

## (346–361) Miscellaneous proposals aimed at enhancing or clarifying aspects of the *International Code of Nomenclature for algae, fungi, and plants*

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This series of proposals addresses several unrelated issues that aim to enhance the effectiveness of the *Code* (McNeill & al. in *Regnum Veg.* 154. 2012) through some additional provisions, and also to provide some clarifications. Most issues dealt with here relate to all groups of organisms embraced by the *Code*. A separate series of proposals primarily relating to the naming of fungi, supported by the 10th International Mycological Congress (IMC10) 2014 and the International Commission on the Taxonomy of Fungi (ICTF), has already been published (Hawksworth in *Taxon* 64: 858–862. 2015; and in *IMA Fungus* 6: 199–205. 2015).

### Harmonization of terms between different *Codes*

**(346–354) Instruct the Editorial Committee to make the following changes in terminology throughout the *Code*, in accordance with the recommendations of the International Committee on Bionomenclature:**

**(346) Replace “effectively published” by “published”.**

**(347) Replace “validly published” by “established”**

**(348) Replace “legitimate” by “compliant”**

**(349) Replace “illegitimate” by “non-compliant”**

**(350) Replace “deposited” by “registered”**

**(351) Replace “correct” by “accepted”**

**(352) Replace “listed” by “protected”**

**(353) Replace “nomenclatural type” by “name-bearing type”**

**(354) Replace “name and type” by “nominal taxon”**

The issue of the five organismal *Codes* not all employing the same term for a particular nomenclatural act or attribute of a scientific name is a long-standing issue, and was brought to the fore by the International Union of Biological Sciences (IUBS), at its General Assembly in Amsterdam in 1991, which encouraged “where possible, the use of identical terms” (Younés, *Promoting Life Sciences for a Better Human Life*: 66. 1992). Some progress in this direction has been made in the different *Codes* since that time, stimulated by the work of the IUBS/International Union of Microbiological Societies (IUMS) International Committee on Bionomenclature (ICB), which was established in 1994 to foster collaboration and harmonization between the *Codes*. The first proposals on terms arising from the ICB were debated at the St Louis Congress in 1999, a few of which, including the use of “heterotypic” and “homotypic”, were adopted (Greuter & al. in *Englera* 20: 18–32. 2000). The ICB has now proposed an updated list of 18 recommended nomenclatural terms for use across all *Codes* (David & al. in *ZooKeys* 192: 67–72. 2012). Nine of those terms are ones currently used in the *ICN*, while the others are not. Proposals to adopt those nine are enumerated above, and, as not all are related, they should be voted on separately.

The issue of differing terminologies is not just the issue of a constraint in discussions between the *Codes*, but introduces an unnecessary layer of complexity in teaching biological nomenclature across different groups, and in all-organism nomenclatural databases.

Adoption of these changes at this time would be especially valuable as a new edition of the *International Code of Zoological Nomenclature* is currently in preparation. Nine terms currently used in that *Code*, the same number as in the *ICN*, differ from the recommendations of the ICB. If all, or even some, of the above proposals are adopted at the Shenzhen Congress in 2017, there is a strong possibility that zoologists will also decide to follow the ICB recommendations on terminology in their new edition.

### Status of special forms

#### (355) Insert a new Note after Art. 37.3 and a cross-reference at the end of Art. 4 Note 4 (new text in bold):

“[Art. 37] *Note 0*. Indications of special forms (see Art. 4 Note 4) that meet the requirements for valid publication may serve as basionyms or replaced synonyms of names in ranks recognized by this *Code*. Names of special forms do not compete with names at the rank of form (Art. 4.1).”

“[Art. 4] *Note 4*. In classifying parasites, especially fungi, authors who do not give specific, subspecific, or varietal value to taxa characterized from a physiological standpoint but scarcely or not at all from a morphological standpoint may distinguish within the species special forms (*formae speciales*) characterized by their adaptation to different hosts, but the nomenclature of special forms is not governed by the provisions of this *Code* (but see Art. 37 Note 0).”

In the course of editing and refereeing mycological papers, instances have arisen where authors have considered the rank of “special form” to be equivalent to that of “form” and wished to use special form names, when they met the requirements for valid publication, as basionyms of new combinations. This issue is coming to the fore now as molecular work increasingly reveals that long-recognized special forms can represent separate species. The proposed additional two sentences aim to emphasize that “special form” designations are not equivalent to the rank of “form”, but that they can be used in combinations where the criteria for valid publication have been met. While special form designations published on or after 1 January 1953 do not meet the criteria for valid publication, as they do not have a clear indication of rank (Art. 37.1), there are instances where these have been introduced with diagnoses and types prior to that date.

### Limitations to the use of illustrations as lecto-, neo-, and epitypes

#### (356) Insert a new paragraph after Art. 9.3 as follows:

“9.3*bis*. On or after 1 January 2019, an illustration may not be designated as the lectotype of the name of a fungus unless it shows, in the opinion of the typifying author(s), features diagnostic of the taxon.”

#### (357) Insert a further new paragraph after Art. 9.3 as follows

“9.3*ter*. On or after 1 January 2019, illustrations may not be designated as either neotypes or epitypes of the names of fungi.”

In the absence of original material consisting of specimens, the current *Code* obliges those selecting lectotypes to choose any illustration that is part of the original material as a lectotype (Art. 9.12). This provision does not work well for mycologists (including lichenologists) where the cited illustrations rarely show diagnostic features and may even represent a different taxon from that to which the name has been applied by subsequent workers. The consequence of this is that

epitypes have sometimes been designated based on historical specimens from which DNA cannot be extracted or in which microscopic details cannot be confirmed. As an epitype, once selected, cannot be rejected independently by a later author, in order to resolve such situations and clearly fix the application of a name, conservation with a new type is the only option.

This is a particular problem in the case of 18th century works, and the situation can be illustrated by two recent examples. First, in the original description of *Lichen muralis* Schreb. (*Spic. Fl. Lips.*: 130. 1771) no original specimens could be located, but Schreber cited two polynomials, one of which was accompanied by an illustration (Micheli, *Nova Pl. Gen.*: 94, pl. 51 fig. 4. 1729). The species to which the Micheli figure refers is obscure, but does not agree with the species now known as *Lecanora* (or *Protoparmeliopsis*) *muralis* to which Schreber’s name has been consistently applied. As this illustration was potentially available for designation as a lectotype, in order to retain the current usage of Schreber’s epithet it was necessary to conserve the name with a conserved type (Hawksworth & al. in *Taxon* 64: 1316. 2015).

Second, in the case of *Lichen pubescens* L. (Linnaeus, *Sp. Pl.* 2: 1155. 1753), no extant material of Linnaeus was available, so Jørgensen & al. (in *Bot. J. Linn. Soc.* 115: 343. 1994) designated an illustration cited in the protologue as lectotype (Dillenius, *Hist. Musc.*: pl. 13, fig. 9. 1742), and an undated unlocalized specimen in LINN annotated by Linnaeus’s son (and which had previously been incorrectly indicated as a lectotype) as epitype (LINN 1273.286). It has since emerged that this and an allied species can only be reliably separated by molecular methods (Boluda & al. in *Lichenologist* 48: in press. 2016), so that a proposal for conservation with a conserved type is now necessary to conclusively resolve the situation.

In addition, to ensure that specimens, from which there is the possibility of microscopic and microchemical examination, and further of DNA being extracted in the future (even if not technically possible today), it would be prudent to rule that illustrations are not acceptable as neotypes or epitypes for fungal names in the future.

While these proposals as worded are restricted to names of fungi, the Section may wish to consider whether they might be applied to all organisms treated under the *Code*.

### Introduction of a List of Protected Works

#### (358) Insert a new paragraph to follow Art. 15.6:

“15.7. Names in specified ranks included in publications listed as protected works (*opera utique protecta*, App. VII) are to be treated as if conserved against earlier homonyms and competing synonyms. Proposals for the addition of publications to App. VII must be submitted to the General Committee (see Div. III), which will refer them for examination to the committees for the various taxonomic groups (see Rec. 34A; see also Art 14.12 and 5.2).”

It appears anachronistic that the *ICN* has a list of suppressed works (*opera utique oppressa*; App. VI) but not a list of protected works. The International Commission on Zoological Nomenclature (ICZN) already has an “Official List” of works, the level of protection in the listed works being determined by the Commission (Melville & Smith, *Official Lists and Indexes of Names and Works in Zoology*: 317–320. 1987). This proposal would open this same possibility to those working with algae, fungi, and plants. In the case of the fungi, it could be of value as a short-cut in the production of Lists of Protected Names (Art. 14.13) where names accepted in a monograph, after scrutiny and approval by the Nomenclature Committee for Fungi and

the General Committee, could be accepted for protection without the need for a separate list to be extracted from the monograph.

The system of sanctioning works has been a great force for the stability of names and their application in fungi. This is much more than just affording protection against homonyms and competing synonyms, as suggested above, as it also enables typifications to be made from either the sanctioning or the original protologue (Art. 9.10). The proposal to extend sanctioning to other works received limited support (51.8% in favour) at the 10th International Mycological Congress in 2014 (Redhead & al. in IMA Fungus 5: 449–462. 2014). However, there was stronger support for the term “sanctioned” being replaced by “protected” (63.8%) and, if so, discontinuance of the use of the colon (“:”) to indicate sanctioned status (71.8%). If the above proposal is accepted, the current sanctioning works could be placed on the List of Protected Works, with the special provisions related to typification mentioned in parenthesis, in a parallel manner to the citations in the current App. VI. The Editorial Committee, in consultation with the Nomenclature Committee for Fungi, could then consider how to reword Art. 15.1–15.6 to reflect the change in terminology.

#### Nomenclatural acts in suppressed works

##### **(359) Insert a new phrase in the first sentence of Art. 34.1 as follows (new text in bold):**

“34.1. Names in specified ranks included in publications listed as suppressed works (*opera utique oppressa*; App. VI) are not validly published **and any other nomenclatural acts associated with those names are ineffective.**”

When the Appendix of Suppressed Works was first introduced into the *Code* at the Tokyo Congress in 1993, no reference was made to the status of nomenclatural acts other than the valid publication of names. This was understandable, as the original list included almost exclusively 18th century works in which there was no concept of later typifications. Now some 19th and 20th century works have been added to the Appendix, there is a need to clarify the situation with regard to later typifications and any other nomenclatural acts at the specified ranks. The situation is a particular issue in Motyka’s suppressed *Porosty (Lichenes): Rodzina Lecanoraceae* (4 vols. 1995–1996) in which numerous lectotypifications of previously validly published names were made. Some of these later typifications may be acceptable and in accordance with current usage of the name, whereas others are not. In order to avoid the need to make any proposals to effect changes in the types selected in such suppressed works, it would be prudent to rule all such acts as ineffective. This proposal would not preclude later workers from designating as lecto-, neo-, or epitypes the *same* elements that had been designated in a suppressed work.

#### Homonyms between different Codes

##### **(360) Add a new paragraph to Art. 54.1 as follows:**

“(c) A name published on or after 1 January 2025 for any organism covered under this *Code* is illegitimate if it is a later homonym of a name available under either the prokaryote or the zoological *Code*.”

##### **(361) Amend Rec. 54A.1 as follows (new text in bold):**

“54A.1. Authors naming new taxa under this *Code* **prior to 1 January 2025** should, as far as is practicable, avoid using such names as already exist for zoological and **prokaryote** taxa.”

The issue of identically spelled generic names being applied to organisms treated under different *Codes* is a long-standing issue, and can be a cause of confusion and misunderstandings, especially for users of search engines in databases. The problem has become more acute as the worldwide web is increasingly used by non-specialists. McNeill (in Biol. Int. Special Issue 34: 17–40. 1997) found that there were 8784 generic names in zoology that were homonyms of ones subject to the then botanical *Code*, of which 3554 were in current use. Recognizing that there was no easy way to deal with the issues of the past, Rec. 54A.1 was introduced into the *Code* at the St Louis Congress in 1999, with overwhelming support from the mail ballot (159 Y vs. 65 N; Barrie & Greuter in Taxon 48: 771–784. 1999), recommending that names already existing under other *Codes* should be avoided when naming new taxa. The annual checklist releases of the *Catalogue of Life* (Species 2000, 2015 Annual Checklist. 2015) now make searching for homonyms easier than ever before; 143,327 generic names are accepted across all groups of organisms in the 2015 release, which is based on information drawn from 151 databases; the catalogue is available for searching online free of charge (<http://www.catalogueoflife.org/col/>).

The date of 2025 is proposed here to allow time for the International Commission on Zoological Nomenclature to consider incorporating a complementary proposal into the next edition of the zoological *Code*. In the event that Proposals 082 and 083 (Hawksworth in Taxon 64: 861. 2015; and in IMA Fungus 6: 203–204. 2015), which relate to avoiding homonyms of names of fungi with those of animal protists and prokaryotes, are approved in Shenzhen, it will be necessary for the Editorial Committee to revise the proposed changes in wording of Art. 54 to incorporate all the approved new provisions.

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