

TYPIFICATION OF *SCINDAPSUS DILACERATUS* (ARACEAE)

MICHAEL H. GRAYUM
Missouri Botanical Garden
4344 Shaw Blvd.
St. Louis, Missouri 63110
michael.grayum@mobot.org

MARCO CEDEÑO-FONSECA
Programa de Posgrado en Biología / Herbario Luis Fournier Origgi (USJ)
Universidad de Costa Rica
Apartado 11501-2060
San José, Costa Rica
marcovf.09@gmail.com

ABSTRACT

Scindapsus dilaceratus K. Koch & Sello is the basionym of *Monstera dilacerata* (K. Koch & Sello) K. Koch, a name that was long accepted in taxonomic revisions and New World floristic accounts. Recent work has established that *S. dilaceratus* and its homotypic synonyms apply correctly to a widespread Old World species with the prior name *Epipremnum pinnatum* (L.) Engl. The name *Scindapsus dilaceratus* is here neotypified accordingly.

The name *Scindapsus dilaceratus* K. Koch & Sello was published in 1853 or 1854 in a seed catalogue, with a brief Latin description and no illustrations, based on sterile material then in cultivation (under the never-published name "*Philodendron dilaceratum*") at or near the Sanssouci Palace in Potsdam, Germany. The generic placement was apparently prompted by a resemblance to the South American *Scindapsus occidentalis* Poepp. (now accommodated in the genus *Alloschemone*), to which the new species was compared. According to its protologue, *S. dilaceratus* originated "in regionibus Americae tropicis," presaging its application in subsequent years to New World material. Shortly after its publication, *S. dilaceratus* was transferred to *Monstera* (in 1855 or 1856) and later to *Tornelia* (1860) and *Rhaphidophora* (1864). Nowadays, the genera *Scindapsus* and *Rhaphidophora* are restricted to the Old World, and *Monstera* (with *Tornelia* as a synonym) to the New World (see, e.g., Mabberley 2017).

For more than 100 years, beginning in 1878 (Engler 1878) and extending until at least 1993 (Brako & Croat 1993), *Scindapsus dilaceratus* thrived as the basionym of *Monstera dilacerata* (K. Koch & Sello) K. Koch, an accepted name used regularly in taxonomic revisions and floristic accounts for various neotropical regions. However, from the start the name *M. dilacerata* was applied very broadly. In particular, specimen citations in the most recent revision of *Monstera* (Madison 1977) revealed that at least four distinct species were subsumed within the concept of *M. dilacerata* (Croat & Grayum 1987). Efforts to comprehend the correct application of the name with reference to the protologue (of *Scindapsus dilaceratus*) and type material were stymied by the brevity and inadequacy of the former, and the apparent absence of the latter. Karl Koch's original material (i.e., the effective holotype) of *Scindapsus dilaceratus* has not been found and was presumably destroyed (with most of the rest of the B herbarium) in a 1943 bombing raid (see Merrill 1943). A photograph of the presumptive holotype, taken by J.F. Macbride ca. 1929–1933 (see Grimé & Plowman 1986) does exist (<http://emuweb.fieldmuseum.org/botany/berDisplay.php?irn=224759&QueryPage=%2Fbotany%2Fsearch_berlin.php>), with prints deposited in various herbaria (e.g., MO-1663837); however, this image is of limited utility and could not be matched to any material from Costa Rica (Grayum 1997), a country to which *M. dilacerata* has been routinely attributed.

For a time, it seemed as though the correct application of *Scindapsus dilaceratus* might never be established conclusively (see Croat & Grayum 1987); however, a breakthrough came with the discovery (by the first author of this paper) of a handwritten note contained within a fragment folder affixed to *Donnell Smith 6808* (US), a Costa Rican specimen now determined as *Monstera dissecta* (Schott) Croat & Grayum (one of the species that had been included in *M. dilacerata*). Said note, dated May, 1898, was penned by British botanist (and sometime Araceae specialist) N.E. Brown, who stated that he had "seen Koch's type" (of *Scindapsus dilaceratus*) and possessed "drawings of it." On that basis, Brown declared that he was "now fully persuaded that it [*S. dilaceratus*] is identical with" *Epipremnum mirabile* Schott, now regarded as a synonym of *E. pinnatum* (L.) Schott, a widespread Old World species (tropical Asia to Australasia and Oceania). This information was immediately communicated to Peter C. Boyce, a specialist on Southeast Asian Araceae, who examined Brown's drawings at K and endorsed his conclusion unreservedly. The synonymization of *Scindapsus dilaceratus* (and its homotypic synonyms) under *Epipremnum pinnatum* was reported by Grayum (1997) and formalized shortly thereafter in Boyce's (1998) revision of *Epipremnum* for West and Central Malesia. Boyce's (1998: 205) pointed observations sounded the death knell for *S. dilaceratus* and its derivatives:

"...N.E. Brown prepared a drawing of the type (K) that shows it to be an exact match for the pre-adult stage of *E. pinnatum*, even to the pellucid dots next to the mid-rib. Further, on a copy (K) of an article by Brown (1882) dealing with *E. mirabile* (= *E. pinnatum*) there is a note in the margin adjacent to the discussion of *Monstera dilacerata*, in Brown's hand and dated April 1885, stating 'I now believe that *Monstera dilacerata* Koch is identified with *Epipremnum mirabile* Schott'."

Brown (1882) had initially dismissed any connection between *Epipremnum mirabile* and *Monstera dilacerata* but reversed his position three years later, effectively resolving the true identity of *Scindapsus dilaceratus* only seven years after *M. dilacerata* had been taken up as an accepted species name; nonetheless, rampant misapplication of *M. dilacerata* would continue unabated for more than a century. In recent years, however, the name *Monstera dilacerata* has been abandoned in most major floristic works (e.g., Croat 1999; Croat & Stiebel 2001; Grayum 2003). Even so, it appears that its basionym, *Scindapsus dilaceratus*, has not yet been typified properly, so as to guarantee its synonymy under *Epipremnum pinnatum* and banishment from *Monstera*. Madison (1977) neglected to typify *S. dilaceratus*, as did Croat and Grayum (1987) and Grayum (1997). Boyce (1998) cited the type as follows: "Cultivated Berlin Botanic Garden (B† holo; K iso)"; the dagger was clearly meant to acknowledge the demise of Koch's original material at B, while "K iso" suggests that Boyce was accepting some element at K as an isotype. It seems most likely that Boyce's intended "iso[type]" was the Brown drawing mentioned in the passage quoted above (there being no actual duplicate of Koch's collection at K). The drawing in question, currently on file at K, represents an "Outline of [the] Type specimen! in C. Koch's Herbarium" and was executed by N.E. Brown on 3 Jul 1878. Its components concord exactly (even as to leaf folds and tears) with those manifest in Macbride's photo of the specimen itself, discussed previously. The so-called "pellucid dots" referenced by Boyce (1998: 205) are addressed in the following handwritten (presumably by Brown) annotation:

"These rounded markings represent pellucid spots on the leaf arranged along both sides of the midrib. They are not perforations but are spaces free from parenchyma, being covered by the two epidermal skins only."

Having said all of that, according to a strict interpretation of the International Code of Nomenclature (ICN; Turland et al. 2018), photographs, and drawings of original material prepared after the publication of the pertinent protologue do not themselves qualify as original material (see especially ICN Arts. 9.1 and 9.4; Ross 2002; Staples & Prado 2018); however insightful they may be, such depictions are thus not eligible as holotypes or even lectotypes (see ICN Art. 9.3) and certainly

not as isotypes, which must always be specimens (ICN Art. 9.5). This consideration eliminates both Brown's drawing and the Macbride photo as potential holo-, iso-, or lectotypes, and the apparent absence of any material that may be construed as original leaves neotypification as the only option for *Scindapsus dilaceratus*.

It could be argued that, despite his clear misuse of the term "iso[type]," Boyce may be credited with having neotypified *S. dilaceratus* inadvertently, inasmuch as the usage of terms or phrases such as "neotypus" (ICN Art. 9.23) and "designated here" (ICN Art. 7.11) was not mandated prior to 2001. However, we feel justified in rejecting this notion because Boyce's intended type element was not "clearly indicated by direct citation," as required by ICN Art. 7.11. While it is true that Brown's drawing is the only eligible element discussed in Boyce's (1998: 205) "Notes" under *Epipremnum pinnatum*, it is not referred to there as a "type" (or any equivalent term) and is not referenced at all in Boyce's type citation for *Scindapsus dilaceratus*. Thus Boyce's intent must be deemed conjectural, and his supposed "iso[type]" could conceivably have been some specimen or a different drawing. Indeed, a second drawing of *S. dilaceratus* does exist at K, labeled as a "Tracing from C. KOCH's drawing. 1878." and also annotated (again, presumably in Brown's hand) to highlight "the dots on the surface" of the leaves. Both drawings must have been seen by Boyce, though neither is annotated by him in any way. Clearly, Boyce's (unintended) "typification" of *Scindapsus dilaceratus* was ambiguous in every respect, and we therefore consider that the name has yet to be properly typified, according to the requirements of the Code. We proceed here to neotypify it ourselves, and in so doing, prefer to eschew old illustrations and photos of sterile material and instead designate a good, fertile, modern collection (determined as *Epipremnum pinnatum* by Peter Boyce) as neotype (ICN Art. 9.8).

EPIPREMNUM PINNATUM (L.) Engl., Pflanzenr. IV.23b (Heft 37): 60. 1908. *Pothos pinnatus* L., Sp. Pl. (ed. 2) 2: 1374. 1763. *Monstera pinnata* (L.) Schott, Wiener Z. Kunst 1830(4): 1028. 1830. *Scindapsus pinnatus* (L.) Schott, in Schott & Endl., Melet. Bot. 1: 21. 1832. *Rhaphidophora pinnata* (L.) Schott, Bonplandia (Hannover) 5: 45. 1857. **TYPE: India.** t. 183, f. 2 in Rumph., Herb. Amboin. 5. 1747 (lectotype, designated by Merrill 1917: 127).

See Boyce (1998) for a comprehensive heterotypic synonymy of *Epipremnum pinnatum*, including *Scindapsus dilaceratus* and *Epipremnum mirabile* and 10 others.

Scindapsus dilaceratus K. Koch & Sello, in A. Braun et al., Append. Sp. Hort. Berol. 1853: 6. 1853–1854. *Monstera dilacerata* (K. Koch & Sello) K. Koch, in A. Braun et al., Append. Gen. Sp. Hort. Berol. 1855: 5. 1855–1856. *Tornelia dilacerata* (K. Koch & Sello) Schott, Prodr. Syst. Aroid. 356. 1860. *Rhaphidophora dilacerata* (K. Koch & Sello) K. Koch ex Regel, Gartenflora 13: 5. 1864. **TYPE:** Cult. Germany, "In regionibus Americae tropicis indigenus" [fide protologue], *K. Koch* [*s.n.*] (holotype: B, destroyed; photo!). **NEOTYPE (here designated):** Cultivated at Gemini Botanical Garden, Manalapan, Florida, 11 Jun 1992. *T.B. Croat* 73888 (MO-4076916!, -4211564!, -4211565!, -4211566!; isoneotypes F, non vidi, US, non vidi).

Epipremnum mirabile Schott, Gen. Aroid., t. 79. 1858. **TYPE: Java.** Schott, Gen. Aroid., t. 79. 1858 (holotype).

The MO neotype of *Scindapsus dilaceratus* represents a single gathering, mounted on four sheets that are clearly labeled ("Sheet 1 of 4," "Sheet 2 of 4," etc.) as being parts of the same specimen (see ICN Art. 8.3).

On a final note, the option of typifying *Scindapsus dilaceratus* in such a way as to maintain *Monstera dilacerata* as an accepted name has been considered (see Grayum 1997) and rejected — on the grounds that the name *M. dilacerata* has never been used consistently for any particular species and has only been a source of confusion for the duration of its lengthy tenure.

ACKNOWLEDGEMENTS

We thank Simon J. Mayo (K) for providing photographs of illustrations and texts at K. Critical reviews by Fred R. Barrie (MO) and Gerrit Davidse (MO) of the initial draft of this paper resulted in considerable improvement, for which we are grateful. We assume full responsibility for any subsequent errors.

LITERATURE CITED

- Boyce, P.C. 1998. The genus *Epipremnum* Schott (Araceae–Monsteroideae–Monstereae) in West and Central Malesia. *Blumea* 43: 183–213.
- Brako, L. and T.B. Croat. 1993. Araceae. Pp. 71–82, *in* L. Brako and J.L. Zarucchi (eds.), *Catalogue of the Flowering Plants and Gymnosperms of Peru/Catálogo de las Angiospermas y Gimnospermas del Perú*. *Monogr. Syst. Bot. Missouri Bot. Gard.* 45: 1–1286.
- Brown, N.E. 1882. The Tonga Plant (*Epipremnum mirabile*, Schott). *J. Bot.* 20: 332–337.
- Croat, T.B. 1999. Araceae. Pp. 227–246, *in* P.M. Jørgensen and S. León-Yáñez (eds.), *Catalogue of the Vascular Plants of Ecuador*. *Monogr. Syst. Bot. Missouri Bot. Gard.* 75: 1–1181.
- Croat, T.B. and M.H. Grayum. 1987. New combinations in Central American Araceae. *Ann. Missouri Bot. Gard.* 74: 659–660.
- Croat, T.B. and T. Stiebel. 2001. Araceae Juss. Pp. 136–188, *in* W.D. Stevens, C. Ulloa Ulloa, and O.M. Montiel (eds.), *Flora de Nicaragua*. *Monogr. Syst. Bot. Missouri Bot. Gard.* 85: 1–2666.
- Engler, A. 1878. Araceae. Pp. 25–224, *in* C.F.P. von Martius, *Flora Brasiliensis*. Vol. III, Pars II. F. Fleischer, Leipzig.
- Grayum, M.H. 1997. Nomenclatural and taxonomic notes on Costa Rican Araceae. *Phytologia* 82: 30–57.
- Grayum, M.H. 2003. Araceae. Pp. 59–200, *in* B.E. Hammel, M.H. Grayum, C. Herrera, and N. Zamora (eds.), *Manual de Plantas de Costa Rica*. Vol. II. Gimnospermas y Monocotiledóneas (*Agavaceae–Musaceae*). *Monogr. Syst. Bot. Missouri Bot. Gard.* 92: 1–694.
- Grimé, W.E. and T. Plowman. 1986. Type photographs at Field Museum of Natural History. *Taxon* 35: 932–934.
- Mabberley, D.J. 2017. *Mabberley's Plant-book* (ed. 4). Cambridge Univ. Press, Cambridge, United Kingdom.
- Madison, M. 1977. A revision of *Monstera* (Araceae). *Contr. Gray Herb.* 207: 1–100.
- Merrill, E.D. 1917. *An Interpretation of Rumphius's Herbarium Amboinense*. Bureau of Printing, Manila.
- Merrill, E.D. 1943. Destruction of the Berlin Herbarium. *Science* 98: 490–491.
- Ross, R. 2002. Which illustrations are original material? *Taxon* 51: 523–524.
- Staples, G. and J. Prado. 2018. Clarification is needed in the *Code* for the nomenclatural status of type specimen photographs. *Taxon* 67: 833–835.
- Turland, N.J., J.H. Wiersma, F.R. Barrie, W. Greuter, D.L. Hawksworth, P.S. Herendeen, S. Knapp, W.-H. Kusber, D.-Z. Li, K. Marhold, T.W. May, J. McNeill, A.M. Monro, J. Prado, M.J. Price, and G.F. Smith (eds.). 2018. *International Code of Nomenclature for Algae, Fungi, and Plants (Shenzhen Code)*. *Regnum Veg.* 159: 1–254.