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NAME CHANGES IN THE ACANTHACEAE OF INDIA AND CEYLON (SRI LANKA)

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Abstract : A brief historico-nomenclatural study is made of the Indian and Ceylonese Acanthaceae from the time of T. Anderson's account to that of Abeywickrama's Check List. In spite of revisions of this nomenclature in the recent past there still remains the need to re-examine in the light of modern research many incorrect names used by pase authors.

The present research involved an examination of a wide range of representative material, inclusive of types, in some foreign herbaria and in the Peradeniya Herbarium. A parallel consultation of literature was conducted against the framework of the International Code of Botanical Nomenclature. This work has resulted in a correction of some of the faulty nomenclature in the family.

Corrections involve changes of 4 generic and 10 specific names. Each such change is accompanied by a critical discussion of the respective name. As far as possible, references to the latest literature, and indication of types are furnished. In the synonymy only names commonly adopted in Indian and Ceylon works are documented.

It is concluded that the revised names of taxa enumerated have contributed to a measure of stability in the taxonomic position and nomenclature of many Indian and Ceylonese acanthaceous plants.

Introduction

The Acanthaceae, a typical component of the tropical flora, is well represented both in the Indian peninsula and in Ceylon. Out of 45 genera described by C.B. Clarke¹, Trimen² enumerates 31. Interestingly, these genera form, for the most part, shrubs and herbs which constitute no less an important element of the forest synusiae than the upper ones of trees.

The nomenclature of the Acanthaceae of Ceylon was originally established by Anderson³ who wrote the first major account of the family for Ceylon. Subsequently, this was revised and enlarged by Trimen.² Later, with his penchant for nomenclature, and following mainly the Rule of Priority, Alston⁴ updated Trimen's² nomenclature of many species, even adding on a new genus, *Plaesianthera* (C.B. Clarke) Livera, which has now been changed to *Brillaintaisia* Beauv. by Cramer.⁵

In more modern times Abeywickrama⁶ further improved upon the nomenclature of a few other species recorded by Trimen² but overlooked by Alston.

The need for re-examination

Nomenclaturally, the Acanthaceae bears some of the difficult taxa among the dicotyledons, both in regard to genera and species. This is instanced, particularly, in the case of some genera such as *Justicia L., Ruellia L.* and *Strobilanthes* Blume.

The controversial position of these taxa arose especially during the 19th century when authors like R. Brown⁷, Nees⁸, Anderson³ and C.B. Clarke¹ differently circumscribed such genera and accordingly referred different names to the same species. (See Cramer⁹ in regard to *Hygrophila*). In spite of the revisions by Alston⁴ and Abeywickrema⁶ some faulty nomenclature still continued to prevail in the family for a long time, both in respect of genera and species. Hence the need arises in the light of modern research to re-examine and update the nomenclature of many of these taxa.

Materials and Methods

Not infrequently, changes in nomenclature are effected as a result of more precise identification, often based on types. Accordingly, in addition to the author's own collections, a wide range of other representative herbarium material, inclusive of types, was examined in the herbaria of Peradeniya, Kew, the Linnean Society (London), the British Museum, the University of Copenhagen and the Rapinat Herbarium, Tiruchirapalli.

A parallel consultation of opinions in nearly all the classical and modern literature on the Indian and Ceylon Acanthaceae was carefully conducted in the libraries of these herbaria in the light of the International Code of Botanical Nomenclature¹⁰.

Opportunity was also taken to have enlightening discussions with recognized authorities on the family at Kew, the British Museum, and particularly with Bertel Hansen of the University of Copenhagen. To all of these the author here tends his grateful thanks.

The following abbreviations are used in the citations of references in the documentation:

- AB The Acanthaceae of Bombay, by H. Santapau, Bot. Mèm. 2, University of Bombay, 1951. Bombay Univ. Press, Bombay 1.
- CJS Abeywickrama, B.A. In: The Ceylon Journal of Science (Biol. Sci.) Vol. 2, No. 9, 1959.
- EPZ Enumeratio Plantarum Zeylaniae, by G.H.K. Thwaites. Part 3. 1860. London: Dulau & Co.
- FBI The Flora of British India, by J.D. Hooker (ed.) Vol. 4. 1885. London: L. Reeve & Co.
- HFC A handbook to the flora of Ceylon, by H. Trimen. Part 3. 1895. London: Dulau & Co.

- HFCS A handbook to the flora of Ceylon, by H. Trimen. Part 6 (Supplement) by A.G.H. Alston, 1931. London: Dulau & Co.
- JLS The Journal of the Linnaean Society, Botany. vol. 9: 1867.
- PAR Plantae Asiaticae Rariores, by N. Wallich. Vol. 3. 1832. London: Treuttel, Writz & Richter.
- PRD Prodromus systematis naturalis regni vegetabilis, by A.De Candolle (ed.). Vol. 11: 1847. Paris: Victor Mason.

The use of author names and abbreviations follows Meikle.¹¹

Names revised

- 1. Andrographis Wallich ex Nees vs. Indoneesiella Sreemadh.
- 1.1 Sreemadhavan,²⁸ on examination of Indian material of Andrographis echioides (L.) Nees, queried the compatibility of this species with Andrographis. He based his finding on the numerical difference of seeds between this species (4) and the other recognized species of the genus (6 more). He accordingly created a monotypic genus Indoneesiella Sreemadh. to accommodate A. echioides.
- 1.2 The differential number of seeds between species being a quantitative character, and (as in this genus) of only slight variation, too, leaves room for an overlapping of numbers in this character. Unfortunately, overrating such a low degree of variability in a quantitative character without a correlation with some other stable, differential, qualitative character (such as, for instance, one of inflorescence or calyx or stamens) prejudices the establishment of generic delimitation, and is not in accord with the Linnaean standard. On a related point Bentham¹³ remarks: "Distinction based on a single character leads to artificial divisions and limitations".

In agreement with Bertel Hansen (pers. comm.), I reckon, therefore, that the status of *Indoneesiella* Sreemadh. being tenuous, its generic name must be reduced to the synonymy of *Andrographis* Wallich ex Nees. Accordingly, *A. echioides* remains unchanged, as is maintained by previous recognized authors; and *Indoneesiella echioides* (L.) Sreemadh. must, similarly, be reduced to its synonymy.

- 2. Dicliptera Juss., nom. cons.
- 2.1 D. foetida (Forssk.) Blatter, Rec. Bot. Surv. Ind. 8(3): 361. 1921; Wood, Hillcoat & Brummit, Kew Bull. 38(3): 463. 1983. Justicia foetida Forssk., Descr. Aegyp.-Arab. 5. 1775. Type: Yemen, Forsskäl 382 (Lectotype C, chosen by Wood et al.). Dicliptera zeylanica Nees in A. DC., PRD 474; FBI. 552; HFC 344;

CJS 227; AB 79. D. bivalvis sensibus Nees in loc. cit. 475, & T. Anders., in Thwaites, EPZ 235, non Justicia bivalvis L., 1753.

2.2 D. foetida (Forssk.) Blatter. The clarification of this name, is based on the typification of Justicia foetida Forssk, and of Justicia bivalvis L. Both these species were referred by Nees⁸ to Dicliptera bivalvis (L.) Juss., formerly considered a synonym of D. zeylanica Nees by C.B. Clarke¹, loc. cit. Justicia bivalvis L., the basionym of Jussieu's name, is now referred to Peristrophe bivalvis (L.) Merrill.

Examination of the type of *J. foetida* Forssk. by Wood et al.,¹⁴ showed that the plant is very similar to the currently recognized Asiatic species *D. zeylanica* Nees.

The only significant difference between the Forsskäl plant from Arabia and the South Asiatic one lies in the length of the peduncle; but even this difference shows variations in both types of material. In reference to the Asiatic plant, Wood et al.¹⁴ assert that "the distinction from the Forsskäl plant may be rather tenuous", and conclude that both the Asiatic and the Arabian plants must rather be considered conspecific. On the basis of priority, therefore, *D. zeylanica* Nees must, accordingly, be reduced to the synonymy of *D. foetida* (Forssk.) Blatter.

- 3. Dipteracanthus Nees emend. Bremek.
- 3.1 Nees⁸, in the linnaean tradition, maintained a broad concept of *Dipteracanthus*, including in his genus "all Ruellinae with axillary flowers and distinctly unguiculate capsules".

On a more detailed examination of these species, however, inclusive of pollen, Bremekamp¹⁵ restricted this concept of the genus " to those species which, in addition, are provided with large, foliaceous bracteoles, a subringent corolla and sparsiporous pollen."

After Bremekamp, Santapau^{16,17} retains, in turn, this restricted concept of *Dipteracanthus* for the Indian species of Bombay State inclusive of *D. prostratus* (Poir.) Nees and *D. patulus* (Jacq.) Nees. The author follows this view endorsed by other Indian workers.

- 3.2 D. prostratus (Poir.) Nees in Wallich, PAR 81; AB 24. Ruellia prostrata Poir., in Lamk., Encycl. 6: 349. 1804; T. Anders., JLS 7: 24. 1864; FBI 411. Type: Ex India, Dupuis (not traceable). R. ringens auct. non L.: Trimen, HFC 295. D. ringens auct.: Abeyw., CJS 225, non D. ringens L. 1753.
- 3.3 It is remarkable that Trimen², not following Anderson's¹⁸ adoption of Poiret's name, confirmed by C.B. Clarke¹, had incorrectly referred this species to *Ruellia ringens*. Abeywickrama⁶ erred analogously in considering *R. ringens* the

basionym of his combination. Regarding the taxonomic position of this latter species see under *Hygrophila*, 4.6.4.

4. Ecbolium Kurz

4.1 E. ligustrinum (Vahi) Vollesen, Kew. Bull. 44(4):651. 1989. Justicia ligustrina Vahl, Enum. 1: 118. 1804; Roem. & Schult., Syst. Veg. 1: 144. 1817. Type: Ex India orientali, Rottler, ex Herb. Vahl (lectotype C, chosen by Vollesen). J. ecbolium Linn., Sp. Pl. 15. 1753; Burm., Fl. Ind.:77. 1768. Eranthemum ecbolium (L.) T. Anders., in Thwaites, EPZ. 235, & JLS. 523. Ecbolium linneanum Kurz, J. As. Soc. Beng. 40: 75. 1871; FBI. 544; HFC. 341. E. linneanum var. dentatum (Klein ex Link) C. B. Clarke in FBI. 545; Santapau, AB 82 & Fl. Khandala 16(1): 185. 1960. E. linneanum var. laetevirens (Vahl) C.B. Clarke in FBI 545; Santapau, loc. citt.

Vollesen's¹⁹ emended identification of this common species is based on type material. Following a comprehensive examination of material from India and Ceylon, he concludes that *E.ligustrinum* comprehends a wide range of morphological variation (with intermediaries), particularly from small to large leaves with obtuse to cuspidate apices, and bracts with entire to dentate margins. Accordingly, he has restored Clarke's¹ varieties of *E. linneanum* to specific level.

4.2 Excluded species

E. viride (Forssk.) Alston, in HFCS 229; Wood & al., Kew Bull. 38(3):446, 1983. *Justicia ligustrina* auct. non Vahl 1804: Alston, ibid.

Though Alston⁴ made the right combination, he mistakenly included J. ligustrina in its synonymy having not examined the respective type materials. This species, besides, is known from arid areas (Vollesen, l.c., 656,658-659). It is ironical, however, that, though the Sri Lankan material of *Ecolium* derives chiefly from the dry zone, it represents *E. ligustrinum* only.

- 5. Hemiadelphis Nees vs. Hygrophila R. Br., emend. Heine.
- 5.1 The only species of *Hemiadelphis* was erroneously identified by previous authors and referred to *Hygrophila*. For an explanation why this species belongs to *Hemiadelphis*, see Cramer⁹, Key to *Hemiadelphis* and *Hygrophila*.
- 5.2 Hemiadelphis polysperma (Roxb.) Nees in PAR 80. Justicia polysperma Roxb., Hort. Beng. 3. 1814 & F1. Ind. 1: 119. 1832. Type: Bengal, Roxburgh Icon. 1016

(K!). Hygrophila polysperma (Roxb.) T. Anders., JLS 456. FBI; 406; AB 19; Abeyw., Ceyl. J. Sci. (Sect. A, Bot.) 12: 163. 1949 & CJS 224.

- 6. Hygrophila R. Br., emend. Heine vs. Asteracantha Nees, Cardanthera Buch.-Ham. ex Benth., and Synnema Benth.
- 6.1 For reasons of more or less morphological similarity between the first two of these genera and of nomenclatural instability of the other two, R. Brown's⁷ concept of *Hygrophila* has been broadened by Heine²⁰ to include all these genera. For a fuller discussion on this subject, see Cramer⁹.
- 6.2 H. auriculata (Schumach.) Heine, Kew Bull. 16: 173. 1962. Barleria auriculata Schumach. in Schumach. & Thonn., Besk., Guin. Pl., 285. 1827. Type: not seen. Hygrophila spinosa T. Anders., in EPZ. 225; HFC. 293. Asteracantha longifolia (L.) Nees in PAR 90; Alston, HFCS 224; AB. 17; CJS 225.
- 6.3 H. balsamica (L. f.) Raf., F1. Tell. 4: 66. 1838; Heine, Adans. II, 2: 657. 1971. Ruellia balsamica L. f., Suppl. 290. 1781. Type: 804.21 (LINN.!). Cardanthera balsamica (L.f.) C.B. Clarke in FBI 404; HFC. 291. Synnema balsamica (L.f.) Alston in HFCS 224; CJS 224. Adenosma verticillata Nees in PAR 79; T. Anders. in EPZ 224. Cardanthera verticillata (Nees) C.B. Clarke in FBI 404; HFC 291.
- 6.4 H. ringens (L.) R. Br. ex Steud., Nom. (ed.1) 1: 418. 1821 & (ed. 2) 2: 783. 1840. Ruellia ringens L., Sp. P1. 635. 1753. Type: 804/13/ (7) (LINN.!). Ruellia quadrivalvis Buch.-Ham., Trans. Linn. Soc. 14: 291. 1824. H. quadrivalvis (Buch.-Ham.) Nees in PAR 80; T. Anders. in EPZ 225, excl. var. salicifolia (Vahl) T. Anders.; AB. 21; CJS 224. Ruellia salicifolia Vahl, Sym. Bot. 3: 84. 1794. H. salicifolia (Vahl) Nees in PAR 81 & in PRD 92; HFC 293; AB 20; CJS 224.

7 Justicia L. vs. Adhatoda Miller

7.1 Justicia has been one of the most controversial genera of the Acanthaceae with regard to both its taxonomy and nomenclature ever since Linnaeus²² first described it. Nees⁸ originated the controversy when he split this complex group into smaller genera such as *Adhatoda* Miller, *Beloperone* Nees, *Gendarussa* Nees and *Rostellularia* Nees.

Nomenclaturally, the difficulty surrounding the genus lay with regard to the typification of its name. Stearn²¹ remarks that Linnaeus²², "basing his generic description of *Justicia* on the Asiatic species, later named *J. adhatoda*, merely substituted *Justicia* for '*Adhatoda*' " (a Sinhalese name) used by Paul Hermann²³. At the same time he made a reference to a Rivinus plate ('Riv. 1. 129') under the name *Ecbolium*, which illustrates *J. adhatoda* received from

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Hermann²³. On examining this plate Linnaeus²³ later repeated his original description of *Justicia*.

Britton²⁵ designated Rivinus' plate as the lectotype of *J. adhatoda* L., (called by Stearn²¹ 'the historic lectotype'), which, in turn, he designated the lectotype of *Justicia*. Graham²⁶, however, holds that this lectotypification is "based on a mechanical system" and is now considered to be arbitrary. It can, therefore, be superseded under Art. 8 of the International Code¹⁰.

Of the species recorded by Linnaeus in the Species Plantarum²⁷ only 3 species -viz. J. Adhatoda, hyssopifolia, and sexangularis --- were well known to him when preparing the Hortus Cliffortianus²⁸. Of these J. sexangularis was not described in the Genera Plantarum²². J. adhatoda and hyssopifolia remained, therefore, the only possible lectotypes of Justicia. But the former had long been considered to belong to Adhatoda Miller²⁹, and has now been placed by Graham²⁶ in the Section Vasica. Hence the latter, hyssopifolia (placed in the typical Section Justicia), must be considered the standard lectotype of Justicia according to the proposal of Hitchock & Green³⁰, and accepted by the Cambridge Botanical Congress. This has been confirmed by Brummitt of Kew Herbarium (pers. comm.) and by Graham²⁶.

J. adhatoda L., Sp. Pl., 15. 1753; Roxb., F1. Ind. 1: 126. 1832; T. Anders., in EP2.
233 & JLS 509; Stearn, J. Arn. Arb. 53: 640. 1971. Adhatoda zeylanica Medicus in Hist. Comm. Acad. Theod. Palat. 6. Phys.: 393. 1790. A. vasica Nees in PAR 103; FBI 540; HFC 338; AB 92; CJS 227.

8. Ruellia L., emend., Bremek.

Some past Indian and Ceylonese authors have mistakenly attributed to this genus a few Asiatic species. Yet, the only one valid species in the genus is Central American and is commonly known under the name *R. tuberosa*. This is now a widespread weed in India, Ceylon and neighbouring countries in South East Asia. The other species are now included in the genus *Dipteracanthus*.

Bremekamp¹⁵ gives the following differences between the two genera:

Flowers in lax, axillary cymes, the cymes sometimes combined in a terminal panicle; bracts present; pollen grain 3-porous. Species introduced from America: *Ruellia* Linn., emend. Bremek.

Flowers in dense, axillary pairs or triads, never in axillary cymes; bracts O; pollen grains sparsiporous. Asiatic species: *Dipteracanthus* Nees, emend. Bremek.

9. Rungia Nees

9.1 Rungia pectinata (L.) Nees in PRD 469; T. Anders., JLS, 517. Justicia pectinata L., Amoen. Acad. 4: 299. 1759. Type: not known. Rungia parviflora (Retz.) Nees in PAR 110 & in PRD 469; FBI 550; HFC 342, incl. var. pectinata Nees; CJS 227.

10. Brillaintaisia P. Beauv.

Livera³¹ created a new monotypic genus, *Plaesianthera*, formerly a subgenus of *Hygrophila* R. Br. *Plaesianthera* itself was based on *Adenosma thwaitesii* T. Anders³, a Ceylon plant. C.B. Clarke¹ referred it to *Cardanthera thwaitesii* (T. Anders.) Benth., which he placed under *Hygrophila*. But the plant also shows characters typical of *Brillaintaisia* (till recently only an African genus), especially in the two staminodes, overlooked by Livera³¹. *Plaesianthera*, therefore, previously represented by *Cardanthera thwaitesii*, is congeneric with *Brillaintaisia*, and must be merged with the latter which antedates it. For a fuller explanation of this name change see Cramer⁵.

Brillaintaisia P. Beauv., Fl. d'Oware et de Benin 2: 67 (1818); Burkill & C.B. Clarke, in Thiselton-Dyer, ed., Fl. Trop. Afr. 5: 37 (1900). Type: B. owariensis P. Beauv.

B. thwaitesii (T. Anders.) Cramer, comb. nov., Kew Bull. 46(2): 338. 1991. Adenosma thwaitesii T. Anders., in Thwaites, EPZ. 224. 1860. Type: Ceylon, Batticaloa, C.P. 1994 (holotype K; isotype K, PDA). Cardanthera thwaitesii (T. Anders.) Benth., in Benth. & Hook. f., Gen. Pl. 2: 1975. 1876. Hygrophila thwaitesii (T. Anders.) C.B. Clarke in FBI. 4: 405. 1884. Plaesianthera thwaitesii (T. Anders.) Livera in Ann. Roy. Bot. Gard., Peradeniya 9 (2): 196. 1924.

In the identification and naming of the earlier material of the Asiatic Acanthaceae the earlier authors held different opinions on similar taxa. Nees⁸, for example, with his wide knowledge of the family at the time, showed a tendency to 'splitting' (as instanced in the group *Justicia*). T. Anderson^{3,18}, on the contrary, showed a tendency to 'lumping' (as instanced in the group *Hygrophila*). In many cases, this diversity of views led chiefly to a tangle of different names for a taxon, thus multiplying the number of synonyms of the accepted legitimate names.

Later authors, therefore, such as Alston⁴, Bremekamp¹⁵, Santapau^{16,17}, and Wood et al.¹⁴, trying to stabilize a correct nomenclature, attempted a more critical examination of a wider range of representative material, inclusive of types, than that available to the earlier authors. Among them, Bremekamp¹⁵, especially, even enhanced his examinations by studies of pollen.

These researches have resulted finally in establishing a great measure of stability in the taxonomic position and nomenclature of many of the Asiatic Acanthaceae. The resultant nomenclature of some of the Indian and Ceylonese Acanthaceae has benefitted from the attempts. The research done so far underlines the importance of examining representative material, inclusive of types, in herbaria other than those in local centres. Such a task, supplemented by consultation of both the original and modern literature on the subject, is an indispensable requisite for updating the nomenclature of this family.

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