Although the genus has only 1–3 species, in C. and S. America, one species is a weed introduced in the Old World. The Committee recommends conservation of *Pseudelephantopus,* noting that this correction was probably first made by Pfeiffer, Nomencl. Bot. 2: 852. 1874.

Proposal 653. *Hapaline* Schott 1857 corr. Schott 1858 vs. *Hapale* Schott (Araceae). Proposed by D. H. Nicolson in Taxon 30: 494–495. 1981. Votes: 8–4.

Like *Centotheca* and *Pseudelephantopus* above, this is a proposal to conserve a commonly used spelling over the original spelling. *Hapale,* derived from the Greek for soft or tender, was changed by Schott himself a year later to avoid confusion with the zoological name *Hapale* for a genus of S. American marmosets. In this case it was agreed in the Committee (including the proposer) that *Hapaline* Schott 1858 is to be regarded as a *nomen novum* for *Hapale* Schott 1857, and without conservation some five or six new combinations under *Hapale* would be required. Despite the rather small size of the genus, this point seems to have tipped the balance in favour of the proposal, and it is recommended that *Hapaline* Schott be conserved over *Hapale* Schott.

PARALECTOTYPE, A NEW TYPE TERM IN BOTANY

Hans V. Hansen and Ole Seberg[1]

Summary

In order to clarify the terminology used in typification a new term, the paralectotype, is proposed to cover the group of types which remains when a lectotype (and isolectotype(s)) has been selected from the syntypes.

Following discussions with editors and colleagues it has become increasingly obvious that the application of two of the terms used to designate types are inconsistent, viz. syn- and paratype. This view has gained strength by studying the unauthorized definitions employed by McVaugh et al. (1968) and Jeffrey (1973).

The ambiguity is in our opinion caused by want of a term to cover the group of specimens which remains when a lectotypification has been effected.

History

The type-concept was well established in the 6th edition of the Code (ICBN 1935, Amsterdam), but the various type-terms not explicitly defined until the 7th edition (ICBN 1950, Stockholm), in which an appendix (p. 543), 'Recommendation: Guide for the determination of types,' also was introduced.

Originally, the term paratype appeared as a recommendation (19A) in the Code being defined as specimen(s) 'other than the holotype' cited with the original description, but in the 8th edition (ICBN 1954, Paris) it was stated more exactly as specimen(s) 'other than the holotype or isotype(s).' In the 9th edition (ICBN 1959, Montreal) the definition was by editorial decision moved to the 'Guide for determination of types' (p. 64) as a footnote. At the same time, its definition became broader, since the following sentences were added: 'In most cases where no holotype was designated there will also be no paratypes, since all the cited specimens will be syntypes. However, in cases where an author cited two or more specimens as types (Art. 7, Note 3), the remaining cited specimens are paratypes and not syntypes.' The intention of this addition certainly was to cover the practice which was in use in the first part of this century, simultaneously to designate two or more specimens as types (syntypes in the narrow sense), while quoting additional specimen(s) (paratypes) as well (Fig. 1B, App. 1B).

The contents and position of the footnote has remained unchanged in all following editions of the Code apart from a logical addition in the 11th edition (ICBN 1969, Seattle), where the original definition was expanded to include specimen(s) 'other than the holotype, isotype(s) or syntypes.'

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Outline of the Problem

The Code unambiguously presents rules for designating holotypes. When the publishing author(s) has indicated a holotype, the duplicate(s) of this are isotype(s), whereas all other specimens cited in the protologue are paratypes (Fig. 1A, App. 1A).

When no type was initially selected, all the specimens cited by the publishing author(s) are syntypes. According to the Code one subsequently has to choose a syntype as lectotype. When this has been accomplished, the duplicate(s) of the lectotype are designated as isolectotype(s) (Fig. 1C, App. 1C).

A variation of the above-mentioned examples exists in cases where two or more specimens simultaneously were designated as types. Any other specimen cited in the protologue, other than the proposed types, are paratypes. The cited types are syntypes from which one has to select a lectotype (Fig. 1B, App. 1B). These three different situations can conveniently be reduced into two: In the first case, either a single specimen (the holotype) or two or more specimens (the syntypes in the narrow sense) have been indicated to serve as type(s) by the publishing author(s). All other specimens cited in the protologue, which are not iso- or isosyntype(s), are paratypes. This is in essence in agreement with the original definition of the term (cf. ICBN 1950, 1954).

In the second case, no specific type(s) (holotype or syntypes in the narrow sense) were indicated; accordingly all cited specimens are syntypes in the broad sense. As the Code prescribes, one of the syntypes has to be chosen as a lectotype, the duplicate(s) of which are isolectotype(s). However, when initially a lectotype has been selected (from the syntypes) the Code does not provide us with a term for the remaining specimens. McVaugh et al. (1968) added the following to the previously mentioned footnote: 'When a lectotype is chosen from among syntypes, the remaining syntypes may also be called paratypes.' This formulation is rather vague, but it appears that an author freely can choose to designate the remaining specimens as either 'syntypes' or 'paratypes.' Jeffrey (1973) went even further defining a paratype as 'a remaining syntype after a lectotype has been chosen amongst syntypes.'

Thus it will be seen that the paratype-concept is treated by these authors in a sense conflicting with the definition given in the Code, also inflicting uncertainty on the precise definition of the term syntype. Originally, the paratype-concept was not connected with the lectotype-concept, and it is not reasonable to retain the term syntype(s) for the remaining specimen(s), since the number (and state) of the syntype(s) before the lectotypification are different from the number (and state) after lectotypification.

The inevitable conclusion is that we need an additional, new term for this group of specimen(s), since the Code does not provide us with such a term, and since McVaugh et al.'s and Jeffrey's attempt to expand the definitions of the terms para- and syntype must be rejected as being at variance with the definitions in the Code.

With the purpose of preventing that the terms para- and syntype are ambiguously and inaccurately employed, we propose the following emendation of the definition of the term paratype as used in the appendix, 'Guide for determination of types' (ICBN 1983, Sydney, p. 80 (footnote)):

Paratype: A specimen cited in the protologue, either other than the holotype and isotype(s), or other than the syntypes, when two or more specimens simultaneously are designated as types. Duplicates hereof are isoparatype(s).

This covers the intentions of the footnote. Accordingly, the term paratype can only be used when the publishing author(s) unequivocally indicated that either one specimen, the holotype (+isotype(s)) or two or more specimens simultaneously, though erroneously, were designated as types (syntypes in the narrow sense).

For the wanting term we propose the term paralectotype, as defined below:

Paralectotype: A specimen prior to lectotypification included among the syntypes, other than the chosen lectotype and isolectotypes. Duplicates hereof are isoparalectotype(s).

The term paralectotype can only be used in combination with lectotypification.

Why Paralectotype?

Though the botanical and zoological Codes are independent, there is no reason why the terminology should be deviating, when this can be avoided.

The term paralectotype (=lectoparatype; however, see below) has a comparatively long standing in zoology. It was proposed by Alexander in a letter to Horn (ref. in Horn, 1929), but had its first extensive use in a paper by Betrem (1928). In zoology the term is used to characterize specimen(s) from the

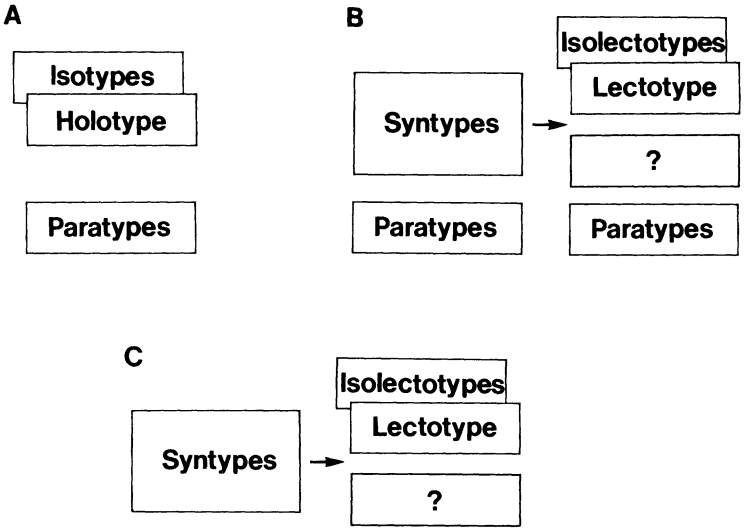

Fig. 1. Type terminology. There is, with respect to time, a significant, logical difference between "holo-" and lectotypification, which is often not realized: In cases of "holotypification" the categories of types, viz. holo-, and if any, iso- and paratype, are given from the outset by the publishing author(s) (A), whereas in cases of lectotypification either two categories, viz. syn- and paratypes (B), or only one category, viz. syntypes (C), are initially given. When subsequently made, lectotypification is in essence equivalent to a later "holotypification," and the syntype category is thus an intermediary, ephemeral category. Accordingly syntypes cease to exist, as such, when a lecto-, and if any, isolectotypes has been selected. As the Code provides us with a covering set of terms in cases of "holotypification," it ought to provide us with an equally covering set of terms when *a posteriori* "holotypification," viz. lectotypification, has been made in accordance with its rules. However, it presently does not, as the terms syn- and paratype have been preoccupied for other purposes. For a more detailed discussion, see the text. For the sake of clarity, the only duplicates, included in the figure, are iso- and isolectotypes, respectively.

type series which following lectotypification acquire the same status as paratypes, viz. specimen(s) other than the holo- and lectotype, respectively.

The zoological Code (Stoll et al., 1964) even has a recommendation (74E) urging authors to label this group of specimen(s) as such.

However, as the botanical definition of the term paratype (viz. specimen(s) other than the holotype, isotype(s), and syntype(s)) differs somewhat from the zoological, the use of the term paralectotype has to be more restricted in botany than in zoology: Covering the group of type-specimen(s) remaining when one of the previous syntypes has been selected as lectotype (and isolectotype(s)).

The term paratype can thus retain its original definition in botany, not exactly like, but close to the use in zoology, since in botany paratypes can only be present when either one specimen (the holotype) or two or more specimens were intended to serve as nomenclatorial type(s) by the publishing author(s).

The term paralectotype is preferred to lectoparatype, though Frizzell (1933) considered the terms identical. The former term is in our opinion the best one as it does not imply that the residual group has in any way been actively selected as does the latter. The paralectotypes simply are the specimens which remain when a lectotype has been chosen from the original syntypes. It should be added that the term has been used once in botany, namely by Porter (1980), who however attributed it to Sell.

Acknowledgments

We are grateful to Ib Friis for critically reading the manuscript.

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Appendix 1. Examples of Type Citations

A. The publishing author(s) indicated one and only one specimen as the type:

1. A single collection was cited for *Gerbera tuberosa* Klatt (1886: 845): "Natal: Pinetown, H. Junod, 156."

   As thorough research revealed that only one specimen exists, at Z (Hansen, in press), this must be considered the holotype.

2. A single specimen was cited for *Lithocarpus perclusa* Markgraf (1924–5: 68): "Nordöstliches Neu-Guinea: In den Wäldern des Bismarck-Gebirges (*Schlechter* n. 18848—Fruchtend 18. Nov. 1908.—Original der Art!)."

   Accordingly, this specimen must be the holotype.

3. A single specimen was designated as holotype for *Pourouma bolivarensis* Berg (in Berg and Kooy, 1982: 39–40): "Typus: VENEZUELA, Bolívar: Cerro Venamo, Río Venamo, 950–1000 m (♀), *Steyermark, Dunsterville & Dunsterville 92936* (Holotype: VEN; isotype: U). Additional collections: VENEZUELA. Bolívar: Cerro Venamo, Río Venamo 900–1000 m (♀), *Steyermark, Dunsterville & Dunsterville 92850* (U, VEN); Río Anawaray-parú, 134 km S of El Dorado, 900–1000 m, *Steyermark, Dunsterville & Dunsterville 104466* (NY, VEN)."

   In this modern citation of types the holotype and isotype are clearly designated. Specimens cited as "Additional collections" are paratypes.

B. The publishing author(s) designated two or more specimens as types:

Two collections were cited as types for *Scleropyrum leptostachyum* Pilger (1924–1925: 123–124): "Nordost Neu-Guinea: Sepik-Gebiet, Felsspitze, Gebirgswald bei 1400–1500 m. ü. M. (*Ledermann* n. 12845—♀ Blüte im August 1913; Typus!); ders. Standort (*Ledermann* n. 12749—♂ Blüte im August 1913; Typus!); ders. Standort (*Ledermann* n. 12963); Lordberg, lichter montaner Wald, 1000 m. ü. M. (*Ledermann* n. 10324—Dezember 1912)."

The two collections cited as "Typus!" are syntypes in a narrow sense but are accorded special status in Art. 7.5 for lectotypification (the lectotype must be chosen from them). Under the footnote definition of paratypes (bottom p. 80 of Sydney Code) ". . . the remaining cited specimens are paratypes and not syntypes."

If a subsequent author selects one of the two specimens cited as "Typus!" as the lectotype, e.g., *Ledermann 12845,* then the other, *Ledermann 12749,* becomes, as proposed above, a paralectotype. The remaining specimens continue to be paratypes.

Duplicates of all categories are designated by the prefix iso-.

C. The publishing author(s) failed to indicate a type(s):

Ten different collections were cited for *Gerbera welwitschii* S. Moore (1916: 284–285): "Hab. Angola; *Welwitsch,* 3599, 3600, 3601, 3602, 3603: junction of rivers Longa and Lazingua; *Baum,* 641. Nyassaland; *Buchanan,* 922: Milanji Mt.; *A. Whyte,* 111, *Mrs. Arthur Shinn*: Nyika plateau; *Miss Henderson.*"

All are syntypes in the broad sense. Hansen (in press) selected *Welwitsch 3599* (BM) as the lectotype. The remaining collections become, as proposed above, paralectotypes.

Duplicates of all categories are designated by the prefix iso-.

ON THE TYPIFICATION OF *SUILLUS* (BOLETACEAE, BASIDIOMYCOTINA)

Mary E. Palm and Elwin L. Stewart[1]

Summary

The generic name *Suillus* Micheli ex Adans. is lectotypified by *Suillus granulatus* (L.: Fr.) Kuntze. A neotype collection is designated for *S. granulatus* and a description of microscopic characters is provided. *Suillus* S. F. Gray no longer has nomenclatural standing and *Suillus luteus* (L.: Fr.) S. F. Gray (ut "[Schaeff.]") is replaced by *S. granulatus* as type.

The change in starting-point date enacted at the 1981 International Botanical Congress in Sydney, Australia, created the need to completely revise author and bibliographic citation for the generic name *Suillus*. The genus must also be lectotypified because *Suillus luteus* (L.: Fr.) S. F. Gray (ut "[Schaeff.]"), heretofore considered the type species, is unacceptable in that position.

Micheli (1729) was the first to use *Suillus* as a generic name. The name was applied to 25 species of boletes. Micheli's name predates Linnaeus (1753) and is not valid. Under the pre-Sydney Code the first valid publication of *Suillus* was by Gray (1821). Gray attributed the generic name to Micheli (1729) but included only *Boletus luteus* Schaeff. in his monotypic genus. As Donk (p. 303–304, 1955) stated "Since the one species he [Gray] retained under it [*Suillus*] is at least very doubtfully acceptable as the type of *Suillus* Mich., his emendation should rather be considered a misapplication which by the introduction of the later starting-point for these fungi acquired the status of a 'new' genus . . . ." Due to the recent change in starting-point date, Adanson's (1763) use of the name *Suillus* now constitutes the first valid use of the generic name. The correct citation is therefore *Suillus* Micheli ex Adans., Fam. Pl. 2: 10. 1763.

Suillus granulatus (L.: Fr.) Kuntze is the appropriate choice for type species of *Suillus* and *S. luteus* is unacceptable in that position. As indicated previously, *Boletus luteus* Schaeff. was the only species included by Gray (1821) in *Suillus* and consequently *S. luteus* has heretofore been considered the type species of *Suillus*. *Suillus granulatus* satisfies a criterion essential for selection of a lectotype not met by *S. luteus*. The lectotype must have been included by either Micheli (1729) or Adanson (1763) or both. Adanson (1763) cited "Mich. t. 68, 69." in his delimitation of *Suillus* but listed no species names. Fries (1821) cited "Mich. t. 69. f. I" as a synonym of *Boletus granulatus* L. This plate and figure correspond to Micheli's (1729) "Suillus esculentus, crassus, viscidus, superne obscurus, inferne subluteus, pediculo brevi, tenui, concolore, punctis, & lituris rubris notato Tab. 69. fig. I." Fries (1821) presumably did not believe that any of Micheli's species represented *Boletus luteus* L. because none of Micheli's species or figures were identified by Fries as *B. luteus*. Therefore *S. luteus* is not clearly synonymous with any of Micheli's species. Additionally, typification of *Suillus* by *S. granulatus* conserves the current usage of *Suillus*. For these reasons we designate *S. granulatus* lectotype of *Suillus*.

Suillus Micheli ex Adans., Fam. Pl. 2: 10. 1763.
LT: *Suillus granulatus* (L.: Fr.) Kuntze (≡*Boletus granulatus* L.: Fr.)

Suillus granulatus lacks a designated type collection. Efforts to locate original or authentic collections of *S. granulatus* have been unsuccessful. Collection #54, Fungi Exsiccati Suecici (UPS) is topotypic (geographically relevant material) and matches Linnaeus's (1753) circumscription. After critical examination this collection is designated as neotype of *S. granulatus*. The collection packet at UPS has been appropriately annotated. A description of the microscopic characteristics of this collection follows.

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