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Typification of *Bambusa bambos* (L.) Voss (*Gramineae*: *Bambusoideae*)

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Summary. The specimens and literature relating to the first validly published bamboo name, *Arundo bambos* L. are discussed. A previously overlooked specimen collected by Hermann in Sri Lanka, and used by Linnaeus for his *Flora Zeylanica*, is selected as the lectotype. This specimen is clearly the common thorny bamboo of India, which had conventionally been known as *Bambusa arundinacea* (Retz.) Willd., or more recently as *Bambusa bambos* (L.) Voss. *Bambusa arundinacea* was apparently described from a mixed collection, and it is lectotypified to maintain conventional application of the names of the components, *Bambusa arundinacea* and *Bambusa vulgaris* Schrad. ex Wendl. *Bambusa bambos* (L.) Voss takes priority over the taxonomic synonym *Bambusa arundinacea* (Retz.) Willd. and is the correct name to use, although *Bambusa arundinacea* remains the name representative of the type of the conserved genus *Bambusa*.

BACKGROUND

Arundo bambos L. was the first validly published name for a bamboo (Linnaeus 1753). Linnaeus gave no description in the first edition of *Species Plantarum*, merely citing earlier references to *Arundo arbor* and stating '*habitat in India utraque*'. The brief description given in the second edition (Linnaeus 1761) was still inadequate for assessment of which species he intended to name. The identity of *Arundo bambos* L. has been considered by several taxonomists but without any wholly satisfactory conclusions being reached. It would appear that three bamboo species had been encountered by 1753, a small Chinese species with thorns, and two Indian species of major economic importance, one of these also bearing thorns.

In the Linnaean Herbarium there are two specimens of the thorny Chinese species described later as *Bambusa flexuosa* Munro. Osbeck (1771) reported finding a bamboo on Henan (Honam) Island, Guangzhou (Canton) in 1751, and added that he received its flowers in 1754. The flowers are presumably sheet No. 97.1 in the Linnaean Herbarium, marked '1. *Bambos*'. The sheet No. 97.2 is sterile and consists of a single leafy, thorn-bearing branchlet. It is possible that Linnaeus might have seen the sterile Osbeck material, No. 97.2, before the publication of *Arundo bambos* (Linnaeus 1753), but the flowering specimen could only have been received after publication. Thus although Linnaeus may have based his description of *Arundo bambos* in the second edition of *Species Plantarum* (1761) on the flowers of *Bambusa*

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flexuosa, there is no evidence to suggest that he had this species foremost in his mind when he published the species in the first edition (1753).

McClure (1946) considered the typification of *Arundo bambos* L. in depth. He argued that material representing an endemic Chinese species such as *Bambusa flexuosa* could not be taken as representative of *Arundo bambos*, as the species was described (Linnaeus 1753) as occurring throughout India. Instead, he concluded that the most satisfactory available original documentation of *Arundo bambos* L. was the illustration of Ily in *Hortus Malabaricus* (Rheede 1686), cited by Linnaeus (1753) in his protologue, apparently depicting the thorny Indian bamboo. This species was universally known as *Bambusa arundinacea* (Retz.) Willd. in 1946. Although McClure's conclusion appeared satisfactory at the time, the lectotypification was never formalized.

Retzius (1788) had published the first bamboo genus *Bambos* with a single species *Bambos arundinacea* Retz., citing *Arundo bambos* auct. in synonymy. *Bambusa* Schreb. was published with an indirect reference to *Bambos* Retz. (Schreber 1789). *Bambusa* was eventually to be conserved against the earlier name *Bambos* (Lanjouw *et al.* 1961), after proposals to that effect by McClure (1946; 1957) and Holttum (1956a).

McClure (1946) also considered the typification of *Bambos arundinacea* Retz. In his opinion, when Retzius published the name he had only seen material of the non-thorny Indian bamboo, now known as *Bambusa vulgaris* Schrad. ex Wendl. His conclusion, therefore, was not only that *Bambusa bambos* L. was the correct name for the thorny species rather than *Bambusa arundinacea*, but also that *Bambusa arundinacea* was actually the correct name for the non-thorny species rather than *Bambusa vulgaris*. These two changes were, together, highly radical for such economically important plants, and they were not followed.

Holttum later gave his considered opinion on the typification of *Arundo bambos* (1956a). He reported there to be a specimen at the British Museum that Linnaeus probably had seen — a sterile leafy branch from the garden of Clifford, and he identified it as the non-thorny *Bambusa vulgaris*. He concluded that it was best to ignore this collection and to regard *Arundo bambos* L. as a *nomen confusum*. He did not want to follow McClure's suggestion (1946) of interpreting it as the thorny Indian bamboo then known as *Bambusa arundinacea*, nor was he inclined to interpret it formally as the non-thorny Indian bamboo universally known as *Bambusa vulgaris*.

Holttum (1956a; 1956b) also considered the typification of *Bambos arundinacea* Retz. He initially (1956a) agreed with McClure's opinion that this species was described from material representing the non-thorny bamboo *Bambusa vulgaris* Schrad. ex Wendl. However, he then received a previously misplaced specimen from the *Herbarium Retzii* in Lund, in which material from the thorny and the non-thorny species were mixed. He suggested (1956b) that lectotypification of the right-hand component of the collection as representative of *Bambos arundinacea* Retz. would be most appropriate. He identified that component as the common thorny bamboo of India, and could in this way stabilize conventional usage of the name *Bambusa arundinacea*. However, this lectotypification was also never formalized.

McClure (1957) appeared to follow Holttum's suggestion (1956b) concerning typification of *Bambos arundinacea* Retz., but he did not explicitly concur with Holttum about the continued use of *Bambusa arundinacea* rather than *Bambusa*



bambos for the common thorny bamboo of India. Soderstrom (1986) also agreed with Holtum (1956b) concerning typification of *Bambos arundinacea* Retz. rather than McClure (1946), but like McClure he felt that *Bambusa bambos* was the correct name for this bamboo. In this way he was selectively adopting part of the earlier conclusions of both McClure and Holtum, but he did not formalize the lectotypification necessary for stabilization of the names. In recent years nearly all authorities have followed Soderstrom (1986) and adopted the name *Bambusa bambos* for the common thorny bamboo of India (Soderstrom & Ellis 1988; Bennet & Gaur 1990; Tewari 1992; Wong 1993; Negi & Naithani 1994; Dransfield & Widjaja 1995). However, Sharma & Singh (1994) seem to consider Rheede's illustration inadequate and prefer to ignore *Arundo bambos*.

ADDITIONAL MATERIAL

Linnaeus (1753), when publishing his *Arundo bambos*, cited his previous publication, *Flora Zeylanica* (Linnaeus 1747), in which he had listed *Arundo arbor* as:
'*Arundo arbor* Bauh. Pin... *Arundo indica arborea maxima cortice spinoso Tabaxir fundens...*Mambu & Bambu dicta...*Unaghas*'

This flora was apparently based upon the collections made by Paul Hermann in Sri Lanka c. 1672 – 1677, and the main part of Hermann's herbarium is now to be found in the British Museum. Holtum (1956a) reported that there were no bamboo collections in Hermann's herbarium at the BM. However, Van Ooststroom (1937) had earlier reported that two large volumes of old plant collections in book form at Leiden were also undoubtedly part of Hermann's herbarium. This is not surprising, as Hermann returned from Sri Lanka to take up the chair of Botany there in 1679 (Trimmen 1887). Van Ooststroom had included a list of the species in these volumes (1937), in which he clearly reported there to be a collection of an *Arundo arbor* Bauh., Pin. This is a very good fertile specimen of what is clearly the thorny Indian bamboo now known as *Bambusa arundinacea*, and definitely not *Bambusa vulgaris* Schrad. ex Wendl. (Fig. 1). It is annotated in Hermann's distinctive handwriting as:

'*Arundo Indica arborea maxime cortice spinoso Tabaxir fundens. Mambu & Bambu dicta Arundo arbor* B. Pin. ...*Unaghas*'

The exact repetition of Hermann's annotation by Linnaeus suggests that this specimen was the basis for Linnaeus's bamboo in *Flora Zeylanica*, later cited in the protologue of his *Arundo bambos*. According to Trimmen (1887) the specimens of Hermann's herbarium are the types for many Linnaean species, and most of the species in Hermann's herbarium were unrepresented in Linnaeus's own collection. He also pointed out that Linnaeus rendered some of his species obscure by erroneous synonymy, and concluded that it must be allowed in most such cases that 'the Hermannian specimens should determine what was the plant intended by Linnaeus rather than his book references'. Therefore it seems much more appropriate to select Hermann's collection as the lectotype of *Arundo bambos*, rather than to follow Holtum's suggestion (1956a) that the name should be rejected, or the suggestion of McClure (1946), reiterated by Soderstrom (1986), that Rheede's ambiguous illustration should be selected.

CONCLUSIONS

Thus we now have adequate material to decide which bamboo species were being described by both Linnaeus and Retzius. The proposal by Holttum (1956a) that *Arundo bambos* should be rejected can no longer be justified as the species name is now widely used. The suggestion by McClure (1946) that the illustration of Ily in Rheede's *Hortus Malabaricus* should be selected as lectotype is out of date now that extant material of the same species seen by Linnaeus has been discovered. *Arundo bambos* L. should clearly now be lectotypified by the Hermann collection. The right-hand component of the mixed collection in the Retzius Herbarium should be taken as representative of *Bambos arundinacea* Retz., in order to stabilize conventional application of names to the component species. In this way we can agree with Soderstrom (1986): *Bambusa bambos* (L.) Voss and *Bambusa arundinacea* (Retz.) Willd. are synonymous names for the common thorny Indian bamboo, with the former taking priority. *Bambusa vulgaris* Schrad. ex Wendl. is still the correct name for the common non-thorny bamboo cultivated throughout India and most of the tropical world, and *Bambusa flexuosa* Munro can still be used for the small thorny species from South China. The only change necessary is that, for convenience, the type citation for the conserved genus *Bambusa* in *Nomina generica conservanda* (Greuter *et al.* 1994) should indicate parenthetically that *Bambusa bambos* (L.) Voss (*Arundo bambos* L.) is the correct name for the taxonomic synonym *Bambusa arundinacea* (Retz.) Willd., which represents the type.

Bambusa bambos (L.) Voss in Vilmorin's *Blumeng.*, ed. 3, Sieb. & Voss, i.: 1189 (1895). Type: Sri Lanka, *Hermann* fol. 15, no locality. *Arundo Indica maxime cortice spinoso Tabaxir fundens*. *Mambu* & *Bambu dicta Arundo arbor* B. Pin. *Unaghas*. (lectotype selected here, L, photo seen).

[*Arundo arbor* Bauh. Pin. 18 (1623).]; Sp. Pl. ed. 1. 81, 1753.

[*Bambos arundinacea* Retz. in *Obs. Bot.* 5: 24 (1788)]; *Bambusa arundinacea* (Retz.) Willd. in Sp. Pl. 2: 245 (1799). Type: India, oriental, s. loc., *Herbarium Retzii* s.n., right-hand side only (No. 2.), H554/90 (lectotype selected here, LD!).

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TYPIFICATION OF BAMBUSA BAMBOS



FIG. 1. Lectotype of *Arundo bambos* L. from the Hermann collection in the Reijksherbarium, Leiden.

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