

# NOMENCLATURAL CHANGES RESULTING FROM THE TRANSFER OF *NESAEA* AND *HIONANTHERA* TO *AMMANNIA* (LYTHRACEAE)

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**Abstract.** Generic delimitations and understanding of relationships among the herbaceous Afro-Asian genera *Ammannia* L., *Hionanthera* A.Fern. & Diniz, and *Nesaea* Comm. ex Kunth were long elusive due to the extensive similarity in their habit and floral morphology. Recently, studies based on morphological and molecular-based evidence found the three genera forming a strongly supported monophyletic clade. The need for taxonomic unification as a result of this finding is satisfied here by formal nomenclatural recognition of a single genus under the earliest available name, *Ammannia*, and new synonyms *Hionanthera* and *Nesaea*. To accommodate the required nomenclatural changes, 77 new combinations are proposed. Seven new names are provided for replaced synonyms: *Ammannia brevistyla* S.A.Graham & Gandhi, *A. fernandesiana* S.A.Graham & Gandhi, *A. grayi* S.A.Graham & Gandhi, *A. involucrata* S.A.Graham & Gandhi, *A. mauritiana* S.A.Graham & Gandhi, *A. parvula* S.A.Graham & Gandhi, and *A. pauciramosa* S.A.Graham & Gandhi. Lectotypes are designated for 18 names.

**Keywords:** African flora, *Ammannia*, *Hionanthera*, Lythraceae, *Nesaea*, nomenclatural changes

The Lythraceae genera *Ammannia* L., *Hionanthera* A.Fern. & Diniz, and *Nesaea* Comm. ex Kunth are small annual and perennial, amphibious or aquatic herbs primarily distributed in subtropical to tropical Africa and Asia. Historically, *Ammannia* and *Nesaea* have long been confused due to their closely similar vegetative morphology and floral structures and shared habitats. The two genera have simple decussate leaves, cymose inflorescences, perigynous flowers 6 mm long or less that are basically tetramerous with a simple style, caducous petals, and thin-walled capsules enclosing many tiny (0.3–0.4 mm) golden seeds (Koehne, 1903; Graham, 1985, 2007). Traditionally, they have been separated by a questionable difference in the mode of capsule dehiscence: irregular splitting in *Ammannia* versus initial circumscissile dehiscence followed by irregular splitting in *Nesaea*. The type of dehiscence has proven difficult to determine, and this distinction between the two genera appears not to be universally applicable across all the species (Graham et al., 2011).

The East African genus *Hionanthera*, consisting of one or two rarely collected species, was first described in 1955 (Fernandes & Diniz,

1955; Verdcourt, 1994). It is morphologically isolated from *Ammannia* and *Nesaea* by flowers with persistent petals and only two to five, larger (ca. 1–1.8 mm), purple-black seeds per capsule. It was considered possibly synonymous with *Ammannia* by Cook (1996).

Recent molecular studies in the Lythraceae (Graham et al., 2011) based on the sequence data from the nuclear rDNA internal transcribed spacer (ITS) and plastid *rbcL* and *trnL-trnF* regions found *Ammannia*, *Hionanthera*, and *Nesaea* constituted a monophyletic assemblage (100% maximum likelihood). Combined with comparative studies of vegetative, floral, pollen and seed characters, and chromosome numbers, the complete evidence strongly supported the three genera as congeneric. Here they are formally recognized under *Ammannia*, the earliest available name. A number of new combinations and other nomenclatural changes are required to accomplish the unification, particularly for *Nesaea*, the most species-rich member of the group with between ca. 55 (Verdcourt, 1994) and 70 (Immelman, 1991) species. A total of seven new names and 77 new combinations are proposed. Lectotypes are designated for 18 names.

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## MATERIALS AND METHODS

The International Plant Names Index (<http://www.ipni.org>) served as the initial source of names and relevant literature. The taxonomy employed here follows the current usage. The current nomenclatural and taxonomic status of each species, variety, and forma in *Nesaea* and *Hionanthera* was determined through a search of the monographic, floristic, and revisionary treatments of the two genera. The monographic treatment of the Lythraceae by Koehne (1903) and numerous subsequent other publications by him remain primary sources for understanding

the taxonomy and nomenclature of the genera. Other important treatments utilized in determining the correct names currently in use in *Nesaea* and *Hionanthera* are Verdcourt (1994), Immelman (1991), and the extensive contributions of Fernandes & Diniz (1954, 1955) and Fernandes (1970, 1978a, b). An effort is made to verify the location of the holotype and one or more isotypes, but not necessarily all isotypes, of each name treated. Herbarium registration or barcode numbers are provided for many type collections.

## NOMENCLATURE

***Ammannia* L.**, Sp. pl. 1: 119. 1 Mai 1753. LECTOTYPE: *Ammannia latifolia* L. (vide A. S. Hitchcock, Prop. Brit. Bot. 126. Aug 1929). Synonyms: *Nesaea* Comm. ex Kunth in Humboldt, Bonpland & Kunth, Nov. gen. sp. 6: ed. folio. 151. 6 Aug. 1823, *nom. cons.* TYPE: *N. triflora* (L.f.) Kunth. *syn. nov.* *Hionanthera* A.Fern. & Diniz, Bol. Soc. Brot., sér. 2: 29: 90. 1955. TYPE: *Hionanthera mossambicensis* A.Fern. & Diniz. *syn. nov.*

***Ammannia alata* (Immelman) S.A.Graham & Gandhi, *comb. nov.***

Basionym: *Nesaea alata* Immelman, Bothalia 21: 44. 1991. TYPE: SOUTH AFRICA. Transvaal, Phalaborwa, Kruger National Park, Mtomene Pan, Mai 1977, *W. P. D. Gertenbach 7006* (Holotype: PRE [820010-0]; Isotype: KNP). [Note: non *Ammannia alata* Steud., Nomencl. bot., ed. 2, 1: 76. 1840, *nom. nud.*]

The specific epithet refers to the distinctly quadrangular young stems with well-developed wings.

***Ammannia anagalloides* Sond., Linnaea 23: 40. 1850. *Nesaea anagalloides* (Sond.) Koehne, Bot. Jahrb. Syst. 3: 327. 1882. TYPE: SOUTH AFRICA. damp places on Rhinosterkop at Vaal River, *C.L.P. Zeyher 541* (Holotype: S [S-G-347]; Isotypes: CGE [161], K [310524]).**

***Ammannia andongensis* (Welw. ex Hiern) S.A.Graham & Gandhi, *comb. nov.***

Basionym: *Nesaea andongensis* Welw. ex Hiern in Oliver, Fl. trop. Afr. 2: 473. 1871. TYPE: ANGOLA. Pungo a Ndongo, *F. Welwitsch s.n.* (Lectotype (as holotype; designated by Fernandes, 1970: 184): *F. Welwitsch 2368* (LISU [209448])).

The number of the type collection was provided in Hiern, Cat. afr. pl. 1(2): 375. 1898.

***Ammannia angolensis* (A.Fern. & Diniz) S.A.Graham & Gandhi, *comb. nov.***

Basionym: *Nesaea angolensis* A.Fern. & Diniz, Bol. Soc. Brot. sér. 2, 29: 95. 1955. TYPE: ANGOLA. Huilla region, Ruàcanà, 9 Jun 1937, *A. W. Exell & F. A. Mendonça 2748* (Holotype: COI [5469]; Isotype: BM [902416]).

***Ammannia angustifolia* (A.Fern. & Diniz) S.A.Graham & Gandhi, *comb. nov.***

Basionym: *Nesaea angustifolia* A.Fern. & Diniz, Bol. Soc. Brot. sér. 2, 28: 216. 1954. TYPE: GUINEA BISSAU. Boé (Madina), 10 Jun 1951, *J. V. G. Espirito Santo 2919* (Holotype: COI [5465]; Isotype: LISC [2449]). [*non Nesaea angustifolia* Immelman, Bothalia 21: 43. 1991, *nom. illeg.*]

***Ammannia arnhemica* (F.Muell.) S.A.Graham & Gandhi, *comb. nov.***

Basionym: *Lythrum arnhemicum* F.Muell., Fragm. 3: 109. 1862–1863. *Nesaea arnhemica* (F.Muell.) F.Muell., Fragm. 7(57): 146. December 1871. LECTOTYPE (designated by Hewson, 1990: 322): AUSTRALIA, Northern Territory, Victoria River, *F. Mueller s.n.* (MEL [1558270]).

***Ammannia aspera* Guill. & Perr., Fl. Seneg. tent. 1(8): 304. 1833. *Nesaea aspera* (Guill. & Perr.) Koehne, Bot. Jahrb. Syst. 3: 327. 1882. TYPE: SENEGAL. Kounoun near Cape Verde, fl. March, no collection cited. Lectotype (designated here): *G. Perrottet 338* (G [141147]; Isolectotype: BM [902426]).**

***Ammannia auriculata*** Willd., Hort. Berol. 1: pl. 7. 1803. LECTOTYPE (designated by Graham, 1985: 403): EGYPT, near Rosetta, cult. in Berlin (*B-WILLD 3081*).

Synonyms: *Nesaea dinteri* subsp. *elata* A.Fern., Bol. Soc. Brot. sér. 2, 48: 122, pl. 9. 1974 [publ. 1975]. TYPE: ZAMBIA. Mumbwa, Chunga, Kafue National Park, *B. L. Mitchell 18/50* (Holotype: LISC [2447]; Isotypes: COI, PRE [820013-0], SRGH). *Ammannia auriculata* var. *elata* (A.Fern.) A.Fern., Bol. Soc. Brot. sér. 2, 52: 2. 1978.

*Nesaea transvaalica* A.Fern., Bol. Soc. Brot. sér. 2, 48: 121. 1974 [publ. 1975]. TYPE: SOUTH AFRICA. Transvaal, Assen, Farm Welgevonder, 10 Apr 1936, *A. A. Obermeyer s.n.* (Holotype: SRGH; Isotype: BOL [138186]). *Ammannia longipes* C.Wright, Anales Acad. Ci. Méd. Habana 6:75. 1869. TYPE: CUBA, San Gabriel and Palacios, Dec 1865, C. Wright s.n. (Holotype: GH [68366]).

Verdcourt (1994: 37) included *Ammannia auriculata* Willd. var. *elata* (A.Fern.) A.Fern. as a synonym of *A. auriculata* Willd. var. *auriculata*. Immelman (1991: 45) proposed *Nesaea transvaalica* as a synonym of *N. dinteri* subsp. *elata*. Specimens of *Obermeyer 35573* (PRE 322393-0, 593194-0, 593195-0) are possible isotypes. They are from same locality with same date as the holotype.

***Ammannia aurita*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea aurita* Koehne, Bot. Jahrb. Syst. 41: 101. Dec 1907. TYPE: TANZANIA. Lindi District, near Seliman-Mamba, Ngwai-Quelle, *W. Busse 2798* (Holotype: B, destroyed; Lectotype (designated by A. Fernandes, 1978a: 10): BR [6260057]; Isolectotype: EA).

Synonym: *Ammannia auriculata* Willd. f. *longistaminata* A.Fern., Bol. Soc. Brot. sér. 2, 52: 2. 1978. TYPE: TANZANIA. Selous Game Reserve, Kingupira forest, grassland N of the forest, *R. I. Ludanga & K. B. Vollesen MRC 2459* (Holotype: DSM).

Verdcourt (1994: 36) on placing f. *longistaminata* in the synonymy of *N. aurita*, indicated the need for detailed field study of this taxon because of the difficulty in separating it from *A. auriculata* and possibly also from *A. senegalensis* Lam.

***Ammannia baumii*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea baumii* Koehne in Warburg, Kunene-Sambesi-Exped. 312. Mai, 1903; Koehne in Engler, Pflanzenr. IV. 216(Heft 17): 234. 9 Oct 1903. TYPE: ANGOLA. East of Mossamedes, Kokakele [Kakele], *H. Baum 204* (Lectotype (designated by Fernandes, 1970: 185): COI [5470]; Isolectotypes: M, MO [106659], W [1901-9359], Z [27737]).

***Ammannia bequaertii*** (De Wild.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea bequaertii* De Wild., Ann. Soc. Sci. Bruxelles 40: 117. 1921. TYPE: DR CONGO. Katanga, Shinsenda, 9 Mai 1912, *J. Bequaert 432* (Holotype: BR [8952257]).

***Ammannia brevistyla*** S.A.Graham and Gandhi, *nom. nov.*

Replaced synonym: *Nesaea angustifolia* Immelman, Bothalia 21: 43. 1991, *nom. illeg.*, non A.Fern. & Diniz, 1954. TYPE: SOUTH AFRICA. Transvaal, Ellisras, 25 May 1967, *W. J. Louw 4145* (Holotype: PRE [323627-0]).

The epithet alludes to the short style length of the species which, according to Immelman (1991: 43), is a feature that separates it from the closely similar species, *Ammannia erecta* (Guill. & Perr.) S.A.Graham & Gandhi.

***Ammannia burttii*** (Verdc.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea burttii* Verdc., Fl. trop. e. Afr., Lythraceae 18. 1994. TYPE: TANZANIA. Dodoma District, Kazikazi, *B. D. Burt 3703* (Holotype: K).

***Ammannia calcicola*** (H.Perrier) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea calcicola* H.Perrier, Notul. Syst. (Paris)14: 307. 1953. SYNTYPES: MADAGASCAR. Ouest, *H. Perrier 6595*, *H. Perrier 1537* (Lectotype (designated by Perrier, 1954: 6): MADAGASCAR, environs of Mahevarano, E of Majunga, Mar 1908, *H. Perrier 6595* (P [412919]; Isolectotypes: P [412918], TAN [651]).

Two specimens of *Perrier 6595* are present at P. Perrier did not indicate which sheet was the lectotype. The numbered sheet 412919 is selected here as the lectotype.

***Ammannia cinerea*** (A.Fern. & Diniz) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea cinerea* A.Fern. & Diniz, Bol. Soc. Brot. sér. 2, 31: 158, pl. 9, Nov 1957. TYPE: ANGOLA. without locality, 1903, *J. Gossweller s.n.* (Holotype: BM [902415]).

***Ammannia cordata*** Wight & Arn., Prodr. fl. Ind. orient. 1: 304. 1834; *Nesaea brevipes* Koehne, Bot. Jahrb. Syst. 3: 326. 1882; Koehne in Engler, Pflanzenr. IV. 216(Heft 17); 226. 1903; *N. cordata* (Wight & Arn.) M. R. Almeida, Fl. Maharashtra 2: 87. 1998, *nom. illeg.* SYNTYPES: *Wall. Cat. n. 6322* (K [729586]) and *R. Wight 1021* (Lectotype (designated here): INDIA, *R. Wight 1021* (K [729585]; Isolectotypes: E [174596, 00174597, 174598], GZU [261329]). [non *N. cordata* Hiern in Oliver, Fl. trop. Afr. 2: 475. 1871 = *A. involucrata* S.A.Graham & Gandhi, *nom. nov.*, (this publication); *non A. cordata* Wall. Cat. n. 6322. Dec. 1828, *nom. nud.*]

The localities of *N. brevipes* were listed in 1882 without collectors' names or numbers. The associated collections were listed in 1903 where Koehne cited the syntypes of *A. cordata* Wight & Arn. and *Wall. cat. 6322* and *Wight 1021* among the collections of *N. brevipes*.

***Ammannia crassicaulis*** Guill. & Perr., Fl. Seneg. tent. 1(8): 303. 15 Apr 1833. *Nesaea crassicaulis* (Guill. & Perr.) Koehne, Bot. Jahrb. Syst. 3: 324. 1882. TYPE: SENEGAL. *Crescit in paludosis circa Khann in peninsula Promontorii-Viridis; ad fontes Ghielcouil, in regno Cayor*, collection unspecified (Lectotype (designated here): Senegal, *G. Perrottet 337* (S 09-22840).

Synonym: *Nesaea polyantha* Tul., Ann. Sci. Nat., Bot. ser. 4, 6: 132. 1856. TYPE: Tanzania, probably Zanzibar, *W. Bojer s.n.* (Holotype: P).

Koehne (1903: 225) cited: "am Grünen Vorgebirge bei Khann und an den Ghielcouilquellen im Reiche Cayor, *Perrottet 337*. Immelman (1991: 41) designated as lectotype: Senegal, Cape Verde, marshy places near Khann, sheet marked 'herbarium Richard' and 'Herbier E. Drake', Mar 1834, *G. Perrottet s.n.* (P). The lectotype cannot be located at P (Phillipson, pers. comm.). A sheet of *Perrottet 337* is present at S 09-22840 and *Perrottet s.n.* from the type locality is present at MPU [18826].

The synonymy follows Koehne (1882: 326), who relied on Tulasne's (1856) description having not seen the collection of Bojer. *Nesaea polyantha* is not treated by Verdcourt but he included the Bojer type in a discussion of *Nesaea crassicaulis* (Verdcourt 1994:19) where he noted that Perrier said it "most certainly" came from Zanzibar, not from Madagascar as recorded in the protologue of *N. polyantha*.

***Ammannia crinipes*** F.Muell., Trans. & Proc. Philos. Inst. Victoria 3: 49. 1859. *Koehnea crinipes* F.Muell., Syst. census. Austral. pl. 2: 142. 1882 invalid; *Nesaea crinipes* (F.Muell.) Koehne, Bot. Jahrb. Syst. 3: 337. 1882. TYPE: AUSTRALIA. "Banks of rivers in Arnhem's Land", (between the Victoria and Fitzmaurice Rivers fide Koehne, 1882), *F. Mueller s.n.* (Holotype: MEL; Isotypes: K [729583, 729584]; MEL).

***Ammannia cymosa*** (Immelman) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea cymosa* Immelman, Bothalia 21: 42. 1991. TYPE: SOUTH AFRICA. Cape Province, Glen Lyon, Hay division, Paardekloof [Perdekloof], May 1942, *T. Cooke. s.n.* (Holotype: PRE [820012-0]).

***Ammannia dinteri*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea dinteri* Koehne, Bot. Jahrb. Syst. 29: 166. 1900. TYPE: NAMIBIA. Hereroland, Okaruse, Apr., *K. Dinter 606* (Holotype: B, destroyed; Isotype: Z[27739]).

***Ammannia dodecandra*** DC., Mém. Soc. Phys. Genève 3 (2): 89, t. 2. 1826. *Nesaea dodecandra* (DC.) Koehne, Bot. Jahrb. Syst. 3: 334. 1882. *Nesaea candollei* Guill. & Perr., Fl. Seneg. tent. 1(8): 307. 15 Apr 1833, *nom. illeg.* *Lythrum grandiflorum* Perr. ex DC., Mém. Soc. Phys. Genève 3 (2): 89. 1826, *pro syn.* TYPE: SENEGAL. Between Richard-Tol and Doukitt, *G. S. Perrottet 58* (Holotype: G).

***Ammannia drummondii*** (A.Fern.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea drummondii* A.Fern., Bol. Soc. Brot. sér. 2, 48: 124, t. 10. 1974 [publ. 1975]. TYPE: BOTSWANA. Namibian border, 16 km W of Knau Knau, Chadum Valley, 14 Mar 1965, *H. Wild & R. B. Drummond 7019* (Holotype: SRGH; Isotypes: COI, K [310519]).

***Ammannia engleri*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea engleri* Koehne, Bot. Jahrb. Syst. 39: 664. Jan 1907. TYPE: TANZANIA. Mombo, sumpf in der Buschsteppe, ca. 550 m, A. Engler 3318 (Holotype: B, destroyed).

***Ammannia erecta*** (Guill. & Perr.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea erecta* Guill. & Perr., Fl. Seneg. tent. 1(8): 305, t. 69. 15 Apr 1833. *Nesaea erecta* Guill. & Perr. f. *hirtella* Koehne, Bot. Jahrb. Syst. 3: 332. 1882 = f. *erecta*. SYNTYPES: SENEGAL, Cayor, wet sandy places near Laybar, G. Perrottet 343; near Samatite, banks of Casamance River, G. Perrottet 342 Lectotype (designated here): Perrottet 342 (P 5132524).

Synonyms: *Nesaea humilis* Klotzsch in Peters, Naturw. Reise Mossambique 1: 68. 1861. TYPE: MOZAMBIQUE. Swampy places, Rios de Sena [Zambezi River], W. Peters s.n. (Holotype: B, destroyed; Lectotype (designated here): K [310508]).

*Nesaea erecta* f. *glabra* Koehne, Bot. Jahrb. Syst. 3: 332. 1882. SYNTYPES. ETHIOPIA. Schire, *Quartin Dillon & Petit s.n.*(P); Sudan: Bongo, Gir., *Schweinfurth 2530* (B, destroyed); MOZAMBIQUE, Rios de Sena, W. Peters s.n. (Lectotype: B, destroyed; Isolectotype, K 310508).

The synonymy and herbarium depositories are taken from Verdcourt (1994: 23).

***Ammannia erecta* f. *villosa*** (A.Fern.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea erecta* f. *villosa* A.Fern., Bol. Soc. Brot. sér. 2, 52: 5. 1978. TYPE: TANZANIA. Kilwa District, Selous Game Reserve, ± NNW of Kingupira, K. B. Vollesen 2570 (Holotype: DSM; Isotypes: C [10000960], EA [312813], K [312812, 312813], WAG).

***Ammannia fernandesiana*** S.A.Graham & Gandhi, *nom. nov.*

Replaced synonym: *Nesaea ramosa* A.Fern., Bol. Soc. Brot. sér. 2, 48: 118, t. 5. 1974 [publ. 1975]; non *Ammannia* ['*Ammania*'] *ramosa* Hill, Veg. Syst. 11: 14. 1767 = *Rotala ramosior* (L.) Koehne.

TYPE: MOZAMBIQUE. Inhambane District, Vilanculos, km. 9 on the road to Mambone, 9 Oct 1965, A. R. Torre & A. Pereira 12330 (Holotype: LISC [2439]; Isotypes: COI [5484], K [310507]).

***Ammannia fruticosa*** (A.Fern. & Diniz) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea fruticosa* A.Fern. & Diniz, Bol. Soc. Brot. sér. 2, 31: 159. t. 10, 11. 1957. TYPE: TANZANIA. Iringa District, by little Ruaha River, 8 Sep 1956, S. R. Semsei 2452 (Holotype: COI [5483]; Isotypes: BR [6259990, 6260019], COI [5482], EA [2183], FHT, K [310167, 310168]).

***Ammannia garciae*** (A.Fern. & Diniz) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Hionanthera garciae* A.Fern. & Diniz, Bol. Soc. Brot. sér. 2, 29: 94, t. 9. 1955. TYPE: MOZAMBIQUE. Serra de Bandula, near Chimoio, G. J. Garcia 790 (Holotype: LISC [2441]; Isotypes: COI, K [310127], MO [2282399], P, PRE [594500-0], SRGH).

***Ammannia gazensis*** (A.Fern.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea gazensis* A.Fern., Bol. Soc. Brot. 49: 9. 1975. TYPE: MOZAMBIQUE. Gaza District, Dumela, Limpopo River, on mud in riverbanks, R. B. Drummond & Rutherford-Smith 7623 (Holotype: SRGH; Isotype: COI [5477]).

***Ammannia grayi*** S.A.Graham & Gandhi, *nom. nov.*

Replaced synonym: *Nesaea longipes* A.Gray, Smithsonian Contr. Knowl. 3(5): 68. 1852. *Heimia longipes* (A.Gray) Cory, Rhodora 38: 407. 1936. TYPE: USA. Texas: low grounds along the Rio Grande and Medina, Texas, and west to Zacate Creek, Jul 1849, C. Wright 186 (Lectotype (designated by Graham, 1977: 67): GH [68508]; Isolectotypes: G [227462], GH [68509, 68510], K [729734, 729735], NY [386583], PH 19292, 19293]). [Non *Ammannia longipes* C. Wright, Anales Acad. Ci. Méd. Habana 6: 75. 1869 = *Ammannia auriculata* Willd.]

***Ammannia heptamera*** (Hiern) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea heptamera* Hiern in Oliver, Fl. trop. Afr. 2: 472. 1871. TYPE: MOZAMBIQUE. Zomba and Lake Shirwa, *Meller s.n.* (Holotype: K [310511]).

***Ammannia heptamera* var. *heptamera***

***Ammannia heptamera* var. *bullockii*** (Verdc.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea heptamera* var. *bullockii* Verdc., Fl. trop. e. Afr., Lythraceae 30. 1994. TYPE: TANZANIA. Buha District, A. *Bullock 3203* (Holotype: K; Isotype: BR [6260002]).

***Ammannia heterophylla*** (H.Perrier) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaeaheterophylla* H.Perrier, Notul. Syst. (Paris) 14: 307. 1953. SYNTYPES: MADAGASCAR. Environs of Majunga, *H. Perrier 1734*; plateau of Ankara, *H. Perrier 1454*; Namoroka (Ambongo), *H. Perrier 6612* (Lectotype (designated here): Madagascar: Ouest, bords d'une mare, dans la forêt de Kamakama sur le plateau d'Ankara (Boiny), Jul 1902, *H. Perrier 1454* (P [412922])).

***Ammannia hockii*** (De Wild) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea hockii* De Wild., Ann. Soc. Sci. Bruxelles 40: 118. 1921. TYPE: DR CONGO. Katanga, bois de contre-forts de la Manika, Oct 1911, A. *Hock s.n.* (Holotype: BR [8951885]).

***Ammannia icosandra*** (Kotschy & Peyr.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea icosandra* Kotschy & Peyr., Pl. tinn. 10, t. 5a. 1867. TYPE: ETHIOPIA. Dembo Province, near the Djur River which flows from Bahr-Ghasal, Dec. 1863, T. *Heuglin 61* (Holotype: W [9790]).

***Ammannia involucrata*** S.A.Graham & Gandhi, *nom. nov.*

Replaced synonym: *Nesaea cordata* Hiern in Oliver, Fl. trop. Afr. 2: 475. 1871. SYNTYPES: NIGER. Upper Guinea *Barter s.n.*; Nileland, Madi District, *Speke and Grant s.n.*; ANGOLA. Lower

Guinea, Pungo a Ndongo, 2400-3800ft, *F. Welwitsch s.n.* (Lectotype: Step I: *F. Welwitsch 2327* (vide Panigrahi (1976: 186); Step II: BM [902424], upper half of the sheet) (vide Immelman (1991: 43); Isolectotypes: M [16656], PRE). [Note: *non Ammannia cordata* Wight & Arn., Prodr. fl. Ind. orient. 1: 304. 1834; *non Nesaea cordata* (Wight & Arn.) M. R. Almeida, Fl. Maharashtra. 287. 1998, *nom illegit.*]

Synonyms: *Nesaea cordata* Hiern f. *villosa* Koehne, Bot. Jahrb. Syst. 29: 166. Sep 1900. TYPE: MALAWI. *Buchanan 423* (Holotype: B, destroyed; Isotype: E).

*Nesaea sagittata* Peter, Abh. Königl. Ges. Wiss. Göttingen, Math.-Phys. Kl. 13: 86, 124, fig. 17. 1928. TYPE: TANZANIA. Ujiji, [western Tanzania, ca. 6 mi. from Kigoma], A. *Peter 37208* (Holotype: B [10-0159392]). [non A. *Sagittata* DC. 1828.]

The lectotypification of *N. cordata* Hiern was initially attempted by Panigrahi (1976: 186) who selected *Welwitsch 2327* as a lectotype but did not provide the herbarium source. Immelman (1991: 43) cited Panigrahi and added the herbarium source as BM. The single sheet at BM consists of three sections, *Welwitsch 2327*, *2337b*, and *2337c*, each with a separate label and barcode. The lectotype *Welwitsch 2327* (BM [902424]) is the collection on the upper half of the sheet. The initial choice by Panigrahi predates the choice of Verdcourt (1994: 24). The synonymies follow Verdcourt (1994).

Fernandes (1978a) treated *Nesaea sagittata* Peter as a synonym of *N. cordata* Hiern. The synonymy was accepted by Verdcourt (1994). Fernandes provided the holotype number A. *Peter 37208* (B) in Bol. Soc. Brot. 52: 6. 1978. The B specimen has an original Peter label with this number and "Nesaea sagittata n. sp."

***Ammannia kilimandscharica*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea kilimandscharica* Koehne in Engler, Pflanzenw. Ost-Afrikas, 2/3C: 286. Jul 1895. TYPE: TANZANIA. Between Meru and Kilimanjaro, *G.Volkens 1657* (Holotype: B, destroyed).

***Ammannia kilimandscharica* var. *kilimandscharica***

***Ammannia kilimandscharica*** var. ***hispidula*** (Rolfe) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea hispidula* Rolfe, Bull. Misc. Inform. Kew 1916: 230. 1916. *Nesaea kilimandscharica* var. *hispidula* (Rolfe) Verdc., Fl. trop. e. Afr., Lythraceae 32. 1994. SYNTYPES: KENYA. At Nairobi, A. Whyte *s.n.*; E. Battiscombe 69; W. J. Dowson 67, 332 (Lectotype [designated by Verdcourt, 1994: 32]: Kenya, near Nairobi, A. Whyte *s.n.*, K).

***Ammannia kilimandscharica*** var. ***ngongensis*** (Verdc.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea kilimandscharica* var. *ngongensis* Verdc., Fl. trop. e. Afr., Lythraceae 32. 1994. TYPE: KENYA. Masai District, W foot of Ngong Hills, 30 Mar 1957, P. J. Greenway 9168 (Holotype: K; Isotypes: BR [6259976], EA).

***Ammannia linearis*** (Hiern) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea linearis* Hiern in Oliver, Fl. trop. Afr. 2: 475. 1871. SYNTYPES: MOZAMBIQUE. Mozambique District, Forbes *s.n.* (K); Mozambique, Zambesi, J. Kirk *s.n.* (Lectotype (designated here): Mozambique, mouth of Zambezi, J. Kirk *s.n.* (K [310522])).

***Ammannia linifolia*** (Welw. ex Hiern) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea linifolia* Welw. ex Hiern in Oliver, Fl. trop. Afr. 2: 472. 1871. TYPE: ANGOLA. Huilla, F. Welwitsch *s.n.* (Lectotype (as holotype; designated (by Fernandes, 1970: 185): F. Welwitsch 2332 (LISU [209449]; Isolectotypes: BM [902421], LISU [209450, 209451], LD [1021781], M [106655], PRE [594535-0]).

The type number was provided by Hiern, Cat. afr. pl. 1(2): 376. 1898.

***Ammannia loandensis*** Welw. ex Hiern in Oliver, Fl. trop. Afr. 2: 480. 1871. *Nesaea loandensis* (Welw. ex Hiern) Koehne, Bot. Jahrb. Syst. 3: 325. 1882. TYPE: ANGOLA. Luanda (Loanda), near Conceição, Jul., F. Welwitsch *s.n.* (Lectotype (as holotype; designated by

Fernandes, 1970: 183): F. Welwitsch 2366 (LISU [209446]; Isolectotypes: LD [1040245], LISU [209447]; BM [902428]).

Hiern in Cat. afr. pl. 1(2): 374. 1898 cited two collections of *Nesaea loandensis*, Welwitsch 2366 and 2370.

***Ammannia luederitzii*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea luederitzii* Koehne, Verh. Bot. Vereins Prov. Brandenburg 30: 251. Sep 1888. SYNTYPES: NAMIBIA. Between Walfischbai [Walfish Bay] and Odyitambi, Luederitz *s.n.*; Hereroland, Tsoa Xaubthal, A. Schenck 420 (Lectotype (designated here): A. Schenck 420 (Z [27744])).

Synonym: *Nesaea staminea* Koehne, Bot. Jahrb. Syst. 29: 167. Sep 1900. TYPE: NAMIBIA. Tsoachausand, Salem, 29 Jul 1898, K. Dinter 139 (Holotype: Z [27754]).

The synonymy was determined by Pohnert & Roessler (1966: 95.6) and was accepted by Immelman (1991: 46).

***Ammannia luederitzii*** var. ***luederitzii***

***Ammannia luederitzii*** var. ***hereroensis*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea luederitzii* var. *hereroensis* Koehne, Bot. Jahrb. Syst. 29: 167. Sep 1900. TYPE: NAMIBIA. Hereroland, Otjinene, 13 Apr 1899, K. Dinter 613 (Holotype: B, destroyed; Isotype: Z [27745]).

The specimen at Z was annotated by Koehne but does not include 'n. var.' which suggests the holotype was at B and that the Z specimen is an isotype. The variety was erroneously referred to as *Nesaea leideritzii* f. *hereroensis* by Koehne (1902: 69).

***Ammannia lythroides*** (Welw. ex Hiern) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea lythroides* Welw. ex Hiern in Oliver, Fl. trop. Afr. 2: 471. 1871. TYPE: ANGOLA. Mossamedes, F. Welwitsch *s.n.* (Lectotype (designated by Fernandes, 1970: 187): F. Welwitsch 2335 (LISU [209452]; Isolectotypes: BM [902418], LD [1090629], LISU [209453, 209454], M [106654]).

The type number was provided in Hiern, Cat. afr. pl. 1(2): 377. 1898.

***Ammannia mauritiana*** S.A.Graham & Gandhi, *nom. nov.*

Replaced synonym: *Lythrum triflorum* L.f., Suppl. Pl. 249. 1781 [publ. Apr 1782]. *Nesaea triflora* (L.f.) Kunth in Humboldt, Bonpland & Kunth, *Nov. gen. sp.* 6: ed. folio: 151; ed. Qto.: 191. 1823. Lectotype (designated by Verdcourt, 1994: 20): MAURITIUS, *P. Commerson s.n.* (P; Isotype: G [microfiche], M [146401]). [Note: *non Ammannia triflora* R.Br. ex Benth., *Fl. austral.* 3: 297. 1867]

Synonym: *Nesaea capitellata* C.Presl, *Isis* (Oden) 21: 273. 1828. TYPE: MAURITIUS. *Fl. Maur.* ed. 1, *F. W. Sieber 174* (Holotype: PR [615826/PR4805]).

*Trotula triathis* Comm. ex DC., *Prodr.* 3: 90. 1828, pro syn. of *Nesaea triflora* (L.f.) Kunth.

The new epithet is chosen to reflect the frequent appearance of the species in Mauritius from which the original collection is thought to have come. Koehne (1903: 230) includes *N. capitellata* as a synonym of *Nesaea triflora* (L.f.) Kunth.

***Ammannia mauritiana* subsp. *mauritiana***

***Ammannia mauritiana* subsp. *lupembensis*** (Verdc.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea triflora* (L.f.) Kunth subsp. *lupembensis* Verdcourt, *Fl. trop. e. Africa*, *Lythraceae* 21. 1994. TYPE: TANZANIA. Ulanga District, Ifinga, *H-J. Schlieben 1326* (Holotype: BM; Isotypes: BR [6259907,6259983,6260026]; M [146402]; S [09-22846]).

***Ammannia maxima*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea maxima* Koehne, *Bot. Jahrb. Syst.* 41: 100. Dec 1907. SYNTYPES: TANZANIA, Uzaramo District, near Bagamoyo, Mtoni, *Stuhlmann 7196* (B, destroyed); "and elsewhere", *Stuhlmann 6438* (B, destroyed). (Neotype designated by Verdcourt (1994: 35): Tanzania, Kilwa District, Selous Game Reserve, Mwendi [Mwende], *R. I. Ludanga 1424* (DSM; Isoneotypes EA [2179], K [310172]).

The identity of the neotype was confirmed by Verdcourt as *Nesaea maxima* by comparison with a sketch in BM made from syntype material at B that was later destroyed.

***Ammannia minima*** (Immelman) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea minima* Immelman, *Bothalia* 21: 44. 1991. TYPE: BOTSWANA. Kachikau, Zwezwe 'flats', 18 Mai 1977, *P. A. Smith 2037* (Holotype: PRE [668964-0]).

***Ammannia moggii*** (A.Fern.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea moggii* A.Fern., *Bol. Soc. Brot. ser. 2*, 48: 116. 1974 [publ. 1975]. TYPE: MOZAMBIQUE. North, António Enes, Nantangula Beach, W. littoral, 20 Oct 1965, *A. O. D.Mogg 32410* (Holotype: LISC [2438]).

***Ammannia moissiensis*** (A.Chev.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea moissiensis* A.Chev., *Bull. Soc. Bot. France*, 58(Mem. 8): 171. 1911 [publ. 2 Mar 1912]. TYPE: BURKINA FASSO. Gourma et Mossi, de Tangaye à Lozitenga près Koupéla, 28 Jul 1910, *A. Chevalier 24540* (Holotype: P [412908]; Isotypes: P [412906, 412907]).

***Ammannia mossambicensis*** (A.Fern. & Diniz) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Hionanthera mossambicensis* A.Fern. & Diniz, *Bol. Soc. Brot. sér. 2*, 29: 91, t. 6. 1955. TYPE: MOZAMBIQUE. Nampula, *A. R. Torre 719* (Holotype: COI [5472]; Isotype: LISC [2443]).

Synonyms: *Hionanthera graminea* A.Fern. & Diniz, *Bol. Soc. Brot. sér. 2*, 29: 92, t. 7. 1955. TYPE: MOZAMBIQUE. Nampula, *A. R. Torre 715* (Holotype: COI [5471]; Isotype: LISC [2442]).

*Hionanthera torrei* A.Fern. & Diniz, *Bol. Soc. Brot. sér. 2*, 29: 93, t. 8. 1955. TYPE: MOZAMBIQUE. Nampula, *A. R. Torre 1212* (Holotype: COI 5473; Isotype: LISC 2444).

The synonymies were determined by Verdcourt (1994: 49).

***Ammannia muelleri*** (Hewson) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea muelleri* Hewson in Robertson et al., Fl. Australia 18: 322. 1990. TYPE: AUSTRALIA. Northern Territory, Kapalga (Ref. 2698), 28 Apr 1977, R. Collins BC417 (Holotype: DNA [D13797]).

***Ammannia palmeri*** (S.A.Graham) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea palmeri* S.A.Graham, Syst. Bot. 2: 70, fig. 26. 1977. TYPE: MEXICO. San Luis Potosí, Media Luna, near Rio Verde, 2-8 Jun 1904, E. Palmer 72 (Holotype: NY [386585]; Isotype, MO [292633]).

***Ammannia parkeri*** (Verdc.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea parkeri* Verdc., Fl. trop. e. Afr., Lythraceae 27. 1994. TYPE: KENYA. Kitui District, Lali Hills, Dakadima-Didima, G. M. Parker 501 H (Holotype: EA [2182]).

***Ammannia parkeri* var. *parkeri***

***Ammannia parkeri* var. *longifolia*** (Verdc.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea parkeri* var. *longifolia* Verdc., Fl. trop. e. Afr., Lythraceae 27. 1994. TYPE: KENYA. North of Mombasa to Lamu and Witu, A. Whyte s.n. (Holotype: K; Isotype: BM).

***Ammannia parvula*** S.A.Graham & Gandhi, *nom. nov.*

Replaced synonym: *Nesaea pygmaea* A.Fern. & Diniz, Bol. Soc. Brot. sér. 2, 29: 97. 1955. TYPE: MOZAMBIQUE. Mozambique District, between Nampula and Corrane, 11 Apr 1937, A. R. Torre 1365 (Holotype: COI [5479]; Isotype: LISC [2440]). [Note: *non Ammannia pygmaea* Kurz, Jour. Bot. 5: 376. 1867 = *Rotala mexicana* Schldl. & Cham., Linnaea 5: 567. 1830 (fide Cook (1979: 33)); *nec Ammannia pygmaea* A.Chev., Fl. Afr. Centr. I., Énum. pl. récolt. 1: 131. 1913, *nom. nud.*]

Chevalier provided a collection locality and collector number for *Ammannia pygmaea* A.Chev., but the description is insufficient to qualify as validly described. "Plantae minuscule

entierrement rougeatre" does not distinguish it from most other *Ammannia* which typically turn red with cold temperatures and age.

***Ammannia passerinoides*** Welw. ex Hiern in Oliver, Fl. trop. Afr. 2: 480. 1871. *Nesaea passerinoides* (Welw. ex Hiern) Koehne, Bot. Jahrb. Syst. 3: 338. 1882. TYPE: ANGOLA. Huilla, F. Welwitsch s.n. (Lectotype (as holotype; designated by Fernandes, 1970: 186-187); F. Welwitsch 2336 [LISU [209455]; Isolectotypes: BM [902417], LD [1037862], LISU [209456], LISC [209457], M [106652, 106653], PRE [819999-0]).

The type number was provided in Hiern, Cat. afr. pl. 1(2): 377. 1898.

***Ammannia pauciramosa*** S.A.Graham & Gandhi, *nom. nov.*

Replaced synonym: *Nesaea filiformis* H.Perrier, Notul. Syst. (Paris)14: 307. 1952. TYPE: MADAGASCAR. Moist sands not far from the coast, environs of Majunga, Apr 1925, H. Perrier 17257 (Holotype: P [412920]; Isotypes: P [412921], TAN [298]). [Note: *non Ammannia filiformis* DC, Mem. Soc. Phys. Genev. 3(2): 95. 1826 = *Ammannia senegalensis* f. *diffusa* (Willd.) Koehne, Pflanzenr. IV. 216(Heft 17): 52. 1903; *nec Ammannia filiformis* (Bellardi) Baill., Hist. pl. 6: 438. f. 420-422. 1877 = *Rotala filiformis* (Bellardi) Hiern in Oliver, Fl. trop. Afr. 2: 468. 1871 = *Suffrenia filiformis* Bellardi, Mem. Acad. Imp. Sci. Turin, Sci. Phys. 7: 445. 1804].

***Ammannia pauciracemosa* f. *pauciracemosa***

***Ammannia pauciramosa* f. *verna*** (Humbert) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea filiformis* f. *verna* Humbert, Fl. Madagascar & Comores 4. 1954. TYPE: MADAGASCAR, Ouest, Secteur Ambongo-Boina, embouchure de la Mahavavy, au S. de Majunga, H. Perrier 13868 (Holotype: P).

***Ammannia pedicellata*** (Hiern) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea pedicellata* Hiern in Oliver, Fl. trop. Afr. 2: 472. 1871. SYNTYPES:

TANZANIA. Zanzibar, *J. Kirk s.n.* and *J. Kirk 6* (Lectotype (designated here): *J. Kirk s.n.* (K [310173])).

Synonym: *Nesaea procumbens* Peter in Abh. Königl. Ges. Wiss. Göttingen, Math-Phys. Kl. ser. 2, 13(2): 87 in key, 124. 1928. TYPE: TANZANIA. Usaramo, Udigo, A. Peter *s.n.* (Lectotype (designated here): Tanzania, Usaramo, A. Peter 44893 (B [10-0159390])).

Verdcourt (1994:19) noted for *N. pedicellata* that neither *Kirk s.n.* nor *Kirk 6* was specified as having actually come from Zanzibar. *Kirk 6* is labeled "Prov. Zanguebar" and *Kirk s.n.* is labeled "Flora Zanguebarica." They could equally have come from the coastal mainland. The type number of *N. procumbens* was not provided in the protologue but only one collection locality, Usaramo, Udigo, is cited in the original publication (Peter 1928: 124). There are three Peter collection numbers in Berlin: 52047 x2, 52048, and 44893. Three of four sheets bear a Peter label "Nesaea procumbens Peter, n. spec." The designated lectotype, *Peter 44893*, is from Usaramo and has the new species annotation.

***Ammannia pedroi*** (A.Fern & Diniz) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea pedroi* A.Fern. & Diniz, Bol. Soc. Brot. sér. 2, 29: 96. 1955. TYPE: MOZAMBIQUE. Mozambique District, Môma, 15 Jul 1948, *J. G. Pedro et J. Pedrógão 4523* (Holotype: COI [5478]; Isotype LMJ).

***Ammannia petrensis*** (M. G. Gilbert & Thulin) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea petrensis* M.G.Gilbert & Thulin, Nord. J. Bot. 13: 53. 1993. TYPE: SOMALIA. Bay Region, Buur Heybo, 2°59'N, 44°16'E, 11 Jun 1989, *M. Thulin & B. Mohamed 7098* (Holotype: UPS [Bot:V-049294]; Isotypes: K [310164], MOG).

***Ammannia polycephala*** (A.Fern.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea polycephala* Peter in Abh. Königl. Ges. Wiss. Göttingen, Math-Phys. Kl., n.f. 13, 2: 25. 1928. *Nesaea polycephala* Peter ex A.Fern., Bol. Soc. Brot. ser. 2, 52: 7. 1978, isonym. TYPE: MOZAMBIQUE. Beira District, Manga, 30 Aug 1925, A. Peter 31168 (Lectotype (designated by Fernandes): B [10-0159388]).

Synonym: *Nesaea polycephala* f. *dolichostyla* A.Fern., Bol. Soc. Brot. ser. 2, 52: 7. 1978 = f. *polycephala*.

***Ammannia praetermissa*** (Kasselmann) Kasselmann, Aqua Planta 38: 9. 2013

Basionym: *Nesaea praetermissa* Kasselmann, Aqua Planta 37? (4): 130. 2012. TYPE: Locality unknown, cultivated plant exported by an Asiatic nursery, C. Kasselmann 978 (Holotype: B; Isotypes: B, M).

***Ammannia pringlei*** (Rose) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea pringlei* Rose, Cont. U. S. Natl. Herb. 5: 198. 1899. (Lectotype (designated by Graham, 1977: 67): MEXICO. Puebla: dry plains near Tehuacán, 2 Aug 1897, *C.G. Pringle 6758* (US [316691]; Isolectotypes: CM, E [285518], F [62543F], G [227463, 227464], GH [68511], GOET [5543], K [528494], M [146406], MO, PH [19294], S [S-G-4285], US [956195, 117367, 117368], S [S-G-4285], Z [27748]).

***Ammannia prostrata*** Buch.-Ham. ex Dillwyn, Rev. Hort. malab. 47. 1839. *Nesaea prostrata* (Buch.-Ham. ex Dillwyn) Suresh in Nicolson et al., Interpret. Rheede's Hort. malab. 168. 1988 (Lectotype: INDIA. Rheede's plate of Belitsjira, Hort. malab. 9: 165, t. 84. 1689 (vide Mabberly 1977: 531-533)).

Synonyms: *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. *Nesaea lanceolata* var. *stricta* Koehne, Bot. Jahrb. Syst. 3: 326. 1882 = *Nesaea lanceolata* var. *lanceolata*. [*Ammannia lanceolata* B.Heyne ex Wall., Numer. list, no. 2106, 1828, *nom. nud.*] LECTOTYPE (designated here): Wallich Cat. No. 2106 (K).

*Ammannia prostrata* Buch.-Ham. ex Blume (Mus. bot. 2(9-12): 132. 1856) is an isonym of *A. prostrata* Buch.-Ham. ex Dillwyn.

***Ammannia pubescens*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea pubescens* Koehne in Engler, Pflanzenw. Ost-Afrikas, 2/3C: 286. Jul 1895; Bot. Jahrb. Syst. 22: 149.

Nov 1895. TYPE: MADAGASCAR. In the west, Ufersand des Betsiboka, Mai 1880, *J. H. Hildebrandt 3453* (Holotype: B, destroyed; Isotypes: K [310529], M [106651], P [412923]).

***Ammannia purpurascens*** (A.Fern.) S.A. Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea purpurascens* A.Fern., Bol. Soc. Brot. ser. 2, 48: 120. 1974 [publ. 1975]. TYPE: ZAMBIA. East, Changola near Fort Jameson, 26 Sep 1966, *J. M. Mutimushi 1482* (Holotype: SRGH, Isotype: K [310510]).

***Ammannia radicans*** (Guill. & Perr.) S.A. Graham & Gandhi, *comb. Nov.*

Basionym: *Nesaea radicans* Guill. & Perr., Fl. Seneg. Tent. 1(8): 306, t. 70. 15 Apr 1833. SYNTYPES: SENEGAMBIA CONFEDERATION, near Khann, N'Batal, Kounoun and other places on Cape Verde; also near N'Boro in Cayor region, *G. Perrottet s.n.* Lectotype (designated by Verdcourt, 1994: 21); SENEGAL. Cayor, *G. Perrottet 341*, P; Isolectotypes: BM, S [09-22859]).

***Ammannia radicans* var. *radicans***

***Ammannia radicans* var. *floribunda*** (Sond.) S.A.Graham & Gandhi, *comb. Nov.*

Basionym: *Nesaea floribunda* Sond. in Harvey & Sonder, Fl. Cap. 2: 517. 1861–1862; *Lythrum floribundum* (Sond.) F. Muell., Fragm. 7: 146. 1867–1871; *Nesaea radicans* var. *floribunda* (Sond.) A.Fern., Bol. Soc. Brot. ser. 2, 48: 117. 1974 [publ. 1975]. TYPE: SOUTH AFRICA. “On the Omblas River, near Port Natal” [Umlaas River, near Durban] Apr, *J. F. Drège s.n.* (Lectotype (designated here): S [S-G-6121]; Isolectotypes: K [310527]; PRE, S [S09-23095]). [Note: *non Ammannia floribunda* Guill. & Perr., Fl. Seneg. tent. 1(8): 302. 15 Apr 1833 = *Ammannia senegalensis* var. *floribunda* (Guill. & Perr.) Koehne, Bot. Jahrb. Syst. 1: 248. 1880; *nec Ammannia floribunda* (Wight) C.B. Clarke in Hooker, Fl. Brit. Ind. 2: 567. 1879 (based on *Nimmoia floribunda* Wight, Madras J. Lit. Sci. 7: 312. 1837) = *Rotala floribunda* (Wight) Koehne, Bot. Jahrb. Syst. 1: 156. 1880].

Synonyms: *Tolypeuma floridum* E.Mey. ex Arn., J. Bot. 3: 259. 1841, *nom. nud.*

*Tolypeuma floridum* E.Mey., Drège, Zwei Pflanzengeogr. Docum. 226. 1843, *nom. nud.*

***Ammannia radicans* var. *latifolia*** (A.Fern. & Diniz) S.A.Graham & Gandhi, *comb. Nov.*

Basionym: *Nesaea radicans* var. *latifolia* A.Fern. & Diniz, Bol. Soc. Brot. ser. 2, 31: 157. t. 8. 1957. TYPE: GUINEA BISSAU, Mansoa, between Bissorá and Mansabá, 24 Dec 1955, *J. V. G. Espirito Santo 3243* (Holotype: COI [5480]; Isotypes: EA [2181], LISC [2956–58, 2450], LMA).

***Ammannia ramosissima*** (A.Fern. & Diniz) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea ramosissima* A.Fern. & Diniz, Bol. Soc. Brot. sér. 2, 29: 98. 1955. TYPE: MOZAMBIQUE. Niassa District, Amaramba, margin of Mandimba River, 31 Mai 1948, *J. G. Pedro & J. Pedrógão 4139* (Holotype: COI [5480]; Isotypes: EA [2181], LMA).

***Ammannia rautanenii*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea rautanenii* Koehne in Schinz, Bull. Herb. Boissier 6: 750. Sep 1898. TYPE: NAMIBIA. Amboland, Olukonda, 20 Mar 1897, *M. Rautanen 218* (Holotype: B, destroyed; Lectotype (designated here): Z [27749]; Isotypes: K [310525], W [12990]).

***Ammannia rigidula*** (Sond.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Lythrum rigidulum* Sond., Linnaea 23: 42. 1850. TYPE: SOUTH AFRICA. Transvaal, Aapies River, *C. Zeyher 542* (Holotype: S [S-G-3867]; Isotypes: CGE [162], K [310531], LD [1010613], SAM [36425-0]).

*Nesaea rigidula* (Sond.) Koehne, Bot. Jahrb. Syst. 3: 333. 1882.

Synonyms: *Nesaea rigidula* f. *brachystyla* Koehne, Bot. Jahrb. Syst. 29: 166. Sep 1900. TYPE: NAMIBIA. Rhukuanjama, Omupanda, Jan, *A. Wulffhorst s.n.* (Holotype: B, destroyed).

*Nesaea mucronata* Koehne, Verh. Bot. Vereins Prov. Brandenburg 30: 248. Sep 1888. TYPE: NAMIBIA. Omatope, Feb 1886, *H. Schinz 518* (Holotype: Z [27746]; Isotype: BOL [138185]).

Koehne (1900) published *N. rigidula* f. *brachystyla* but did not include it in his monograph (1903). The type of the form was included in a list of specimens of *N. rigidula* without mention of f. *brachystyla*. The type of *N. mucronata* at Z is annotated "n. sp." by Koehne and includes a brief description. Immelman followed Pohnert & Roessler (1966) and Fernandes (1978b) in accepting *N. mucronata* Koehne as a synonym of *A. rigidula*.

***Ammannia robertsii*** (F.Muell.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Lythrum robertsii* F.Muell., *Fragm.* 7: 145. 1869–71. *Nesaea robertsii* F.Muell. ex Koehne, Bot. Jahrb. Syst. 3: 336. 1882. TYPE: AUSTRALIA. Queensland, Bowen-Downs, *C. W. Birch s.n.* (Holotype: MEL [1558272A?]; Isotype: K[729589?]).

This species was excluded from the treatment of *Nesaea* in the Flora of Australia (Hewson 1990: 109) as atypical of the genus and of undetermined generic status. More recently, online records of the Flora of Australia (<http://www.anbg.gov.au/abrs/online-resources/flora>) reinstate the species as 'naturalized' in Queensland. One collection in MEL, without collector's name or number may represent the type referred to by Hewson. A second specimen, at Kew and also lacking collector's name but from the type area in 1871, is most likely an isotype.

***Ammannia robinsoniana*** (A.Fern.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea robinsoniana* A.Fern., Bol. Soc. Brot. sér. 2, 48: 116. 1974 [publ. 1975]. TYPE: ZAMBIA. 95 km E of Kasama, 6 Mai 1962, *E. A. Robinson 5137* (Holotype: SRGH; Isotypes: COI, EA [2178], K [310506]).

***Ammannia sagittifolia*** (Sond.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Lythrum sagittifolium* Sond., *Linnaea* 23: 41. 1850 (*sagittae-folium*). *Nesaea sagittifolia* (Sond.) Koehne, Bot. Jahrb. Syst. 3: 339. 1882. TYPE: SOUTH

AFRICA. Transvaal, boggy places near Magaliesburg, *C. Zeyher 543* (Lectotype (designated (as holotype) by Panigrahi, 1976: 187); *C. Zeyher 543* (BM [902412]; Isolectotypes: K [310546], LD [1008373], S [S-G-3868]).

Synonyms: *Nesaea sagittifolia* var. *glabrescens* Koehne, Bot. Jahrb. Syst. 22: 152. Nov 1895. TYPE: SOUTH AFRICA. Transvaal, Hoogevelde bei Standarton, *A. Rehmann 6796* (Holotype: B, destroyed; Lectotype (designated here): Z [27751]). *Nesaea sagittifolia* var. *salicarioides* Koehne, Bot. Jahrb. Syst. 22: 152. Nov 1895b. TYPE: SOUTH AFRICA. Kwazulu-Natal, 1887, *M. Schultze 40* (Holotype: B, destroyed).

***Ammannia sagittifolia* var. *sagittifolia***

***Ammannia sagittifolia* var. *ericiformis*** & f. ***ericiformis*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea sagittifolia* var. *ericiformis* Koehne, Bot. Jahrb. Syst. 22: 152. Nov 1895. *Nesaea sagittifolia* f. *ericiformis* (Koehne) Immelman, *Bothalia* 21: 47. 1991. TYPE: SOUTH AFRICA. Kwazulu-Natal, Maritzburg, *A. Rehmann 7599* (Holotype: B, destroyed; Lectotype (designated here): *A. Rehmann 7599* (Z [27750]).

***Ammannia sagittifolia* f. *swaziensis*** (Immelman) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea sagittifolia* f. *swaziensis* Immelman, *Bothalia* 21: 48. 1991. TYPE: SWAZILAND. Mbabane, Manzini District, Mpisi Government Farm, 22 Jun 1962, *M. C. Karsten s.n.* (Holotype: PRE [49640]; Isotype: NBG).

Of the three varieties described by Koehne, Immelman (1991: 47) synonymized *N. sagittifolia* var. *glabrescens* and var. *salicarioides* with var. *sagittifolia* and retained var. *ericiformis*.

***Ammannia saluta*** (Immelman) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea saluta* Immelman, *Bothalia* 21: 45. 1991. TYPE: NAMIBIA. Grootfontein, 27 Apr 1934, *K. Dinter 7347* (Holotype: PRE [0353983-0]; Isotypes: BOL [138187], HBG, WIND).

***Ammannia santoi*** (A.Fern. & Diniz) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea santoi* A.Fern. & Diniz, Bol. Soc. Brot. sér. 2, 31: 156. 1957. TYPE: GUINEA BISSAU. Between Bulol and Jefunco near Susana, mouth of the Cacheu River, 29 Nov 1955, *J. V. G. Espírito Santo 3717* (Holotype: COI; Isotype, LISC [2451, 2452], WAG [249203]).

***Ammannia sarcophylla*** Welw. ex Hiern in Oliver, Fl. trop. Afr. 2: 479. 1871. *Nesaea sarcophylla* (Welw. ex Hiern) Koehne, Bot. Jahrb. Syst. 3: 328. 1882. TYPE: ANGOLA. Mossamedes, margins of the Rio Bero near Cavaleiros, *F. Welwitsch s.n.* (Lectotype (designated by Fernandes, 1970: 182); *F. Welwitsch 2365* (LISU [209458]; Isolectotypes: BM [902432, 902433], LISU [209459]).

***Ammannia schinzii*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea schinzii* Koehne, Verh. Bot. Vereins Prov. Brandenburg 30: 250. 1888. TYPE: SOUTH AFRICA. Cape province, Oshando in Upingtonia, Mar 1886, *H. Schinz 517* (Holotype: B, destroyed; Lectotype (designated here): BOL [138188]; Isolectotypes: K [310537], Z [27753]).

Synonyms: *Nesaea schinzii* var. *fleckii* Koehne, Bull. Herb. Boissier 3: 409. Aug 1895. TYPE: NAMIBIA. Hereroland, Gansberg, *Dr. Fleck 231a* (Holotype: B, destroyed).

*Nesaea schinzii* var. *rehmanii* Koehne, Bot. Jahrb. Syst. 22: 151. Nov 1895. SYNTYPES: SOUTH AFRICA. Transvaal, Hoogveld near Trigardsfontein, *A. Rehmann 6679, 6694*; Bronkerspruit, *A. Rehmann 6567*; Pretoria, Gauteng, *A. Rehmann 4749* (Lectotype (designated here): *A. Rehmann 4749* (Z [27752]; Isolectotypes: BOL [138189], K [310541]).

*Nesaea kuntzei* Koehne in Kuntze, Revis. gen. pl. 3[3]: 97. 1898; Bot. Jahrb. Syst. 29: 167. Sep 1900. SYNTYPES: SOUTH AFRICA. Kwazulu-Natal. Ladysmith, *O. Kuntze 31* and *O. Kuntze 32*. (Lectotype: *O. Kuntze 32* (NY) (vide Immelman (1991: 47).

*Nesaea rivularis* (J.M.Wood & M.S.Evans) Koehne, J. Bot. 40: 69. 1902. *Lythrum rivulare* J.M.Wood & M.S. Evans, Rep. (Annual) Natal Colon. Herb. 1900: 12 Feb-Mar 1901; J. Bot. 39: 172. May 1901. TYPE: SOUTH AFRICA. Kwazulu-Natal. Province of Zululand near Tugela River, *J. Wylie 5689* (Holotype: NH).

The synonymy for *Ammannia schinzii* follows Immelman (1991: 46). Koehne initially published a description of *N. kuntzei* (in Kuntze, Revis. Gen. Pl. 3: 97. 1898) citing "Natal: Ladysmith, 1100 m." without identification of the collection or collections on which the species was based. Subsequently Koehne cited syntypes *O. Kuntze 31* and *32* in Bot. Jahrb. Syst. 29: 167. 1900. Immelman (1991: 47) cited "*Kuntze 32* (NY; photo in Bol!; scrap and photo in PRE!)." Possibly she regarded this as lectotypification, but did not say so. She did not need to indicate lectotype in 1991. *Kuntze 32* is not listed at CHARL or NY in the type databases. The type of *Nesaea rivularis* (Wylie 5689) should not be confused with the lectotype of *N. woodii* Koehne (Wylie 5689a).

***Ammannia schinzii* subsp. *schinzii***

***Ammannia schinzii* subsp. *subalata*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea schinzii* var. *subalata* Koehne, Bot. Jahrb. Syst. 22: 151. Nov 1895. *Nesaea schinzii* subsp. *subalata* (Koehne) Verdc., Fl. trop. e. Afr., Lythraceae 33. 1994. SYNTYPES: TANZANIA. Mwanza District, Kayenzi [Kagehi], *Fischer 266*, (B, destroyed; K [312814, 312830]); Umpeke [Bumpeke], *F. L. Stuhlmann 840* (B, destroyed). (Lectotype (designated here): *Fischer 266* (K [312830]).

***Ammannia schlechteri*** (A.Fern.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea schlechteri* A.Fern., Garcia de Orta 4: 189, t. 1. 1980. TYPE: SOUTH AFRICA. Transvaal by Sandfontem, 19 Jan 1894, *F. R. R. Schlechter 4243* (Holotype: MO [313238]; Isotypes: BR [6259969], E [217865], PRE [322201-0], S [S09-22874]).

***Ammannia senegalensis*** Lam. var. ***ondongana*** (Koehne) Verdc., Fl. trop. e. Afr., Lythraceae 44. 1994.

Basionym: *Nesaea ondongana* Koehne in Schinz, Mem. Herb. Boissier 10: 78. Nov 1899. (Lectotype (designated by Immelman, 1991: 41): NAMIBIA. Ambo-land, Ondongana, Jan 1886, *M. Rautanen 206* (Z [27747]; Isolectotype, H).

Synonyms: *Nesaea ondongana* var. *evansiana* (A.Fern. & Diniz) A.Fern., Bol. Soc. Brot. sér. 2, 48: 115. 1974 [publ. 1975].

Basionym: *Ammannia evansiana* A.Fern. & Diniz, Bol. Soc. Brot. sér. 2, 31: 155. t. 6. 1957. TYPE: BOTSWANA. Kachikau, swampy areas by Chobe River, *I. B. Pole Evans 4187* (Holotype: SRGH; Isotypes: IFAN, K [312831, 312832], PRE [322187-0]).

*Nesaea ondongana* var. *beirana* A.Fern., Bol. Soc. Brot. sér. 2, 48: 115. t. 1. 1974 [publ. 1975]. TYPE: MOZAMBIQUE. Sofala, Beira, Macuti Beach, at edge of swamp in dune slack, 10 Sep 1962, *A. R. A. Noel 2488* (Holotype: SRGH [97088-0]; Isotypes: K [312833], LISC [2437]).

*Nesaea ondongana* subsp. *orientalis* A.Fern., Bol. Soc. Brot. sér. 2, 48: 115. t. 2. 1974 [publ. 1975]. TYPE: ZIMBABWE. Chipinga Distr., Chibuwe Pan, Jun 1972, *G. E. Gibbs-Russell 2083* (Holotype: COI; Isotype, K [310503]).

Verdcourt (1994: 44) was "unable to keep *Nesaea ondongana* separate from *Ammannia senegalensis*" and the synonymies listed above in *Ammannia senegalensis* are from his treatment.

***Ammannia spathulata*** (A.Fern.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea spathulata* A.Fern., Bol. Soc. Brot. sér. 2, 48: 119. 1974 [publ. 1975]. TYPE: MOZAMBIQUE. Mucarangue near Buzi, 19 Oct 1935, *A. Lea 78* (Holotype: PRE [323572-0]; Isotype: K [310520]).

***Ammannia striatiflora*** (Hewson) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea striatiflora* Hewson in Robertson et al., Fl. Australia 18: 322. 1990. TYPE: AUSTRALIA. West Australia, 7.8 km N of Mitchell River Stn. on Gibb River to Kalumburu road, 9 Jun 1987, *D. J. Edinger 334* (Holotype: UWA [1604589]).

***Ammannia stuhlmannii*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea stuhlmannii* Koehne in Engler, Pflanzenw. Ost-Afrikas. 2/3C: 286. Jul 1895; Bot. Jahrb. Syst. 22: 150. Nov 1895. SYNTYPES: TANZANIA. Zanzibar coast, Pangani, Nov. 1889, *F. L. Stuhlmann ser. 1, 516* (B, destroyed); Jan. 1890, *F. L. Stuhlman 297* (B, destroyed).

***Ammannia teixeirae*** (A.Fern.) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea teixeirae* A.Fern., Bol. Soc. Brot., sér. 2, 43: 141. 1969. TYPE: ANGOLA. Huilla, Namuculungo, 25 Jun 1957, *J. Teixeira 2538* (Holotype: LUA; Isotype: LISC [2436]).

***Ammannia tolypobotrys*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea tolypobotrys* Koehne, Bot. Jahrb. Syst. 22: 151. Nov 1895. TYPE: SOUTH AFRICA. Kwazulu-Natal. fields by the Umhlatuzaan River, Dec., *J. M. Wood 334* (Holotype B, destroyed; Lectotype (designated here): BM [902414]; Isolectotypes: GRA [2179-0], Z [27755]).

***Ammannia tolypobotrys* f. *schlechteri*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea tolypobotrys* f. *schlechteri* Koehne, Bot. Jahrb. Syst. 29: 166. Sep 1900. TYPE: SOUTH AFRICA. "Africae australis regione orientali pr. Ulungubi" [Ungulubi], *R. Schlechter 12145* (Holotype: B, destroyed; Isotype: K [310528]).

***Ammannia triflora*** R.Br. ex Benth., Fl. austral. 3: 297. 1867. *Nesaea lanceolata* var. *pubiflora* Koehne, Bot. Jahrb. Syst. 3: 326. 1882. *Ammannia pubiflora* (Koehne) Hewson in Robertson et al., Fl. Australia 18: 321. 1990, nom. illeg (Lectotype (designated by Bean, 2008: 727): AUSTRALIA, Queensland, Sweers Island, 27 Nov 1802, *R. Brown s.n.* (BM [797641]; Isolectotypes: BRI, NSW).

***Ammannia volkensii*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea volkensii* Koehne in Engler, Pflanzenw. Ost-Afrikas, Theil 2/3C: 286. Jul 1895. TYPE: TANZANIA. Pare District, Muanamata, *G. Volkens 2390* (Holotype: B, destroyed).

***Ammannia wardii*** (Immelman) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea wardii* Immelman, *Bothalia* 21: 42. 1991. TYPE: SOUTH AFRICA. Natal, Nkandla, Umfolozi Game Reserve, 7 Dec 1954, *C. J. Ward 2456* (Holotype: PRE [322377-0]; Isotype: NU [15513-0]).

***Ammannia woodii*** (Koehne) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea woodii* Koehne, in Engler, *Pflanzenr.* IV. 216(Heft 17): 238. 1903. SYNTYPES: SOUTH AFRICA. Natal, Zululand, by Tugela River, *J. Wylie 5689a*;

*J. Wylie 8599* (Lectotype (designated by Immelman, 1991: 45–46): *J. Wylie 5689a*, PRE; Isolectotypes: BOL, E [217864], K [310536], PH [19295], SAM).

***Ammannia zambatidis*** (Immelman) S.A.Graham & Gandhi, *comb. nov.*

Basionym: *Nesaea zambatidis* Immelman, *Bothalia* 21: 46. 1991. TYPE: SOUTH AFRICA. Transvaal, near Waterpoort, east of Pylkop Station, north of the Soutpansberg, Farm Driehoek, 9 Mai 1984, *K. Balkwill 1651* (Holotype: PRE [668482-0]; Isotype: NU [15512-0]).

#### DOUBTFUL AND EXCLUDED NAMES

*Nesaea frutescens* A.Chev., *Fl. Afr. centr.*, *Enum. Pl. récolt.* 132. 1913, *nom. nud.*

*Nesaea jaegeri* Koehne in Engler & Drude, *Veg. Erde* IX. 3 (2): 653. 1921, *nom. nud.*

As Verdcourt (1994:36) pointed out, the name appears in a key only and was separated from *N. dinteri* in the couplet only by geography and is thus lacks a distinguishing diagnosis or description.

*Nesaea linariifolia* Steud., *Flora* 25: 474. 1842, *nom. nud.* (*linariaefolia*).

*Nesaea myrtifolia* Desf. ex A.St.-Hil., *Fl. Bras. merid.* 3: 138. 1833 = *Heimia apetala* (Spreng.) S.A.Graham & Gandhi, *Candollea* 64: 306. 2009.

*Nesaea polyandra* (Hook. & Arn.) Steud., *Flora* 25: 472. 1842 = *Pleurophora polyandra* Hook. & Arn., *Bot. Misc.* 3: 315. 1833 (fide Koehne, 1877: 308).

*Nesaea pusilla* (Hook. & Arn.) Steud., *Flora* 25: 473. 1842 = *Pleurophora pusilla* Hook. & Arn., *Bot. Misc.* 3: 315. 1833 (fide Koehne, 1877: 308).

*Nesaea pusilla* var. *minima* Steud., *Flora* 25: 473. 1842 = *Pleurophora pusilla* f. *minima* (Steud.) Koehne (1882:428).

*Nesaea racemosa* Klotzsch in Peters, *Naturw. Reise Mossambique* Vol. 6 (I). *Botanik*: 68. 1861, *nom. nud.*

*Nesaea recta* Steud., *Flora* 25: 473. 1842, *nom. illegit.* = *Pleurophora pungens* D.Don, *Edinburgh New Philos. J.* 12: 112. 1831 (fide Koehne (1877: 308)).

*Nesaea repens* W.Fitzg., *J. & Proc. Roy. Soc. Western Australia* 3:104. 1918, *nom. nud.*

*Nesaea salicifolia* Kunth in Humboldt, Bonpland, and Kunth, *Nov. gen. sp.* 6 (ed. quarto): 192. 1824 = *Heimia salicifolia* Link, *Enum. hort. Berol. alt.* 2: 3. 1822.

*Nesaea salicifolia* var. *montana* Griseb., *Pl. Lorentz.* 93. 1874 = *Heimia montana* (Griseb.) Lillo, *Reseña fitogeogr. prov. Tucumán.* 225. 1919.

*Nesaea speciosa* Kunth in Humboldt, Bonpland & Kunth, *Nov. gen. sp.* 6(ed. Quarto): 191. 1824, *nom. nud.*

*Nesaea squarrosa* Steud., *Flora* 25: 473. 1842 = *Pleurophora polyandra* f. *squarrosa* (Steud.) Koehne, *Bot. Jahrb. Syst.* 2: 248. 1882.

*Nesaea syphilitica* Steud., *Flora* 25: 474. 1842, *nom. nud.*

*Nesaea triflora* Baill. in Grandidier, *Hist. phys. Madagascar* 35(5) (Atlas 3): t. 359. Dec 1895, *nom. nud.*

*Nesaea verticillata* Kunth in Humboldt, Bonpland & Kunth, *Nov. gen. sp.* 6(ed. Quarto): 191. 1824 = *Decodon verticillatus* (L.) Ell., *Sketch* 1: 544. 1821.

*Nesaea winkleri* Koehne, in Engler & Drude, *Veg. Erde* IX. 3 (2): 653. 1921, *nom. nud.*

As Verdcourt (1994: 32) pointed out, *N. winkleri* was published in a key but is not distinguished in the key from *N. kilimandscharica*.

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## INDEX OF NAMES

Accepted names are in roman TYPE. Synonyms or unaccepted names are in italics.

**Ammannia** L.

*alata* (Immelman) S.A.Graham & Gandhi

*alata* Steud.

*anagalloides* Sond.

*andongensis* (Welw. ex Hiern) S.A.Graham & Gandhi

*angolensis* (A.Fern. & Diniz) S.A.Graham & Gandhi

*angustifolia* (A.Fern. & Diniz) S.A.Graham & Gandhi

*arnhemica* (F.Muell.) S.A.Graham & Gandhi

*aspera* Guill. & Perr.

*auriculata* Willd.

var. *auriculata*

var. *elata* (A.Fern.) A.Fern.

f. *longistaminata* A.Fern.

*aurita* (Koehne) S.A.Graham & Gandhi

*baumii* (Koehne) S.A.Graham & Gandhi

*bequaertii* (De Wild.) S.A.Graham & Gandhi

*brevistyla* S.A.Graham & Gandhi

*burtii* (Verdc.) S.A.Graham & Gandhi

*calpicola* (H.Perrier) S.A.Graham & Gandhi

*cinerea* (A.Fern. & Diniz) S.A.Graham & Gandhi

*coccinea*

subsp. *pubiflora* Koehne

*cordata* Wall.

*cordata* Wight & Arn.

*crassicaulis* Guill. & Perr.

*crinipes* F.Muell.

*cymosa* (Immelman) S.A.Graham & Gandhi

*dinteri* (Koehne) S.A.Graham & Gandhi

subsp. *elata* A.Fern.

*dodecandra* DC.

*drummondii* (A.Fern.) S.A.Graham & Gandhi

*engleri* (Koehne) S.A.Graham & Gandhi

*erecta* (Guill. & Perr.) S.A.Graham & Gandhi

f. *villosa* (A.Fern.) S.A.Graham & Gandhi

*evansiana* A.Fern. & Diniz

*fernandesiana* S.A.Graham & Gandhi

*filiiformis* Baill.

*filiiformis* DC.

*floribunda* C.B.Clarke

*floribunda* Guill. & Perr.

*fruticosa* (A.Fern. & Diniz) S.A.Graham & Gandhi

*garciae* (A.Fern. & Diniz) S.A.Graham & Gandhi

*gazensis* (A.Fern.) S.A.Graham & Gandhi

*grayi* (A.Gray) S.A.Graham & Gandhi

*heptamera* (Hiern) S.A.Graham & Gandhi  
var. *heptamera*

var. *bullockii* (Verdc.) S.A.Graham & Gandhi

*heterophylla* (H.Perrier) S.A.Graham & Gandhi

*hockii* (De Wild.) S.A.Graham & Gandhi

*icosandra* (Kotschy & Peyr.) S.A.Graham & Gandhi

*involutrata* S.A.Graham & Gandhi

*kilimandscharica* (Koehne) S.A.Graham & Gandhi

var. *kilimandscharica*

var. *hispidula* (Rolfe) S.A.Graham & Gandhi

var. *ngongensis* (Verdc.) S.A.Graham & Gandhi

*lanceolata* B.Heyne ex Wall.

*lanceolata* B.Heyne ex C.B.Clarke

*latifolia* L.

*linearis* (Hiern) S.A.Graham & Gandhi

*linifolia* (Welw. ex Hiern) S.A.Graham & Gandhi

*loandensis* Welw. ex Hiern

*longipes* C. Wright

*luederitzii* (Koehne) S.A.Graham & Gandhi

var. *luederitzii*

var. *hereroënsis* (Koehne) S.A.Graham & Gandhi

*lythroides* (Welw. ex Hiern) S.A.Graham & Gandhi

*mauritiana* S.A.Graham & Gandhi

subsp. *lupembensis* (Verdc.) S.A.Graham & Gandhi

subsp. *mauritiana*

*maxima* (Koehne) S.A.Graham & Gandhi

*minima* (Immelman) S.A.Graham & Gandhi

*moggii* (A.Fern.) S.A.Graham & Gandhi

*moissiensis* (A.Chev.) S.A.Graham & Gandhi

*mossambicensis* (A.Fern. & Diniz)

S.A.Graham & Gandhi

*muelleri* (Hewson) S.A.Graham & Gandhi

- palmeri* (S.A.Graham) S.A.Graham & Gandhi  
*parkeri* (Verdc.) S.A.Graham & Gandhi  
   var. *parkeri*  
   var. *longifolia* (Verdc.) S.A.Graham  
     & Gandhi  
*parvula* S.A.Graham & Gandhi  
*passerinoides* Welw. ex Hiern  
*pauciramosa* S.A.Graham & Gandhi  
   f. *pauciramosa*  
   f. *verna* (Humbert) S.A.Graham & Gandhi  
*pedicellata* (Hiern) S.A.Graham & Gandhi  
*pedroi* (A.Fern. & Diniz) S.A.Graham  
   & Gandhi  
*petrensis* (M.G.Gilbert & Thulin) S.A.Graham  
   & Gandhi  
*polycephala* (A.Fern.) S.A.Graham & Gandhi  
   f. *brachystyla* (A.Fern.) S.A.Graham  
     & Gandhi  
   f. *dolichostyla* A.Fern  
   f. *polycephala*  
*praetermissa* (Kasselmann) Kasselmann  
*pringlei* (Rose) S.A.Graham & Gandhi  
*prostrata* Buch.-Ham. ex Dillwyn  
*prostrata* Buch.-Ham. ex Blume  
*pubescens* (Koehne) S.A.Graham & Gandhi  
*pubiflora* (Koehne) Hewson  
*purpurascens* (A.Fern.) S.A.Graham & Gandhi  
*pygmaea* A.Chev.  
*pygmaea* Kurz  
*radicans* (Guill. & Perr.) S.A.Graham  
   & Gandhi  
   var. *floribunda* (Sond.) S.A.Graham  
     & Gandhi  
   var. *latifolia* (A.Fern. & Diniz) S.A.Graham  
     & Gandhi  
   var. *radicans*  
*ramosa* Hill  
*ramosissima* (A.Fern. & Diniz) S.A.Graham  
   & Gandhi  
*rautanenii* (Koehne) S.A.Graham & Gandhi  
*rigidula* (Sond.) S.A.Graham & Gandhi  
*robertsii* (F.Muell.) S.A.Graham & Gandhi  
*robinsoniana* (A.Fern.) S.A.Graham & Gandhi  
*sagittifolia* (Sond.) S.A.Graham & Gandhi  
   var. *ericiformis* Koehne  
   f. *ericiformis* (Koehne) S.A.Graham  
     & Gandhi  
   f. *swaziensis* (Immelman) S.A.Graham  
     & Gandhi  
   var. *sagittifolia*  
   var. *salicarioides* Koehne  
*saluta* (Immelman) S.A.Graham & Gandhi  
*santoi* (A.Fern. & Diniz) S.A.Graham  
   & Gandhi  
*sarcophylla* Welw. ex Hiern  
*schinzii* (Koehne) S.A.Graham & Gandhi  
   subsp. *schinzii*  
   subsp. *subalata* (Koehne) S.A.Graham  
     & Gandhi  
*schlechteri* (A.Fern.) S.A.Graham & Gandhi  
*senegalensis* Lam.  
   var. *floribunda* (Guill. & Perr.) Koehne  
   var. *ondongana* (Koehne) Verdc.  
*senegalensis* f. *diffusa* (Willd.) Koehne  
*spathulata* (A.Fern.) S.A.Graham & Gandhi  
*striatiflora* (Hewson) S.A.Graham & Gandhi  
*stuhlmannii* (Koehne) S.A.Graham & Gandhi  
*teixeirae* (A.Fern.) S.A.Graham & Gandhi  
*tolypobotrys* (Koehne) S.A.Graham & Gandhi  
   f. *schlechteri* (Koehne) S.A.Graham  
     & Gandhi  
*triflora* R.Br. ex Benth.  
*triflora* Wall.  
*volkensisii* (Koehne) S.A.Graham & Gandhi  
*wardii* (Immelman) S.A.Graham & Gandhi  
*woodii* (Koehne) S.A.Graham & Gandhi  
*zambatidis* (Immelman) S.A.Graham & Gandhi
- Decodon** J.F.Gmel.  
*verticillatus* (L.) Ell.
- Heimia** Link  
*apetala* (Spreng.) S.A.Graham & Gandhi  
*longipes* (A.Gray) Cory  
*montana* (Griseb.) Lillo  
*salicifolia* Link  
   var. *grandiflora* Lindl.
- Hionanthera** A.Fern. & Diniz  
*garciae* A.Fern. & Diniz  
*graminea* A.Fern. & Diniz  
*mossambicensis* A.Fern. & Diniz  
*torrei* A.Fern. & Diniz
- Koehnea** F.Muell.  
*crinipes* F. Muell.

**Lythrum** L.

*arnhemicum* F.Muell.  
*floribundum* (Sond.) F.Muell.  
*grandiflorum* Perr. ex DC.  
*rigidulum* Sond.  
*rivulare* J.M.Wood & M.S.Evans  
*robertsii* F.Muell.  
*sagittifolium* Sond. (*sagittaeifolium*)  
*triflorum* L.f.  
  
**Nesaea** Comm. ex Kunth  
*alata* Immelman  
*anagalloides* (Sond.) Koehne  
*andongensis* Welw. ex Hiern  
*angolensis* A.Fern. & Diniz  
*angustifolia* A.Fern. & Diniz  
*angustifolia* Immelman  
*arnhemica* (F.Muell.) Koehne  
*aspera* (Guill. & Perr.) Koehne  
*aurita* Koehne  
*baumii* Koehne  
*bequaertii* De Wild.  
*brevipes* Koehne  
*burtii* Verdc.  
*calcicola* H.Perrier  
*candollei* Guill. & Perr.  
*capitellata* C.Presl  
*cinerea* A.Fern. & Diniz  
*cordata* (Wight & Arn.) M.R.Almeida  
*cordata* Hiern  
    f. *villosa* Koehne  
*crassicaulis* (Guill. & Perr.) Koehne  
*crinipes* (F.Muell.) Koehne  
*cymosa* Immelman  
*dinteri* Koehne  
    subsp. *elata* A.Fern.  
*dodecandra* (DC.) Koehne  
*drummondii* A.Fern.  
*engleri* Koehne  
*erecta* Guill. & Perr.  
    f. *erecta*  
    f. *glabra* Koehne  
    f. *hirtella* Koehne  
    f. *villosa* A.Fern.  
*filiformis* H.Perrier  
    f. *verna* Humbert  
*floribunda* Sond.  
*frutescens* A.Chev.

*fruticosa* A.Fern. & Diniz  
*gazensis* A.Fern.  
*heptamera* Hiern  
    var. *bullockii* Verdc.  
*heterophylla* H.Perrier  
*hispidula* Rolfe  
*hockii* De Wild.  
*humilis* Klotzsch  
*icosandra* Kotschy & Peyr.  
*jaegeri* Koehne  
*kilimandscharica* Koehne  
    var. *hispidula* (Rolfe) Verdc.  
    var. *ngongensis* Verdc.  
*kuntzei* Koehne  
*lanceolata* (B.Heyne ex C.B.Clarke) Koehne  
    var. *pubiflora* Koehne  
    var. *stricta* Koehne  
    var. *lanceolata*  
*linariifolia* Steud. (*linariaefolia*)  
*linearis* Hiern  
*linifolia* Welw. ex Hiern  
*loandensis* (Welw. ex Hiern) Koehne  
*longipes* A.Gray  
*luederitzii* Koehne  
    var. *hereroënsis* Koehne  
    f. *hereroënsis* Koehne  
*lythroides* Welw. ex Hiern  
*maxima* Koehne  
*minima* Immelman  
*moggii* A.Fern.  
*moissiensis* A.Chev.  
*mucronata* Koehne  
*muelleri* Hewson  
*myrtifolia* Desf. ex A.St.-Hil.  
*ondongana* Koehne  
    subsp. *orientalis*  
    var. *beirana* A.Fern.  
    var. *evansiana* (A.Fern. & Diniz) A.Fern.  
*palmeri* S.A.Graham  
*parkeri* Verdc.  
    var. *longifolia* Verdc.  
*passerinoides* (Welw. ex Hiern) Koehne  
*pedicellata* Hiern  
*pedroi* A.Fern. & Diniz  
*petrensis* M.G.Gilbert & Thulin  
*polyandra* Steud.  
*polyantha* Tul.  
*polycephala* Peter

*polycephala* Peter ex A.Fern.  
   f. *brachystyla* A.Fern.  
   f. *dolichostyla* A.Fern.  
   f. *polycephala*  
*praetermissa* Kasselmann  
*pringlei* Rose  
*procumbens* Peter  
*prostrata* (Buch.-Ham. ex Dillwyn) Suresh  
*pubescens* Koehne  
*purpurascens* A.Fern.  
*pusilla* (Hook. & Arn.) Steud.  
   var. *minima* Steud.  
*pygmaea* A.Fern. & Diniz  
*racemosa* Klotzsch  
*radicans* Guill. & Perr.  
   var. *floribunda* (Sond.) A.Fern.  
   var. *latifolia* A.Fern. & Diniz  
*ramosa* A.Fern.  
*ramosissima* A.Fern. & Diniz  
*rautanenii* Koehne  
*recta* Steud.  
*repens* W.Fitzg.  
*rigidula* (Sond.) Koehne  
   f. *brachystyla* Koehne  
*rivularis* (J.M.Wood & M.S.Evans) Koehne  
*robertsii* (F.Muell.) Koehne  
*robinsoniana* A.Fern.  
*sagittata* Peter  
*sagittifolia* (Sond.) Koehne  
   var. *ericiformis* Koehne  
   f. *ericiformis* (Koehne) Immelman  
   f. *swaziensis* Immelman  
   var. *glabrescens* Koehne  
   var. *salicarioides* Koehne  
*salicifolia* Kunth  
   var. *montana* Griseb.  
*saluta* Immelman  
*santoi* A.Fern. & Diniz  
*sarcophylla* (Welw. ex Hiern) Koehne  
*schinzii* Koehne  
   subsp. *subalata* (Koehne) Verdc.  
   var. *fleckii* Koehne  
   var. *rehmanii* Koehne  
   var. *subalata* Koehne  
*schlechteri* A.Fern.

*spathulata* A.Fern.  
*speciosa* Kunth  
*squarrosa* Steud.  
*staminea* Koehne  
*striatiflora* Hewson  
*stuhlmannii* Koehne  
*syphilitica* Steud.  
*teixeirae* A.Fern.  
*tolypobotrys* Koehne  
   f. *schlechteri* Koehne  
*transvaalica* A.Fern.  
*triflora* Baill.  
   subsp. *lupembensis* Verdc.  
*triflora* (L.f.) Kunth  
   subsp. *lupembensis* Verdc.  
*verticillata* Kunth  
*volkensis* Koehne  
*wardii* Immelman  
*winkleri* Koehne  
*woodii* Koehne  
*zambatidis* Immelman

*Nimmoia* Wight  
*floribunda* Wight

**Pleurophora** D.Don  
 polyandra Hook & Arn.  
   f. *squarrosa* (Steud.) Koehne  
 pungens D.Don  
 pusilla Hook. & Arn..  
   f. *minima* (Steud.) Koehne

**Rotala** L.  
 filiformis (Bellardi) Hiern  
 floribunda (Wight) Koehne  
 ramosior (L.) Koehne  
 mexicana Schldl. & Cham.

*Tolypeuma* E.Mey.  
*floridum* E.Mey.

*Trotula* Comm. ex DC.  
*triathis* Comm. ex DC.