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## Typification of Linnaean plant names in *Convolvulaceae*

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Lectotypes and neotypes are designated for 17 previously untypified Linnaean plant names belonging to the family *Convolvulaceae*. These newly proposed types support the current usage of the names concerned. Earlier type statements are discussed.

**KEYWORDS:** *Convolvulaceae*, Linnaean plant names, nomenclature, typification.

### INTRODUCTION

As part of research into the family *Convolvulaceae* by G.S. and continuing research by the Linnaean Plant Name Typification Project at the Natural History Museum, London, all Linnaean names belonging to the family have been investigated. Linnaeus validly published at the rank of species or variety 91 names now placed in this family. Effective typifications exist for 73 of these. Each of the 18 untypified names was examined carefully, relevant literature was searched for typifications, and details of all original elements were compiled. These were then studied (in some cases by other specialists) in order to establish choices of lectotype (or neotype where original material is lacking) to fix the current application of each name. Of the 18 untypified names, 17 are newly typified here. The remaining name, *Ipomoea glaucifolia* L., has been proposed for rejection by Staples & al. (2006). There is insufficient space in the present work to include all details pertinent to each typification (e.g., full lists of original material), but further information on individual type designations is freely available from the second author. Moreover, information on other Linnaean names, whether already typified or not, is available on request. Type information for all Linnaean plant names can now be viewed via the Linnaean Plant Name Typification Project's website at <http://www.nhm.ac.uk/botany/linnaean/>.

### METHODS

The methods used for the present work have been described in detail by Turland & Jarvis (1997: 458–461) and will not be repeated in full. However, the following points may be helpful.

Relevant literature has been searched for existing effective typifications, and these have been found for 73

Linnaean names in the *Convolvulaceae*. The 18 untypified names were carefully examined, and a list of the relevant original material (specimens and illustrations) compiled for each. Choices of type were established from among these elements (or neotypes were designated where no original material could be traced). Great care has been taken to try to ensure that all newly proposed types support the current usage of the names.

In selecting types for the present paper, wherever a choice was possible between specimens and illustrations, the most complete of the specimens has generally been chosen, except where such a choice would disrupt current usage, in which case an illustration supporting current usage has been chosen instead. If the lectotype illustration is supported by a typotype or voucher specimen, this is indicated.

In situations where all potential sources of original material were checked but nothing relevant was found, then (and only then) have neotypes been designated. Neotypes have generally been chosen from among material originating from the geographical area given by Linnaeus in his statements of provenance (“Habitat in ...”) in the respective protologue.

### NEW TYPIFICATIONS

The 17 type designations are presented alphabetically in the following format: Linnaean name with full bibliographic reference, any earlier homonym (placed in square brackets), any later homotypic Linnaean name (recombination), the currently accepted name (when different), the lectotype, any typotype or voucher specimen that supports a lectotype illustration, any epitype, and any explanatory notes. In a number of cases, earlier typifications have been judged to be ineffective, usually because the designated elements were not part of the

original material, and these are noted and discussed. For each entry, the first name to be cited is the name being typified; any later recombinations are, of course, simultaneously typified. The currently accepted name in each entry is shown in **bold italic** typeface, and is placed in square brackets if not homotypic with the name being typified.

*Convolvulus anceps* L., Syst. Nat., ed. 12, 2: 156; Mant. Pl.: 43. 15–31 Oct 1767. [= *Operculina turpethum* (L.) S. Manso]. – Neotype (designated here by Staples): Java (West), Tjikao, near waterfall, July, L. Blume 1219 (L!, sheet 901,163–376; isoneotype, L! sheet 901,184–318).

Note. – Linnaeus indicated, in his Mantissa Plantarum description, that he had a living plant from his garden in Uppsala: “Mihi non floruit. H. U. [Hortus Uppsaliensis]” and gave the habitat as “Zeylona, Java.” A careful search of the herbaria LINN, S, and UPS brought to light no specimens that could be original material for this name and it is possible that none was preserved. The epithet *anceps* has not been in use since the nineteenth century, having been reduced to synonymy with the earlier *Convolvulus turpethum* L. (1753), e.g., by Thwaites (1864: 212), Trimen (1895: 222–223), Austin (1980: 356) for the Sri Lankan flora, and Van Ooststroom (1939: 362) and Van Ooststroom & Hoogland (1953: 456), among others, for the Malesian flora. The neotype chosen here agrees well with Linnaeus’ protologue and maintains established usage.

*Convolvulus biflorus* L., Sp. Pl. ed. 2, 2: 1668. 1763.

***Ipomoea biflora*** (L.) Pers., Syn. I: 183. 1805. – Neotype (designated here by Staples): China, Hong Kong, haies des jardins à Kennedy-town, 20 Sept. 1893, E. Bodinier 386 (E!; iso- P!).

Note. – Linnaeus prepared a remarkably detailed description for this species, including even details of floral colors, which suggests he had a living plant before him. As noted by Meeuse (1958: 723) there is no type specimen in LINN or S; a thorough search of these two herbaria plus UPS confirmed this. There appear to be no extant original elements and it is possible no specimen was preserved. The name was widely misapplied by authors throughout the eighteenth and nineteenth centuries. Merrill (1938: 361) points out that the exact status of this name, and therefore *I. biflora* (L.) Pers., is somewhat doubtful. Van Ooststroom (1940: 493) was the first to use the name *I. plebeia* R. Br. in place of the ambiguous *I. biflora* and he was followed by authors of twentieth century floras, e.g., Van Ooststroom & Hoogland (1953: 463), Meeuse (1958: 723), and Verdcourt (1963: 94). *Convolvulus biflorus* seems therefore to have been informally rejected, at least in the English-speaking

botanical literature. Some have suggested that this is grounds for proposing formal rejection of *C. biflorus* L. (M. Thulin, pers. comm.). However, when the Chinese botanical literature is consulted, the trend in usage is quite different. Beginning with the work of Wu & Li (1965: 107), the epithet *biflora* has been used fairly consistently in twentieth century Chinese-language taxonomic works—e.g., Academia Sinica (1974: 530), Fang & Huang (1979a: 634; 1979b: 41), Wu (1984: 1565), Wu (1989: 336), Zhao (2002: 221)—all as *Aniseia biflora* (L.) Choisy. The spinulose pollen grains exclude this species from *Aniseia*, and indicate placement in *Ipomoea*. Latterly the epithet has appeared in English-language floras for eastern Asia—e.g., Yamazaki (1993: 203), Fang & Staples (1995: 304), Staples & Yang (1998: 358)—all as *I. biflora*. Because the epithet is currently in use for a widespread, weedy Asian species, rejection would serve to destabilize the nomenclature throughout eastern Asia. Therefore the choice of a neotype seems the best course.

*Convolvulus carolinus* L., Sp. Pl. 1: 154. 1 May 1753. [= ***Ipomoea cordatotriloba*** Dennst.]. – Lectotype (designated here by Staples): [icon] “*Convolvulus folio hederaceo, arvensis flore dilute purpureo*” in Dillenius, Hort. Eltham.: t. 84, f. 98. 1732. – Typotype: Sherard. Herb. no. 317 (OXF).

Note. – Previous attempts at designating a lectotype for *C. carolinus* L. (e.g., Austin 1976, 1978, 1988) have focussed on the Dillenius specimen in OXF, which has apparently been lost. Yet, as Shinnars (1965: 233) correctly noted, albeit in passing, the Hortus Elthamensis plate “is the basis for *Convolvulus carolinus* L.,” and the plate has to be taken as the lectotype in preference to a specimen which Linnaeus did not see, and which is not original material for the name. The epithet “*carolinus*” is pre-occupied in *Ipomoea* by *I. carolina* L. (1753).

*Convolvulus hederaceus* L., Sp. Pl. 1: 154. 1 May 1753.

[= ***Ipomoea nil*** (L.) Roth]. – Lectotype (designated here by Staples): Herb. Burser XVII: 6 (UPS!).

Note. – As already pointed out by Shinnars (1965), an earlier lectotypification of *C. hederaceus* by Verdcourt (1957: 232) cannot stand, because the Linnaean specimen he chose (LINN 218.8) was almost certainly not present in the Linnaean Herbarium at the time of publication of Species Plantarum. The sheet lacks the number (“6”) that Linnaeus used for *Convolvulus hederaceus* in that work and bears only the abbreviation “H.U.” which strongly suggests it was a post-1753 addition to the herbarium, from Linnaeus’ garden at Uppsala. We do not accept it as original material for the name.

Likewise, Siddiqi (1977) attempted to designate a lectotype for *I. hederacea* “(L.)” Jacq., but has confused

matters by including *I. nil* (L.) Roth as a synonym of *I. hederacea*. The lectotypification statement given there (Siddiqi 1977: 25) for *I. hederacea* is copied verbatim, mistakes and all, from the treatment of *I. nil* in the Flora of Tropical East Africa account (Verdcourt 1963: 113), where the identical lectotype statement refers to *I. nil*. To accept this action would mean both names (*C. nil*, *I. hederacea*) are based on the same lectotype. Furthermore, *I. hederacea* Jacq. is a distinct species, is not based on *C. hederaceus* L. and its type is therefore entirely independent of that of *C. hederaceus*.

The Burser specimen bears the diagnostic phrase name of Bauhin's Pinax (1623), one of the original elements Linnaeus cited when he published his name. Choosing the Burser specimen as lectotype also preserves long-established usage in a complex of four *Ipomoea* taxa that has been nomenclaturally vexing for the past half century.

*Convolvulus macrocarpus* L., Syst. Nat., ed. 10, 2: 923. May-Jun 1759. ≡ *Operculina macrocarpa* (L.) Urban. – Lectotype (designated here by Staples): [icon] “*Convolvulus foliis palmato-pedatis, pedunculis unifloris*” in Plumier, ed. Burman, Cat. Pl. Amer.: t. 91, f. 1. 1756.

Note. – The specimen in the Linnaean Herbarium (LINN 218.34) labelled “*macrocarpus*” by Linnaeus is identifiable as *Ipomoea mauritiana* Jacq., a species that shares the feature of digitately lobed leaves with *O. macrocarpa* but is otherwise quite distinct. This Linnaean specimen is not an appropriate choice of lectotype if stability of current usage is to be preserved. Heine (1960) provided the historical context for Plumier's cited plate 91, f. 1 and stated that Plumier's original drawing was made from a plant from the island of Martinique and that this is the type locality. Plumier's figure accurately captures the species and is the best choice of lectotype.

*Convolvulus macrorrhizos* L., Syst. Nat., ed. 10, 2: 923. May-Jun 1759. [= *Ipomoea furceyensis* Urban]. – Lectotype (designated here by Staples): [icon], “*Convolvulus foliis digitatis, septenis glabris, pedunculis trifloris*” in Plumier, ed. Burman, Cat. Pl. Amer.: t. 90, f. 1. 1756.

Note. – The epithet *macrorrhizos* is preoccupied in *Ipomoea* by *I. macrorrhizos* Michaux (1803), an eastern North American species. The Linnaean species is part of a taxonomically difficult, West Indian, digitate-leaved complex in *Ipomoea* (Liogier 1994).

*Convolvulus panduratus* L., Sp. Pl. 1: 153. 1 May 1753. ≡ *Ipomoea pandurata* (L.) G. Meyer. – Lectotype (designated here by Staples & Austin): U.S.A., Virginia, Clayton 641 (BM).

Note. – The only original element is Clayton 641 (linked via Gronovius, 1743: 141). Gronovius based his account of Virginia plants on the specimens of John Clayton and it is known that Linnaeus had access to the Clayton specimens when he was in the Netherlands between 1735 and 1738. Clayton 641 is extant at BM, is identifiable as *I. pandurata* as currently understood, and is here chosen as the lectotype.

*Convolvulus pentaphyllus* L. var. *serpens* (L.) L. – see *Convolvulus serpens* L.

*Convolvulus persicus* L., Sp. Pl. 1: 158. 1 May 1753. – Neotype (designated here by Staples): Turkey, “Constantinopel. In arenosis maritimis prope “Kila”, Julio 1899” Herbarium Normale ed. I. Dörfler, no. 3865, G. V. Aznavour s.n. (BM!; iso- B!, E!, P 3 sheets!).

Note. – There appear to be no extant original elements. Sa'ad (1967: 163), who examined many historical specimens in the course of her revision, noted that the specimen in the Linnaean Herbarium (LINN 218.53) post-dates 1753 and is not original material eligible as a lectotype. Sa'ad (1967) effectively established the taxonomic concept for *C. persicus* as it is understood today. The Aznavour specimen chosen as neotype is good, fertile material, annotated by Sa'ad (1967), that fixes the application of this name and maintains established usage.

*Convolvulus scammonia* L., Sp. Pl. 1: 153. 1 May 1753. – Lectotype (designated here by Staples & Jarvis): [icon] “*Convolvulus syriacus s. Scammoniaca syriaca*” in Morison, Pl. Hist. Univ. 2: s. 1, t. 3, f. 5. 1680.

Note. – Sa'ad (1967: 240) noted that the specimen in the Linnaean Herbarium (LINN 218.4) filed under this name post-dates 1753 and so is not original material for the name. She went on to suggest that unspecified van Royen material in L would “presumably” be the type. There are two sheets of *C. scammonia* in the van Royen herbarium, only one of which was annotated by Sa'ad. However, neither of these collections corresponds with the mounting style and paper quality associated with Adriaan van Royen, with whom Linnaeus is known to have worked. The two collections are almost certainly later and are typical of the specimens prepared by David van Royen, Adriaan's nephew. As such, neither collection is old enough to have been available to Linnaeus during his consultation of Adriaan van Royen's herbarium. The figure in Morison's book, while crude, is accurate enough to allow its identification as *C. scammonia* and this seems the best choice as lectotype for the name.

*Convolvulus sericeus* L., Syst. Nat., ed. 12, 2: 156; Mant. Pl.: 43. 1767. [= *Argyreia mollis* (Burm. f.) Choisy]

– Lectotype (designated here by Staples): [icon] “*Convolvulus mollis*” in Burman f., Fl. Indica: t. 17. 1768. – Typotype: Java, *Kleinhoff*[*Kleynhoff*] s.n., Herb. Burman (G!).

Note. – Linnaeus created much taxonomic confusion when he named *Convolvulus sericeus*, an Indian plant, with Burman’s plate of *C. mollis* Burm. f. apparently as the sole original material. The Linnaean epithet cannot be taken up in *Argyreia* because of the later *A. sericea* Dalz. & Gibs. (1861), which also prevents the use of Burman’s own *C. sericeus* (1768) (based on Fl. Indica plate 19, fig. 3) for a plant from Persia now called *Convolvulus cephalopodus* Boiss. (Sa’ad 1967).

The Burman plate is the only original material for this Linnaean name and its choice as lectotype fixes its application with certainty. Recent discovery of original type material for *C. mollis* Burm. f. and the lectotypification of this name (Staples & Jacquemoud, 2005) further clarifies the application of the Linnaean name.

*Convolvulus serpens* L., Syst. Nat., ed. 10, 2: 923. May–Jun 1759. ≡ *Convolvulus pentaphyllus* L. var. *serpens* (L.) L., Sp. Pl., ed. 2, 1: 223. 1–20 Sep 1762, nom. superfl. [= *Merremia quinquefolia* (L.) Hall. f.] – Lectotype (designated here by Staples): [icon] “*Convolvulus foliis digitatis quinis glabris dentatis, caule piloso*” in Plumier, ed. Burman, Cat. Pl. Amer.: t. 91, f. 2. 1756.

*Convolvulus sibiricus* L., Mant. Pl. Alt.: 203. Oct 1771. ≡ *Merremia sibirica* (L.) Hall. f. – Lectotype (designated here by Staples): Herb. Linn. No. 218.5 (LINN).

*Convolvulus tomentosus* L., Sp. Pl. 1: 156. 1 May 1753. [= *Ipomoea jamaicensis* G. Don] – Lectotype (designated here by Staples): [icon] “*Convolvulus folio lanato in tres lacinas divisio, flore oblongo purpureo*” in Sloane, Voy. Jamaica 1: t. 98, f. 2. 1707. – Typotype: Herb. Sloane 3: 12 (BM-SL).

Note. – The epithet “*tomentosus*” is preoccupied in *Ipomoea* by *I. tomentosa* Choisy (1837) [= *Merremia tomentosa* (Choisy) Hall. f.].

*Ipomoea hepaticaefolia* L., Sp. Pl. 1: 161. 1 May 1753. [= *Ipomoea pes-tigridis* L.] – Lectotype (designated here by Staples & Jarvis): [icon] “*Ipomoea hepaticaefolia*”, unpublished drawing in the Hermann Flora zeylanica herbarium, vol. 5, page 141 (BM, bar code 000594923).

Note. – Trimen (1887: 137) noted the existence of this unpublished plate which was available to, and annotated by, Linnaeus. It is the only extant original material and is therefore designated as the lectotype.

*Ipomoea lacunosa* L., Sp. Pl. 1: 161. 1 May 1753. – Lectotype (designated here by Staples): [icon] “*Convolvulus stellatus, periplocae rotundioris folio*” in Dillenius, Hort. Eltham.: t. 87, f. “103” [102]. 1732.

Note. – In the protologue, Linnaeus erroneously cited Dillenius’ plate as t. 87, f. 103. There is no f. 103: f. 101 appears twice, for the left-hand and centre elements on the plate, and f. 102 appears once, for the right-hand element. The Dillenian polynomial (and therefore the Linnaean reference) correctly refers to f. 102.

Austin (1978: 120) stated “The collection in the Dillenius herbarium has been chosen as the lectotype by Schmidt (1965) (lectotype OXF; photo FAU)”. This is an error. Schmidt actually makes no mention of the Dillenian specimens; his paper deals solely with the Hortus Elthamensis. For *Ipomoea lacunosa*, Schmidt (1965: 83) cited only “[Hort. Eltham.] Pag. 103, Tab. 87, Fig. 102.” In his commentary preceding the Clavis, Schmidt (1965: 72) makes it clear that it was not his intention to designate lectotypes, and thus Schmidt’s citation cannot be construed as a lectotypification.

*Ipomoea serpens* L., Fl. Jam.: 13. Dec 1759. [= *Ipomoea pes-tigridis* L.] – Lectotype (designated here by Staples & Jarvis): [icon] “*Pulli-schovadi*” in Rheede, Hort. Malab. 11: t. 59. 1692.

Note. – This name appeared in the thesis *Flora Jamaicensis*, published in December 1759. This work provided binomials for the taxa described by Patrick Browne (1756), though most of the new Linnaean names based on that work had already been published in the tenth edition of Linnaeus’ *Systema Naturae* (May–June 1759). In the thesis, *Ipomoea serpens* is accompanied only by the numbers “155” and “4”, indicating that the epithet should apply to *Ipomoea* number 4 on page 155 of Browne’s book. The validating description there consists of a diagnosis (*I. Hirsuta minor pentaphylla, foliis oblongis leviter crenatis*) and three synonyms, together with a vernacular name, “The hairy Tiger’s-foot”. The first synonym (*I. Foliis palmatis digitatis, supra glabris, caule pilosos, pedunculis multifloris*) Browne attributed to Linnaeus from accounts in the latter’s *Hortus Upsaliensis* (1748: 39, *Ipomoea* no. 4) and *Species Plantarum* (1753: 162; *I. pes-tigridis*). However, the diagnosis of neither account matches that cited by Browne, and the latter is evidently a composite assembled from elements of the two Linnaean accounts. Browne’s remaining two synonyms were from Burman’s *Thesaurus Zeylanicus* (1737) and Rheede (1692), both from the Old World tropics.

Browne’s reference to Linnaeus’ 1753 account of *I. pes-tigridis* could lead to the conclusion that *I. serpens* is an illegitimate renaming of the earlier name. However,

Browne's modification of the 1753 diagnosis, and the absence of much of Linnaeus' synonymy from Browne's treatment (they have only the Rheedee reference in common) suggests that this is not the case. We believe that *I. serpens* should be treated as an independent name.

*Ipomoea serpens* was not used again by Linnaeus after its first appearance, and the name has not been taken up by later authors. Oddly, there is, however, a Mutis collection, not received by Linnaeus until about 1773, in the Linnaean Herbarium (sheet no. 219.15, LINN) which is annotated by Linnaeus with this binomial. The material clearly does not belong to the *Convolvulaceae*, and we are grateful to Caroline Whitefoord (BM) for identifying it as *Nierembergia repens* Ruiz & Pav. (*Solanaceae*). Perhaps fortunately, it is not original material for *I. serpens*.

We have been unable to trace any Browne material associated with his account, and the only original material for *I. serpens* appears to be the cited Rheedee plate. We agree with Nicolson & al. (1988: 92–93) that this represents *I. pes-tigridis*, and, with the designation here of the plate as the lectotype of *I. serpens*, the latter now falls into the synonymy of *I. pes-tigridis*.

*Ipomoea umbellata* L., Syst. Nat., ed. 10, 2: 924. May–Jun 1759. [= *Ipomoea carolina* L.]. – Lectotype (designated here by Staples & Austin): [icon] “*Ipomoea foliis digitatis, pedunculis umbellatis brevissimis*” in Plumier, ed. Burman, Cat. Pl. Amer.: t. 92, f. 2. 1756.

Note. – The identity of *I. umbellata* has long been ambiguous, Urban (1921: 569) characterizing it as “species hodiernis ignota” more than 80 years ago. The only original element is the cited Plumier plate which depicts a member of a taxonomically confused species complex that includes several West Indian digitate-leaved species. It is quite distinct from *Convolvulus umbellatus* L. (1753) [= *Merremia umbellata* (L.) Hall. f.] with which it has sometimes wrongly been equated. *Ipomoea umbellata* has not been accounted for in any twentieth century flora for the Caribbean and the species complex to which it belongs has yet to be critically revised. *Ipomoea umbellata* is here reduced to synonymy with the older *I. carolina* L. for the first time.

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