(2313) Proposal to conserve the name *Momordica lanata* (*Citrullus lanatus*) (watermelon, *Cucurbitaceae*), with a conserved type, against *Citrullus battich*

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(2313) ***Momordica lanata*** Thunb., Prodr. Pl. Cap.: 13. 1794 [*Angiosp.*: *Cucurbit*.], nom. cons. prop.
Typus: Cultivated in St. Louis, Missouri, from seeds of commercial origin, 4 July 2014, *S.S. Renner 2816* (M; isotypi: B, BM, K, L, LE, MO, P, PAL-Gr), typ. cons. prop.

(=) *Citrullus battich* Forssk., Fl. Aegypt.-Arab.: 167. Jun 1775, nom. rej. prop.
Typus non designatus.

This proposal originated as a spinoff of new results of DNA sequencing in the genus *Citrullus*, which put the currently accepted name for the sweet watermelon in jeopardy. While it was being drafted, a second threat to that name surfaced, which is also being taken into account.

The watermelon was first validly named by Linnaeus (Sp. Pl.: 1010. 1753) as *Cucurbita citrullus* L. That name has not as yet been typified effectively (see details in Jarvis, Order Out of Chaos: 465. 2007). According to Jarvis the original material comprises two elements, an illustration (Bauhin & al., Hist. Pl. 2: fig. on p. 236. 1651) and a specimen in the Burser Herbarium. However, the illustration is not an original element. Linnaeus's protologue reference is to *Citrullus folio colocynthidis secto, semine nigro*, on page 235 of Bauhin & al.'s work, where that plant is indeed described but not figured. The figure on the following page (236) is of *Gitruli* [sic] *genus aliud* (a different kind), which is described in the text as *Citruli genus majus* (a larger kind), differing in a number of features of the fruit and seed. Therefore a single original element remains: **the specimen of "*Anguria Citrullus dicta*" in herb. Burser VII: 101 (UPS), that we here formally designate as the (obligate) lectotype.** Savage (C. Linnaei Det. Hort. Sicc. J. Burseri: 57. 1937) confirms that the specimen was examined and identified by Linnaeus before 1753. It is indeed a flowering shoot of the watermelon, as we could verify on the digital images kindly put at our disposal by Mats Hjertson.

The nomenclatural history of the watermelon is chequered. For about a century (mid-19th to mid-20th) the name *Citrullus vulgaris* was in general use for it. However, already in 1930 Bailey (in Gentes Herbarum 2: 180–186) pointed out that "the methods of nomenclature must be liberally interpreted in this case, unless one is willing to adopt the doublet *Citrullus Citrullus*, and even this double name may not be without doubt". Such doubts were appropriate both at the genus and species level.

Ahead of the 1950 Stockholm Congress, Hara proposed conservation of *Citrullus* Forssk. 1775 against two earlier synonyms, *Anguria* Mill. 1754 and *Colocynthis* Ludw. 1757, all said to refer to the watermelon. A corresponding preliminary entry appears in the *Stockholm Code* (Lanjouw & al. in Regnum Veg. 3: 137. 1952). Fosberg (in Taxon 2: 99–101. 1953), having been assigned the proposal for examination, supported it in principle but concluded that *Citrullus* Forssk., having been proposed without generic description for a genus comprising three species, was not a validly published name. Fosberg therefore suggested that *Citrullus* be conserved from its publication by Schrader in 1836, with *C. vulgaris* Schrad. (≡ *Cucurbita citrullus* L.) as its listed type; and that *Citrullus* Neck. 1790 be added to the entry as a rejected earlier homonym. This was approved and is what appears in the *Paris Code* (Lanjouw & al. in Regnum Veg. 8: 273. 1956). Since then, the only changes affecting the entry have been elimination of the Necker homonym (as Necker's generic names had been ruled not to be validly published) and replacement of *Colocynthis* Ludw. with the earlier, supposedly isonymous *Colocynthis* Mill. 1754 (Rickett & Stafleu in Taxon 9: 121. 1960).

Hara (in Taxon 2: 134–135. 1953) had, in vain, objected to Fosberg's change to his proposal. Of Hara's two arguments, one is spurious (*Cucurbita anguria* Duchesne 1786 is an illegitimate name and cannot threaten *Cucumis vulgaris*), but the other is valid. "Though Forskål described three species under *Citrullus*, the first was the only for which he introduced a binomial … Forskål's *Citrullus* with only one validly published binomial … may be regarded as a monotypic genus." The *Code* at that time did not clearly define what a "monotypic genus" is, so both Fosberg's and Hara's interpretations were possible. When the definition eventually was given, first in Art. 42 Note 1 of the *Sydney Code* (Greuter & al. in Regnum Veg. 111: 39. 1983) and then in Art. 42.2 of the *Tokyo Code* (Greuter & al. in Regnum Veg. 131: 52. 1994), it confirmed Hara's position. *Citrullus* Forssk. 1775 is a validly published name, heterotypic although synonymous with *Citrullus* Schrad., and therefore by implication (ICN Art. 14.10) rejected in favour of the latter as an earlier homonym. [Thanks to a last-minute fix, this is now made explicit in the *Citrullus* entry in App. III to the *Melbourne Code*, McNeill & al. in Regnum Veg. 157, in press.]

At the species level, the correct name of the watermelon is to some extent conditioned by taxonomic opinion. Bailey (l.c. 1930), Mansfeld (in Kulturpflanze, Beih. 2: 421–422. 1959) and many others in their wake considered the watermelon to include wild southern African plants in addition to the widely cultivated sweet watermelon. Whereas Bailey, disregarding the laws of priority, included *Momordica lanata* Thunb., as a variety, in the junior *Citrullus vulgaris*, Mansfeld drew the (then inescapable) consequence and accepted *Citrullus lanatus* as the correct name of the similarly circumscribed species. It turned out that what Mansfeld in 1959 believed to be a new combination had in fact been proposed much earlier, for the same reasons, in a Japanese seed list: *Citrullus lanatus* (Thunb.) Matsum. & Nakai, Cat. Sem. Spor. Hort. Bot. Univ. Imp. Tokyo 1915–1916: 30. 1916 (see Hara in Taxon 18: 346–347. 1969).

Authors like Bailey, Mansfeld and some others were well aware of the fact that the plant described by Thunberg was not the sweet watermelon but a plant growing wild in S. Africa. *Citrullus vulgaris* var. *lanatus* (Thunb.) L.H. Bailey (in Gentes Herbarum 2: 87. 1929) was proposed to designate "the bitter or wild native watermelon of South Africa". Mansfeld (l.c. 1959), similarly, restricted the use of *C. lanatus* var. *lanatus* to the southern African "wild watermelon". In Mansfeld, Verz. Landwirtsch. Gärtn. Kulturpfl., ed. 2: 932–934. 1986), *C. lanatus* is subdivided into three subspecies with several varieties, with the sweet watermelon placed in subsp. *vulgaris* (Schrad.) Fursa, as var. *vulgaris* (Schrad.) Fursa, and Thunberg's S. African plant in the autonymic subsp. *lanatus*, as var. *lanatus*.

However, the inevitable occurred. The sweet watermelon came to be generally known as *Citrullus lanatus*, irrespective of the fact that its nomenclatural type represented a different plant. The USDA Germplasm Resources Information Network, GRIN (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?314923) as well as Wiersema & León's standard reference book, *World Economic Plants* (ed. 2: 179. 2013) use *C. lanatus* var. *lanatus* for the cultigen, sweet watermelon, as opposed to var. *citroides* (L.H. Bailey) Mansf. applied to tsamma melon, fodder melon and citrus melon. That state of affairs might have been tolerable as long as all plants traditionally assigned to the watermelon remained in one and the same species. But new results of a combined morphological, geographic and molecular analysis no longer permit to uphold such a concept. Nesom (in Phytoneuron 2011-13: 1–33. 2011) made a first step in that direction, recognising two species: *C. caffer* Schrad. (which by implication includes Thunberg's type of *C. lanatus*) and "*C. lanatus*", which excludes that type. Our own results (Chomicki & Renner, submitted) go further along that path. We analysed nuclear and plastid DNA sequences from all known *Citrullus* species, most of them with multiple accessions, including leaf fragments from the holotype of *Momordica lanata* (UPS-THUNB 22762) and from the lectotype of *Citrullus caffer* (GOET 007221; Nesom, l.c.: 26, fig. 1). We found complete agreement between those two type specimens (they share, in particular, a unique 30-base-pair deletion in the plastid gene *trnS-trnG*). Furthermore, it has become evident that the sweet watermelon, "*C. lanatus*", is not immediately related to S. African plants but is sister to *C. mucosospermus* (Fursa) Fursa from W. Tropical Africa; whereas the southern African populations form a separate lineage, in which Thunberg's plant, the annual, tendril-bearing citron melon (for which the name *C. amarus* Schrad. 1836 is available, which has priority over *C. caffer* Schrad. 1838) is sister to a morphologically quite distinct species, *C. ecirrhosus* Cogn. 1888, a perennial that lacks tendrils.

In our opinion, changing the name of as popular and economically important a plant as the sweet watermelon must not be permitted. It is by far the better solution to condone and legalise the increasingly erroneous application of the name *Citrullus lanatus* by conserving it with a type that, while discordant with Thunberg's original intent, sanctions the current all but universal practice. Since 2000 the name *C. lanatus* has been used in ca. 650 scientific papers (Web of Science, accessed 25 May 2014) and countless publications in the applied domain, all relating to the watermelon. The other conceivable alternative, reverting to the once popular *C. vulgaris*, is not a realistic option since that name is not available for use anyway owing to Forsskål's earlier name. The specimen here proposed as conserved type of *C. lanatus* is one of those of which the DNA has been extracted and sequenced.

Rejection of the present proposal would have two unwelcome consequences: (1) The correct name of the watermelon would change from *Citrullus lanatus*, not to the once familiar *C. vulgaris*, but to the utterly unused *C. battich* Forssk. Forsskål's name has been discussed at length by Bailey (l.c. 1930: 182) who, even though no type material has been preserved, was satisfied of the identity of the plant described with the watermelon, based on the distinctive pattern of seed testa colour and the coincidence of the vernacular name with its modern use. (2) Application of the name *C. lanatus* would have to switch from sweet watermelon, its present well known meaning, to *C. amarus*, the S. African wild citron melon, also cultivated as preserving melon. Even though *C. lanatus* has been widely and persistently used for a taxon not including its type, ICN Art. 57 can no longer be applied if this proposal should fail.