

NOMENCLATURE

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Holotype specimens and type citations: General issues

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Abstract As specification of a holotype has only been necessary for valid publication of a name of a species or infraspecific taxon since 1 January 1990, for names published before that date it is often uncertain if a holotype exists, and, if it does, where it is located. The rules governing holotype recognition are outlined and suggestions for best practice are made.

Keywords holotype; lectotype; original material; syntype

In taxonomic revisions in which type collections are cited, it is not uncommon for a specimen in a particular herbarium to be indicated as the holotype of an accepted name or synonym of a species or infraspecific taxon and one or more others as isotypes. For names published prior to 1 January 1990 this is open to question and is particularly doubtful for names published prior to around the middle of the 20th century. Only very occasionally is it possible to determine that the author of a name used one particular specimen of a gathering unless he/she stated in which herbarium the type was deposited (and, even then, only if no more than one specimen was housed in the stated herbarium). Consequently, even the existence of a holotype, far less its location, is not certain. In citing types, authors should, therefore, bear the following points in mind.

It is only since 1 January 1990, that “the single herbarium or collection or institution in which the type is conserved must be specified” (Art. 40.7 of the *ICN*—McNeill & al., 2012) in order for a name to be validly published. Prior to that, indication of the type (as required since 1 January 1958) could be achieved by reference to an entire gathering even if it consisted of more than one specimen (Art. 40.2). Prior to 1958, no indication of the type was necessary for valid publication of a name.

At the St. Louis Congress in 1999 a clarification of what constitutes a specimen for purposes of typification was approved. This now appears in Art. 8.2 of the *Code* (McNeill & al., 2012). Moreover Art. 8.1 makes clear that (except in the situations in which an illustration is acceptable as type) a type is a single specimen conserved in one herbarium or other collection or institution.

The definition of original material (Art. 9.3), originally adopted at the Tokyo Congress in 1993, makes clear that this includes duplicates of cited specimens, even if not seen by the author of the description or diagnosis.

Consequently the citation of a type prior to 1990 cannot be considered that of a holotype unless one particular herbarium

was indicated in the protologue (and only one specimen of the gathering was deposited there) or if it were made clear that only a single specimen of the gathering existed, or if there is evidence that only one particular specimen was used. More commonly there will be duplicates, often housed in more than one institution, and these must all be treated as syntypes (Art. 40 Note 1).

In situations in which no type is designated but reference is made to only a single specimen or gathering, there will be a holotype only if it can be established that no additional elements were used and, in the case of a gathering, that only a single specimen existed or that only one specimen (duplicate) of the gathering was used by the author. [Also, after 1957, if mention is made of only a single specimen (Art. 40.3, final sentence)].

From the *Tokyo Code* (Greuter & al., 1994) to the *Vienna Code* (McNeill & al., 2006), there was a Rec. 9A.4 that suggested that when “a single gathering is cited in the protologue, but a particular institution housing it is not designated, it should be assumed that the specimen housed in the institution where the author is known to have worked is the holotype”. This was deleted at the Melbourne Congress in 2011 as it was contrary to the rules. Ironically, that recommendation was introduced only at the Tokyo Congress, and although the proposal to do so was perfectly reasonable under the then current *Berlin Code* (Greuter & al., 1988), its inclusion in the *Tokyo Code* was already somewhat at variance with the definition of “original material” adopted at the same Congress, and was quite contrary to the changes made to Art. 8 at the St. Louis Congress, at which time Rec. 9A.4 should have been editorially removed from the *Code*, as was eventually done 12 years later.

Prior to 1 January 2001, if an author stated that a particular specimen was the holotype (or even just the “type”) of a previously published name but other specimens of the cited gathering existed, then under Art. 9.9 this was an error to be corrected

to lectotype. However, as of that date for a lectotypification to be effective, the words “designated here” or an equivalent were required. Consequently such erroneous holotype statements, which do not normally include those words, are no longer effective lectotypifications (see Art. 9 Note 6). It is, therefore, wise for authors who are doubtful as to whether or not a particular specimen in one herbarium is the holotype to cite it as: “Lectotype, designated here (or perhaps holotype):”.

It should also be noted that (except for names being proposed for conservation and rejection under Art. 14) there is never an obligation to select a lectotype (note the “may” in Art. 9.11, final line, and in Art. 9.17) although it is advisable to do so when the original material is taxonomically diverse. As this is unlikely to be the case with a single collection designated as type, it is, therefore, perfectly in order in most cases simply to include as the type entry: “Type: Locality, *Collector nnn*” and then list all the herbaria in which specimens of this collection are known to exist (see Art. 40.2).

In summary, establishing that a specimen (or very occasionally an illustration) is a holotype is only possible under the following circumstances:

If, prior to 1958, no specimen is indicated in the protologue, there will be a holotype only if it can be shown that a single specimen (or illustration) was the only element upon which the validating description or diagnosis was based (Art. 9.3).

If, prior to 1958, a single gathering (but not a single specimen) is indicated as the basis of a new taxon but without the word type, there will be a holotype only if it can be established that the author used no other element and if the gathering is represented by a single specimen—because the specimens that comprise the gathering are syntypes (Art. 40 Note 1).

If, prior to 1990, a single gathering (but not a single specimen) is indicated as the type of the name of a new taxon, there will be a holotype only if the gathering is represented by a single specimen (see above). [Note that, even if an author indicates a single gathering as “holotype”, this will, in fact, only be a holotype, if that gathering is represented by a single specimen.]

If, at any date, an author indicates a single specimen or other collection as “type”, this is a holotype.

If, on or after 1 January 1990, an author does not specify the herbarium or other collection in which the type, stated with

the words “typus” or “holotypus” (Art. 40.6), is deposited, the name is not validly published (Art. 40.7)—i.e., from that date, a holotype specimen must be specified.

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■ LITERATURE CITED

- Greuter, W., Burdet, H.M., Chaloner, W.G., Demoulin, V., Grolle, R., Hawksworth, D.L., Nicolson, D.H., Silva, P.C., Stafleu, F.A., Voss, E.G. & McNeill, J. (eds.) 1988. *International Code of Botanical Nomenclature: Adopted by the Fourteenth International Botanical Congress, Berlin, July–August 1987*. Regnum Vegetabile 118. Königstein: Koeltz Scientific Books.
- Greuter, W., Barrie, F.R., Burdet, H.M., Chaloner, W.G., Demoulin, V., Hawksworth, D.L., Jørgensen, P.M., Nicolson, D.H., Silva, P.C., Treharne, P. & McNeill, J. (eds.) 1994. *International Code of Botanical Nomenclature (Tokyo Code): Adopted by the Fifteenth International Botanical Congress, Yokohama, August–September 1993*. Regnum Vegetabile 131. Königstein: Koeltz Scientific Books. <http://iapt-taxon.org/Tokyo-e/DEFAULT.HTM>
- McNeill, J., Barrie, F.R., Burdet, H.M., Demoulin, V., Hawksworth, D.L., Marhold, K., Nicolson, D.H., Prado, J., Silva, P.C., Skog, J.E., Wiersema, J.H. & Turland, N.J. (eds.) 2006. *International Code of Botanical Nomenclature (Vienna Code): Adopted by the Seventeenth International Botanical Congress Vienna, Austria, July 2005*. Regnum Vegetabile 146. Ruggell, Liechtenstein: Gantner. <http://www.iapt-taxon.org/icbn/main.htm>
- McNeill, J., Barrie, F.R., Buck, W.R., Demoulin, V., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Marhold, K., Prado, J., Prud'homme Van Reine, W.F., Smith, G.F., Wiersema, J.H. & Turland, N.J. (eds.) 2012. *International Code of Nomenclature for algae, fungi, and plants (Melbourne Code): Adopted by the Eighteenth International Botanical Congress Melbourne, Australia, July 2011*. Regnum Vegetabile 154. Königstein: Koeltz Scientific Books. <http://www.iapt-taxon.org/nomen/main.php>