Increasing nomenclatural stability by preventing the introduction of long-forgotten names that will compete with ones in use: A solution must be found, and soon

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Abstract The recording of previously undetected or overlooked, effectively and validly published names from long-forgotten literature, their absorption into datasets, such as the International Plant Names Index (IPNI) and Tropicos, widely accessible electronically through the worldwide web, and subsequent adoption as accepted names in the literature, have an undeniably destabilizing impact on plant nomenclature. It is critically important that a way be found soon to prevent such names, which are sometimes, but not always, laboriously proposed for rejection from disrupting the stability of the names in use for organisms covered by the International Code of Nomenclature for algae, fungi, and plants. For effect to be given to such a preventative system, the establishment and formal recognition of a designated online database of names of families, genera, and species published up to 1970 for vascular plants is of the utmost importance. One way to institute such a system would be to make the inclusion, on a specific date, of a plant name in that database—we propose IPNI—a condition for valid publication for names that are retrieved from literature published prior to 1 January 1970. We argue that this system, based on IPNI 2020, should be implemented on 1 January 2020. Until then the work being done to sanitize existing indices of plant names must continue unabated.

Keywords limiting priority; nomenclatural stability; nomenclature; valid publication; vascular plants
incorrect (or in some cases illegitimate) and in need of proposals to conserve (the name threatened) or reject (the threatening names) to ensure the retention of widely used names. In other cases, where valid publication is not clear, requests for binding decisions must be pursued, a process that is as lengthy as conservation/rejection proposals. Another avenue that can also be pursued is the suppression of the work itself (opera utique oppressa), names published at specified ranks in the work to be taken as not validly published. Such nomenclatural activities are extremely time-consuming, as based on established procedure it can take up to six years for a proposal that requires the involvement of two committees (a Specialist Committee and the General Committee), a Nomenclature Section, as well as ratification by an International Botanical Congress (IBC), before a decision is entrenched. We therefore do not see any advantage or benefit to be derived from retrieving such overlooked names. As noted by Cronquist & Gleason (1968), “...no proper purpose is served by ressurrecting [sic] such names or by using them to invalidate [sic; what is meant is ‘illegitimise’] established names for which they are earlier homonyms.”

Reviving overlooked names can be detrimental to nomenclatural stability in several fields of scientific and popular natural history endeavour, ranging from medicine, the horticultural trade, and agronomy, to biodiversity informatics and data management, not to mention the unwise use of human resources to study, assess, and catalogue these names. Overlooked names are of two types—those that are not indexed and those that are. Also, sometimes the name itself is not overlooked. Rather, its intended and proper application has been overlooked. Regardless, once accepted names are deemed threatened with displacement, the appropriate proposals have to be put forward to save them. However, this process is lengthy and labor intensive, thus here we argue for a different approach.

Collectively taxonomists should put an end to the introduction of names that should best remain buried; it should no longer be necessary to potentially introduce such names in the stead of well-known and widely used ones. This practice can effectively be stopped on a suitable date decided on by a Nomenclature Section and ratified by an IBC, based on an appropriate proposal to change the International Code of Nomenclature for algae, fungi, and plants (ICN or Code) (McNeill & al., 2012). The date of 1 January 2020 is proposed, as it follows some two years after the next International Botanical Congress (IBC) is held in Shenzhen, in China, in 2017, and coincides with the aimed completion of the World Flora Online (Crouch & al., 2013; Victor & al., 2013).

### HISTORICAL BACKGROUND

Since the inception in 1905 of what today is referred to as the Code, this document has aimed at stabilizing nomenclature. More than 100 years later it is still being refined in several respects (see for example Barkworth & al., 2016a, b) to adequately provide a methodology that will prevent the introduction of long-forgotten, rarely used names as a service to the end-users of botanical nomenclature. In addition, once these long-forgotten names have entered both hard-copy and electronic nomenclatural databases they tend to become lodged and spread to others, not unlike computer viruses. Not cleansing such datasets or at least not purging such names from datasets once their (usually non-)placement is resolved, merely adds to the expanding nomenclatural burden applicable to organisms covered by the ICN.

Over the past more than 10 decades, several attempts have been made to address this problem, including the creation, over 60 years ago, of a Special Committee on Stabilization, appointed at the Nomenclature Section of the 1954 International Botanical Congress held in Paris. The chairman of this Committee summarized the conclusions of the meeting in Paris, suggesting possible ways and approaches for dealing with the issue, “from one or more of which it would seem that acceptable proposals are likely to be evolved” (Gilmour, 1954). These included nomina specifica conservanda, nomina specifica rejicienda and suppressed works, thrusts that have been developed and refined since then and are now included in the ICN. A further action suggested was the “banning of names not taken up after a certain date”. This idea was based on a proposal submitted to the same IBC, as New Article 24bis, Prop. B (Pré-Congrès de Genève): “A specific or generic name not taken up in a botanical paper published since 1900 in accordance with art. 39 may not be used to replace a currently accepted name.” According to Lanjouw (1954) this proposal “was accepted unanimously by the Genève conference on the understanding that the principle of nomina specifica (et generic) rejicienda will be introduced at the same time.” Nevertheless, it was eventually rejected by a small margin (Yes, 149: No, 150: Ed. Comm., 14: Sp. Comm., –) (Stafleu, 1954).

The matter was again raised at the Nomenclature Section of the following IBC, which was held in Montreal in 1959, with two proposals by Little (1957), namely: (1) Art. 31bis. “In Spermatophyta a generic or specific name more than fifty years old is rejected as not effectively published when it neither has been accepted by a second author nor has been cited in an index of scientific names within fifty years after publication or by 1 Jan. 1960, if published before 1910” and (2) Art. 31ter. “To be effectively published, a name of a genus or species of Spermatophyta published before 1900 must have been cited in Index Kewensis including Supplementa I to XI” (Little, 1957). The Rapporteur (Lanjouw, 1959) claimed that the proposals were studied by the Special Committee on Stabilization and were not supported in their report, which apparently influenced the voting, resulting in the rejection of both proposals (New Article 31bis Prop. A [5 : 216 : 2]; New Article 31ter Prop. A [8 : 211 : 3]).

A decade later, a similar proposal was submitted to the Nomenclature Section of the IBC held in Seattle in 1969 by Cronquist & Gleason (1968) to stop “the continuing dribble of obscure names which antedate names in use and which come to light either happenstance or through careful literature search, after having escaped previous bibliographic attention”. This proposal was phrased as “(136) Proposal to emend Article 29 of the Code. Add a new final paragraph, before Recommendation 29A: Any specific or generic name of a seed plant which appeared before 1885 and which was not
included in the original edition of Index Kewensis or any of its supplements, up to and including the 15th supplement, is considered not to have been effectively published.” Gleason in particular had been campaigning for nomenclatural stability for many years, calling attention to the fact that if one found a long-forgotten or never-used name in some obscure book, one was “supposed to drag it out, dust it off and introduce it to the long-suffering botanical public” (Gleason, 1930). His proposal (known as the Gleason proposal) had been informally known for years. The Rapporteurs (Stafleu & Voss, 1969) did not disfavor the proposal (referred as Art. 29 Prop. B), commenting that it had “the merit of referring to inclusion in a supplement not yet published. Thus it is possible to safeguard all names actually in use even though at present not listed” (Stafleu & Voss, 1972). The proposal was discussed in the Nomenclature Section under “New article 14bis”. There was no opposition and the only problem raised referred to generic names that at the time had not been completely recorded. In the meeting, Cronquist withdrew the words “or generic” from the proposal to make it more acceptable. It was noted by a delegate that the proposal was the way to go, but conditions for it would only be achievable by the year 2000 [our emphasis]. A vote was then taken and the proposal was rejected. That was almost 50 years ago.

About 30 years ago, in April 1988, a plan to compile a list of currently used generic names of plants was mooted at a meeting held at the International Mycological Institute at the Royal Botanic Gardens, Kew. At the time having such a list available was widely understood to be a means to stabilize and secure plant nomenclature, especially if such names in current use (NCUs) were granted priviledged nomenclatural status (Hawksworth & Greuter, 1989a, b). This initiative eventually gave rise to the establishment of a Special Committee on Plant NCUs under the auspices of the General Committee. The concept of having NCU lists available generated considerable interest and gained substantial support (Greuter, 1991a, b, c, 1992a, b). However, entrencing the concept in the Code was not supported at the 16th IBC held in Missouri, U.S.A., in 1999.

### A NEW APPROACH TO, AND PROPOSAL FOR, NOMENCLATURAL STABILITY IS REQUIRED

To prevent the retrieval of long-forgotten names from disrupting the established nomenclature, we considered expanding the list of suppressed works (Appendix VI of the ICN). However, this would be inadequate to solve the problem because some of the works from which forgotten names are being retrieved indeed contain widely used and validly published names. It was only recently that some journals, such as Gardeners’ Chronicle, were combed for other names that at the time were not considered as validly published, for example names referred to as “garden names” by their authors (see for example Smith & Figueiredo, 2014, on the case of Agave mooreana Mast. & T.Moore; Masters & Moore, 1874). It is obvious that those names were not missed by the compilers of Index Kewensis; at the time they were just not considered as intentionally published botanical names.

At present, when overlooked names are retrieved from the literature either they are adopted, and thus place a widely used name, or they are proposed for rejection outright (McNeill & al., 2012: Art. 56.1) or through the conservation of another name (McNeill & al., 2012: Art. 14.1) or the work in which they appear is proposed for suppression, which renders the names to be not validly published (McNeill & al., 2012: Art. 34.1). Displacing the widely used name disrupts the stability of such names. Proposals for rejection achieve stability, but at what cost? The process is much too labor intensive. It remains infinitely easier to simply adopt an older, long-overlooked name, based on the ICN’s principle of priority, than to develop an argument for a conservation or rejection proposal, or for a binding decision. The number of such proposals has risen over time (Table 1), the average number of proposals for the last five years (83) being more than double the average from 1985 to 1989 (36). This is a significant number, and it additionally does not account for and reflect the inordinate effort—in effect the associated hidden costs—required to determine whether a name should be proposed for conservation or rejection, or not. The opposite must be achieved: it should be more difficult to reinstate an overlooked name, and therefore easier to retain one that has been in use for many years, decades, or even centuries. This clearly illustrates the tension between the ICN’s aim of nomenclatural stability (Preamble 1; “This Code aims at the provision of a stable method of naming taxonomic groups, …”) and principle of priority (Principle III; “The nomenclature of a taxonomic group is based upon priority of publication.”). Furthermore, the number of proposals for suppression of publications presently amounts to 48 (four put forward in 2015 and 2016), which indicates that there is a lingering disruption caused by old publications that interfere with widely used names. We propose that the system is reversed, so that when a name is revived from (typically old) literature its adoption would be subject to the process of a proposal in order to be adopted. Currently a retrieved name has life until it is “killed”;

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with the newly proposed procedure a dug-up name is “dead” until it is revived.

To prevent some of these serious nomenclatural disturbances, all of which are time-consuming to resolve, names published before a certain date and that were not recorded in a designated online database of scientific names of vascular plants—we propose IPNI, or a successor—by a certain date should not have any status and therefore not be accepted and adopted. Thus, we suggest approval at the IBC that will be held in Shenzhen, in China, in 2017, of a proposal that will contribute towards preventing an overlooked name that was published before 1970 from displacing a widely used name.

We propose that this is achieved by the designation, on a specified date, of an existing online database of recorded names, IPNI, or a successor, against which any pre-1970 name that may surface should be checked. If the name was not recorded in that database prior to the specified date—we propose 1 January 2020—it must be discarded as not validly published.

The date on which a record was added to the database must be shown online. In many databases records have a “record history” that shows when they were added to the database, or amendments made to them, as is the case, for example, in IPNI. Therefore, if an overlooked name was added to the designated database after 1 January 2020, the date (post-1 January 2020) in the record history will show that it must be considered as not validly published. Adoption of this proposal (see Smith & al., 2016; this issue), will in no way impact on the work processes of the designated database and any user will be able to access the database online to check this aspect of the validity of a name.

The proposal does not cover taxa below species as these are not comprehensively covered in most online databases. Taxa above family level are not subject to priority. Further, the proposal is limited to names of vascular plants as other groups are also not comprehensively covered by any existing major database.

While there may be a desire to continue recording overlooked names published before 1 January 1970, if such names have not been recorded in the designated database they will not be validly published names, and therefore they will not compete with well-known and widely used ones.

Adopting this proposal will limit the principle of priority of publication (McNeill & al., 2012: 3; Principle III), but it will considerably improve stability and simply represents a further case of specified limitation as mentioned under Principle IV (McNeill & al., 2012: 3). This is a sensible and effective way of achieving a greater level of nomenclatural stability and is in line with the spirit of the ICN’s Preamble “1. This Code aims at the provision of a stable method of naming taxonomic groups, avoiding and rejecting the use of names that may … throw science into confusion” (McNeill & al., 2012: 1).

Consequences of accepting such a proposal will be:
• that no further names from any literature sources with a date earlier than 1 January 1970 will be added to the expanding list of unplaced names. For example, at present (March 2016), there are ca. 1.0 million names in The Plant List (http://www.theplantlist.org), 44% of which are synonyms, while a further 22% are unresolved, leaving only 33% as accepted names. Additional names that are retrieved from the literature mostly, but not exclusively, add to the number of unresolved names. Attempting to place these names is time-consuming and in many cases only speculative;
  • that considerably less time will be spent assessing whether a name requires nomenclatural action, such as conservation or rejection;
  • a reduction in the number of situations (e.g., requests for binding decisions on validity) that need resolution through referral to permanent specialist committees established under the ICN;
  • that fewer problematic works will require to be proposed for suppression;
  • that time will be saved with far fewer names requiring proposals for conservation or rejection, or for binding decisions; and
  • an improvement of nomenclatural stability in general, with far fewer changes required to widely used names.

**SOLUTIONS TO POTENTIAL CHALLENGES**

Besides the benefits of our proposal, we also have reviewed the potential costs of, and objections to, this proposal. These are reviewed below.

1. Names in wide use that were published before 1 January 1970 and are not in the database will be regarded as not having been validly published and thus not available for use. This will have the exact opposite effect of the purported goals of the proposal. — We expect such cases to be exceedingly rare. However, the current conservation/rejection procedures in place could be applied to such cases when another name in the database threatens the name in use. In the formal conservation proposal the name to be retained could be validly published (by reference to the earlier publication) and the validating authors could make sure that the author of the name remains the original author (assuming the name and the description or diagnosis can be attributed to her or him; ICN, Art. 46.2). If no name threatens the name in use that was not included in the database, then the name need only be validly published to be retained. This potential cost of our proposal is far outweighed by the potential benefits of our proposal as it would make many current conservation/rejection/binding decision proposals/requests unnecessary. One way to assess the potential benefits and costs to the proposal is whether or not it will reduce or increase the need for conservation and rejection proposals, and we are confident that this proposal will indeed reduce the need for such proposals.

2. What about cases where the name is recorded in the database, but an earlier place of publication is discovered? — This would merely require a correction to the existing record, which is permitted by the proposed new Article.

3. What about cases where a name listed in the database was not validly published? Would they have to be taken as validly published? — No. The proposal would not accord validly published status to names that do not meet all the ICN requirements for valid publication. If such names were widely
used and threatened by another name the conservation/rejection process would have to be used to retain the name. A critical distinction is that this proposal would accord the status of “not validly published” to names not in the database. It would not accord “validly published” status to those names in the database. The rules of the ICN would still apply in the determination of validly published names contained in the database.

4. What about the situation where someone publishes a revised taxonomy and a long lost (= overlooked) name is the only name for the species that is now recognized? — To be adopted the name could be subject to the process of a proposal. Alternatively a new name could be published. It is worth noting that such replacement names can already be published when a taxon’s rank is changed as priority is limited to rank.

5. The proposal affects only vascular plants, but priority includes the other groups covered by ICN. Will this disrupt their nomenclature? — No, the proposal would not be disruptive to the nomenclature of these other groups. For example, consider a situation where a name in one of these groups (for example fossils) is a later homonym of a name that will be suppressed with this proposal. Since the name of the earlier homonym (extant vascular plant) was not databased, it likely would not be known and therefore, the later homonym in the other group (likely a fossil) would not be known to be a later homonym. The proposal would rid nomenclature of the earlier, overlooked homonym and allow the later homonym to continue to be used as it would no longer be a homonym. Conversely, considering the overlooked name (not databased) of the extant vascular plant was a later homonym, under the current rules it would need to be rejected as it would be illegitimate and under our proposal it would not be available as it would not be validly published. Either way the name could not be used.

6. The number of cases appears to be quite small. Is this problem significant? — The number of cases appears smaller than it actually is (Table 1). In several instances the overlooked names that were recently dug-out from old literature have not been recorded in existing databases because they were not extensively investigated yet, an enormously time-consuming and highly specialised process that hardly contributes to an advancement in science. Reveal (2012) mentioned that 4600 such unrecorded names were submitted to IPNI in 2011, 855 of which were binomials that had to be assessed. Reveal (2012: 2) admitted that “what taxonomic problems might result from the findings presented here are unknown as this requires the expertise of monographers and a review of extant type material”. We suggest that monographers should ideally spend their time more productively, for example on doing monographs unencumbered by having to assess the status of long-forgotten names.

7. How relevant is this proposal and is it really necessary to change the status quo? — People who work on obscure organisms whose names have a “usage sphere” that is quite limited, as well as people who work in parts of the world where the flora is only poorly documented may fail to see the pertinence of this proposal. Our audience here is likely people working on vascular plants in parts of the world where the study of the flora is well-developed and has been on-going for a long time. These will greatly benefit from the proposal, while the former will not be in any negative way affected. It should be noted that many governments around the world, regardless of the richness and diversity of the floras of their countries, will applaud the introduction of measures to ensure stability in the names of organisms covered by the Code.

**CONCLUSIONS**

In summary, we propose that if the name of a family, genus, or species of vascular plants published prior to 1 January 1970 does not appear as an entry in IPNI, or its successor, on 1 January 2020, such names will be regarded as not having been validly published. This list, which we refer to as “IPNI 2020”, will serve as an immutable reference catalogue, with no additions or deletions possible, although corrections can be made to specific entries. The list will be made permanently available on the IPNI website. This list will be automatically established, i.e., without a list having to be created especially as all records in IPNI have a so-called ‘record history’ that shows when they were added to the database, or amended. Therefore, if a pre-1970 overlooked name was added to IPNI, or its successor, after 1 January 2020, the date (post-1 January 2020) in the record history would show that it is invalid. This proposal will therefore not impact on the work processes of IPNI, and any user could access the database online to check the validity of a name.

Following acceptance of this proposal, virtually no preparatory work will be required to have the designated database, IPNI, or its successor, available on 1 January 2020, as it is already in existence and operational. Acceptance of this proposal will further have the effect of sweeping away any pre-1970 vascular plant names not in IPNI and prevent them from threatening names widely used. Having such a database, IPNI, designated will additionally serve stability by lessening the need for further conservation/rejection proposals.

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