

A PROPOSAL TO CONSERVE SPECIFIC EPITHETS OF PLANTS

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From time to time, the established scientific names of plant species of high economic value, as well as other widely known plant species, are found to be technically untenable under the International Rules of Botanical Nomenclature (Ed. 3, 151 p. Jena. 1935; Brittonia 6: 1-120. 1947). Some of these names were correct until changes, always retroactive, were made in the Rules. The old question whether to reject these familiar names in favor of other names almost unknown or whether to amend the Rules to authorize retention of these names as exceptions appears to be gaining increasing numbers of supporters. Following a discussion of the question, a proposed change in Article 21 to authorize nomina specifica conservanda, or conserved specific epithets, is stated. This proposal has been submitted to the Executive Committee.

The recent summary of botanical nomenclature since 1867 by C. A. Weatherby (Amer. Jour. Bot. 36: 5-7. 1949) reviews the history of nomina generica conservanda, which were adopted in the International Rules in 1905 but rejected by followers of the American Code.

Altogether, the number of generic names of seed plants adopted as nomina conservanda from 1905 to 1935 is approximately 793, according to the compilation by W. H. Camp, H. W. Rickett, and C. A. Weatherby (Brittonia 6: 47-93. 1948), in comparison with a total of 9810 genera accepted by C. G. de Dalla Torre and H. Harms (Genera Siphonogamarum. 921 p. Lipsiae. 1900-07) as of about a half century ago. With the latter figure as a basis, about 8.1 percent of the names for genera accepted in that work, or about one name in each twelve, have been retained as nomina conservanda in exception to the principle of priority. The principle of nomina conservanda has been tested over a period of years and has proved to be practicable. Without these nomina conservanda botanical nomenclature would be chaotic and in almost hopeless confusion.

Additional generic names published or revived since Dalla Torre and Harms' compilation generally conform to present Rules and are not eligible for conservation (Art. 21). Also, because of their shorter period of use and generally smaller size, these newer generic names could be rejected, if required, without serious confusion.

It became necessary in 1930 to amend the Rules to provide for nomina conservanda familiarum. Otherwise, a number of universally used family names would have to be rejected. When rules

for names of groups above the rank of family (Rec. VIII, IX) are formulated and these names are carefully checked, it may be desirable to extend this rule to the higher groups also. Thus, as conservation of generic names was authorized in 1905 and conservation of family names in 1930, why not conservation of specific names or, more precisely, specific epithets in 1950?

Conservation of specific names has been advocated by several American taxonomists. The following discussions are illustrations:

Shear, C. L. The failure of the principle of priority to secure uniformity and stability in botanical nomenclature. *Science*, new ser., 60: 254-258. 1924.

Gundersen, Alfred. The need of an enlarged list of botanical nomina conservanda. *Science*, new ser., 64: 182-183. 1926.

Gleason, H. A. A plea for sanity in nomenclature. *Science*, new ser., 71: 458-459. 1930.

Proposals to conserve specific names have been considered at past International Botanical Congresses and rejected each time. It is of interest to note that at the Fifth International Botanical Congress in 1930, three amendments favoring nomina specifica conservanda were submitted by the following: (1) the sub-committee on nomenclature, appointed by the Imperial Botanical Conference, London, 1924, or "British Botanists"; (2) Alfred Rehder; and (3) J. Valckenier Suringar. Three lists of specific names were proposed for conservation, as follows: (1) British Association for the Advancement of Sciences, 4 species of Podocarpus (including 2 new combinations); (2) A. J. Ewart, 43 specific names; and (3) J. Valckenier Suringar, 60 specific names of trees and shrubs. At the Sixth International Botanical Congress in 1935, proposals for nomina specifica conservanda were made by: (1) J. Adams, of Ottawa, Canada; (2) R. Troup, on behalf of various Forestry Institutions and Societies, chiefly of Great Britain (the number of forestry institutions later stated by J. Burt Davy as 38); and (3) three members of the Committee on Australian Botanical Nomenclature, or "Australian Botanists."

Article 21, providing for conservation of generic names, dates in its present form from 1930, but the essential part was adopted in 1905. It is odd but significant that outside of the examples, "generic name" does not appear and "genera" is mentioned but once. This article provides "a list of names" (category not stated) to be retained as exceptions. Except for the word "genera" in the first sentence, the broad statements about "names" and "conserved names" could apply to "a list of names" of any category. Other references to conserved names in the Rules are general. Chapter III, Section 3, includes in its title "conservation of names (Art. 19-22)" without mention of categories. Article 22 authorizes retention of "a name pro-

posed for conservation" (category not specified) when provisionally approved by the Executive Committee but in a footnote provides for nomina conservanda familiarum. This footnote and a note under exceptions to Art. 23 apparently are the bases for conservation of family names, under which a large list of 186 family names (many already correct and not requiring action) was proposed and accepted in 1935. Article 21 itself, without reference to family names, should be amended to mention them.

For definite authorization of nomina specifica conservanda the insertion of the two words "and species" after "genera" in the first sentence of Article 21 would suffice, as in one proposal of 1930, though examples of conserved specific names could be added for clarity. It seems that these general statements, including Art. 22 and the additions to Art. 21 inserted in 1930, were prepared to apply to specific names also, but nomina specifica conservanda were not accepted.

Though the principle of nomina specifica conservanda was rejected in 1935, a compromise motion by J. Ramsbottom was accepted, as follows (T. A. Sprague in Sirks, M. J. Zesde International Botanisch Congress Proc. 1: 343. 1936):

"That an International Committee be appointed to draw up a list of names of economic plants according to the International Rules, and that this list may remain in use for a period of ten years."

This motion in itself is a form of conservation of names which already are in accord with the Rules. Broad authorization to retain a list of names for ten years means stabilization of names and suspension of the Rules. Any new data on the nomenclature of these economic plants would be ignored during this period. However, this list of names of economic plants was never published.

One proposal toward stabilization of plant names was my suggested additional rule to reject old, abandoned names which had not been adopted by a second author within one hundred years after publication (Little, Elbert L., Jr. A proposal to stabilize plant names. PHYTOLOGIA 2: 451-456. 1948). A similar proposal by Otto Kuntze in 1893 received no support from the International Committee in 1905. The old Berlin Rule provided also that no name which had not come into general use within fifty years from its publication need be taken up unless rehabilitated by a recent monographer. My proposal was not approved by the Central Committee on Nomenclature of the American Society of Plant Taxonomists and was decisively rejected by the Jury of the Society. The Committee interpreted this proposal as designed toward infiltrating into the Rules the principle of nomina specifica conservanda and suggested that if this principle is adjudged to be good, the issue should be considered openly.

M. L. Fernald (The confused bases of the name *Pinus palustris*. *Rhodora* 50: 241-249. 1948), interpreting my modest proposal as prohibiting name changes, contributed important notes on past changes of names and on proposals to conserve names of economic plants. He gave the interesting figure that at least 45 percent of the names of vascular plants described in the fifth edition of Gray's Manual (1867) have been changed through restudy of the plants or their nomenclatural types or through changes in the International Rules; 33 percent of the names in the sixth edition (1890) have been changed; and at least 30 percent of the names in the seventh edition (1908) have been changed. After noting some difficulties in previous attempts to conserve names of economic plants, he offered the following significant advice (p. 249): "Those who earnestly wish conservation of really very important names of economic plants should proceed with care, looking out that their would-be conserved names rest upon undoubted types."

In spite of rejections at previous Congresses, the principle of nomina specifica conservanda is becoming more popular and is definitely on the agenda of the next Congress. The International Conference on Botanical Nomenclature and Taxonomy, organized by the International Union of Biological Sciences and held at Utrecht, Netherlands, June 14 to 19, 1948, appointed a Special Committee to deal with questions of nomina specifica conservanda and report to the Stockholm Congress in 1950. Apparently because of my proposal previously mentioned, I was made a member of this Committee.

Seven main objections to the principle of nomina specifica conservanda are stated below, together with arguments against them.

1. "Priority is the fundamental basis of nomenclature."

However, various codes of nomenclature in the past, including the Kew Rule and the Berlin Rule, have made exceptions to priority, as Weatherby noted in his historical summary cited above. The taxonomists of the nineteenth century did not adhere rigidly to priority. Various arbitrary starting dates of nomenclature in different groups of plants, including even the date 1753, have been made in limitation of priority. The principle of nomina generica conservanda and nomina conservanda familiarum has been adopted successfully as an exception to priority.

Though the first 19 of the International Rules are devoted to principles, the principle of priority is not mentioned before Art. 16. Priority is not one of the general considerations and guiding principles (Art. 1-9). First among the essential points in nomenclature (Art. 4) is "to aim at fixity of names," but priority is not listed. Thus, the Rules indicate that stability of names is far more important than priority. Most users of scientific names of plants other than taxonomists surely would agree.

2. "It is easier to change a specific name than to make an exception in the Rules for one name." I formerly accepted this argument, feeling that the Rules were already too complicated. However, names of monotypic genera, such as Maclura Nutt. and Welwitschia Hook. f., have been conserved. Thus, exceptions for single species as well as for other genera of few species have been made successfully in the interest of stability. Also, the Rules provide in appendixes for lists of individual names, specific and other, rejected in special cases as nomina ambigua (Art. 62) and nomina confusa (Art. 64). If scientific names were used only by taxonomists, who are accustomed to lists of synonyms and name changes, perhaps it would be simpler to change a name than to make a special exception in the Rules to retain it. However, the thousands of other persons affected support the view that stability of scientific names of economically important plant species justifies the authorization of individual exceptions to the Rules as needed.

3. "Taxonomists do not want conserved specific names, and the public does not use scientific names, anyway." It is obvious that proposals to conserve specific names have been defeated decisively at past Botanical Congresses. Taxonomists are familiar with lists of synonyms and are accustomed to frequent changes of names and do not need to conserve specific names for themselves alone. The average persons, who seldom, if ever, use scientific names and have never heard of the International Rules obviously are not concerned with the technicalities and inconsistencies of botanical nomenclature. It is significant that a large, intermediate group of workers in applied plant sciences is most interested in conserving specific names of a limited number of economic plants and is most active in proposing the necessary changes in the Rules. These technicians include botanists other than taxonomists, horticulturists, and foresters. These plant scientists to whom the Latin names, being more precise than common names, serve as necessary tools, would benefit most by the stability of conserved specific names. If all the botanists (instead of only taxonomists) attending the next Botanical Congress could vote on this question of nomenclature, nomina specifica conservanda would be approved without difficulty.

4. "The number of nomina specifica conservanda might become very large and cumbersome." It is feared that each botanist might propose his own list of favorite names. Of course, it is difficult to predict how many names might be proposed for conservation and what portion of these would be accepted eventually by Botanical Congresses. Nomina generica conservanda, which have been in successful use since 1905, will illustrate what may be expected. As noted above, they have not been too

numerous nor cumbersome. Though names of some small and relatively unimportant genera were included, the principle of nomina generica conservanda has contributed greatly to stability and prevented countless confusing nomenclatural changes. At present, relatively few additional generic names are being proposed, and these mostly are homonyms affected by a change in the Rules or are in the lower plants, which have not been thoroughly indexed or searched for names needing action. The number of additions soon will become negligible.

Obviously, some restrictions should be placed upon specific names to be conserved, just as are provided for generic names at present under Art. 21. These limitations of Art. 21 to names "which have come into general use in the fifty years following their publication, or which have been used in monographs and important floristic works up to the year 1890" would apply also to specific names. The list should be limited to names of economic species, common species, widely distributed species, or otherwise widely known species, or, in other words, to species of broad interest to persons outside the field of taxonomy.

The present method of handling nomina conservanda proposals (Art. 21, Note 1), through requirement of detailed statements, examination by committees, and final action by infrequent International Congresses, would prevent the list from becoming unduly large or unwieldy. Certain other lists provided by the Rules, such as nomina ambigua, nomina confusa, nomina generica conservanda in special groups of lower plants, the list economic plants authorized in 1935, and Opinions interpreting the Rules, have not even been issued, partly because of insufficient interest, inadequate presentation of proposals, and delayed official action. If interest in conservation of specific names should be no greater, the list will be small indeed.

It is doubtful whether the number of specific names conserved would be much larger than the list of nomina generica conservanda, or more than one or two thousand names. After a few years, relatively few additions would be needed. Also, in time greater uniformity in usage is to be expected for several reasons: the Rules should become more or less stable; names in the older, obscure books will have been accounted for; most questions about typification of the economically important species will have been settled; and the younger workers will learn the correct names.

5. "Some names in use would be changed, and stability of names would not result." As M. L. Fernald (Rhodora 50: 248. 1948) has pointed out, different botanists, especially those of different age groups or generations and those of different countries, might not agree on which name to conserve for a particular species. For some economic species older botanists learned one name and younger botanists another, and for at

at least a few species the botanists in between learned a third name! Also, for other important species two or more specific names are accepted in use, such as an older name formerly correct under the old Rules and a newer name legitimate under a recent change in the Rules but not yet widely adopted. As an illustration, Pseudotsuga douglasii has been proposed for conservation, though Pseudotsuga taxifolia is more widely used.

This objection does not seem serious. Though a few names now in use, at least by some persons, would be changed, the number would be far less than the number of changes required if conserved specific names are not authorized. The specific names to be conserved would be selected by majority votes in a democratic manner and with a spirit of arbitration and compromise. Where there is no clear preference for one name over others, none should be conserved and establishment of the legitimate name left to usage over a period of time.

6. "It would be necessary to look in a special book before using any specific name, to learn if it is conserved." The list of conserved specific names would be published as an appendix to the Rules, probably with the list of conserved generic names (Appendix III). Appendixes of nomina conservanda familiarum (Appendix II), nomina ambigua (Appendix IV), and nomina confusa (Appendix V) are provided by the Rules also. An alphabetical list of all names in the appendixes would be needed. To check a specific name for possible conservation would be no more difficult nor time consuming than checking a generic name at present or looking for a name in one supplement of Index Kewensis. The advantages of a list of conserved names with citations and types would outweigh any inconvenience. Besides, an investigator would soon learn the conserved names in his own groups, and the conserved names would be designated as such in various lists of economic plants.

7. "Supporters of the proposal want to prohibit all changes in the scientific names now in use." Those workers in applied plant sciences who have seriously studied nomenclature realize that absolute stability of scientific names is neither attainable nor desirable and that it is impossible to "freeze" the names. They understand that scientific names, like technical terms in their own sciences or words in a language, are subject to change or revision in meaning as a result of additional knowledge and through usage over a period of time. However, they do believe that the changes in names, such as Prof. Fernald's own figure of 30 percent of the names in the last edition of Gray's Manual (1908), are excessive and that the taxonomists should do something to stabilize their confused nomenclature. All that these workers are requesting is that they be permitted to retain as exceptions to the Rules only the small number of

familiar, well established names of economic plants which have been discovered to be contrary to the Rules, not 30 percent but only a fraction of 1 percent of the scientific names in use.

As mentioned above, the first essential of nomenclature is "to aim at fixity of names" (Art. 4). The question, then, is: Would a limited list of nomina specifica conservanda contribute to this "fixity of names" or would it not? Obviously, the answer is, Yes!

A very important feature of acceptance of nomina specifica conservanda is the improved relationship between taxonomists and workers in other branches of plant sciences which would follow. This minor concession permitting retention of a relatively small number of names of economic plants would result in greater cooperation between the makers and users of plant names and in greater sympathy and support for taxonomic work. Through the privilege of proposing names for conservation for final decision by an International Botanical Congress, the users of scientific names could participate in a small but effective way towards the elimination of confusion in nomenclature. To authorize retention of a few specific names would really make the Rules stronger and would give the Rules increased support.

The probable alternative to nomina specifica conservanda is not pleasant and is even less desirable. If conserved specific names are not authorized by the next International Botanical Congress, then workers in applied plant sciences in different countries may prepare their own lists of names of economic plants, including a few retained as exceptions to the Rules, to be used for specified periods of time. Lists of this kind have already appeared. For example, B. J. Rendle (Names of timber trees. Ann. Appl. Biol. 32: 184-185. 1945) mentioned the lists prepared by Australian foresters and by British foresters containing standard scientific names of commercial timbers which would be retained whenever the botanical names, in a separate list, were changed by the botanists. Thus, specific names would be conserved in defiance of the Rules.

A. C. Martin (Instability in scientific names of plants. Amer. Midland Nat. 34: 799-800. 1945) has advocated a national nomenclatorial board to issue national check lists of plants of the country including generic and specific names judged by the board to deserve conservation. Also, William A. Dayton (The names of the giant sequoia. Leaflets West. Bot. 3: 209-219. 1943) reported that most of the active plant taxonomists of California, as well as the National Park Service, would continue to retain for the giant sequoia the name Sequoia gigantea (Lindl.) Decne., legitimate until 1930, when it was rejected by a new rule as a later homonym. If the publication of lists

with locally "conserved" names is established in different countries, the practice could not be stopped and the foundation of the International Rules would be seriously affected.

Therefore, I have proposed the changes in Art. 21 listed below. From the best features of the several proposals to be submitted, it is hoped that a practicable proposal on nomina specifica conservanda will be formulated by the Special Committee for action by the Stockholm Congress in 1950.

Art. 21, change first sentence to read (additions underlined and deletion struck out):

"However, to avoid disadvantageous changes in the nomenclature of families, genera, and species by the strict application of the Rules of Nomenclature, and especially of the principle of priority in starting from the dates given in Art. 20, the Rules provide ~~a~~ lists of names of families, genera, and species which must be retained as exceptions (Appendix II for family names and Appendix III for generic and specific names)."

Art. 21, after second sentence insert the following sentences:

"Also, these specific names shall concern only a limited number of species of economic importance and species otherwise widely known."

Art. 21, Note 2, add the following sentence:

"Any proposal of a specific name must cite the type specimen or substitute-type specimen where necessary or desirable and must be accompanied by a photograph of this specimen."

Art. 21, add the following Note:

"Note 5.--In nomina specifica conservanda the specific epithet is conserved against all other specific epithets for the same species, so long as the species concerned is not united or reunited with another species bearing a legitimate name. The binary combination and generic name are not conserved, but the generic name and specific epithet may be conserved independently."

Art. 21, add the following examples (to be formally proposed at the following Congress):

"The specific name Picea excelsa (Lam.) Link (1841; otherwise illegitimate under Art. 60 as nomenclaturally superfluous when published) is conserved against Picea abies (L.) Karst. (1881) and against Pinus abies L. (1753). If Picea were reunited with Pinus, the binary name would be Pinus excelsa Lam. (1778; also nomenclaturally superfluous when published).--Eucalyptus rostrata Schlecht. (1847) is conserved against E.

camaldulensis Dehnh. (1832) and against the earlier homonym E. rostrata Cav. (1797).--Sequoia gigantea (Lindl.) Decne. (1854) is conserved against the earlier homonym Sequoia gigantea Endl. (1847). If the genus Sequoia Endl., nom. conserv., is divided, the binary name for this species becomes Sequoiadendron giganteum (Lindl.) Buchholz (1939)."

Art. 22, delete footnote. (This information has been incorporated into Art. 21, as amended.)

Thus, relatively few changes would be needed to expand Art. 21 for specific names. This proposal differs from previous proposals for nomina specifica conservanda in that the conserved name is associated with a definite type specimen, and that conservation of the specific epithet, not the binary name, is clearly provided. Once the amendment is adopted, the cooperation of an active permanent committee or subcommittee to handle the cases submitted is essential.

Obviously, some provision should be made for associating all conserved specific names with type specimens, such as suggested in this proposal. The type specimen or a substitute-type would be designated when the name is submitted. Thus, any questions about typification of a name or other questions of nomenclature would be settled officially, definitely, and finally when the name is conserved by a Botanical Congress. Thereafter, the conserved specific name is permanently attached to this type specimen (Art. 18). This action would be more effective than otherwise provided in the Rules through Opinions by the International Committee, which heretofore have not been issued (Art. 73 (1)).

Just as the Executive Committee now requests one hundred copies of proposals for modifications of the Rules, it could request several copies of photographs of the type specimen (instead of one) as needed for use by the Committee. A central file of these photographs could be maintained, and extra copies could be distributed to representative botanical institutions. This provision for designation of the type specimen and submission of a photograph would require serious taxonomic study and would discourage long lists of hastily prepared proposals. Perhaps some provision should be made also for designation of the type specimen or substitute-type of a rejected name.

Conservation of specific names is more precisely the conservation of specific epithets and does not involve conservation of binomials or binary combinations. Though not endorsing the proposals, J. Ramsbottom (in Sprague, T. A. Prelim. Opin. Nomencl. Prop. Amsterdam 9. 1935) stated clearly: "Fixity of specific epithet, not specific name, is what is really wanted: to fix specific names (generic names and specific epithet)

would not be in the interests of taxonomy." In a later article, Ramsbottom (Reasons for name-change and the stability of names. Ann. Appl. Biol. 32: 181-183. 1945) emphasized that conservation of specific names would be objectionable but that conservation of specific epithets is a totally different matter.

The present provision (Art. 21, Note 3) for uniting genera having conserved names with other genera is equally applicable to specific epithets. A conserved specific epithet is conserved against all other specific epithets of species including the same type specimen. When a species with a conserved name is united with another species bearing a legitimate name, the oldest legitimate specific epithet is retained (Art. 56). When a species with a conserved name is divided, the conserved specific epithet is retained for the species including the type specimen (Art. 52). The epithet of a rejected specific name could not be used under any generic name for the species including the type specimen of a nomen specificum conservandum.

There would be no advantage in conserving a binary name. To conserve combinations would be impractical, confusing, and unnecessary. Concepts of generic limits are not subject to regulation under Art. 21 nor under any other Rules. With at least a few conserved specific epithets there would be a choice of generic names accepted in use, depending upon the generic limits followed. If a genus containing a conserved specific epithet is divided and if the generic name for this species is changed, the old combination still would be in accord with the Rules and probably would remain in use. The example of Sequoia gigantea (Lindl.) Decne. and Sequoiadendron giganteum (Lindl.) Buchholz illustrates this point. If the generic name of a species with conserved epithet is later discovered to be contrary to the Rules, the generic name can be conserved independently also.

In conclusion, the conserved specific epithet of a plant species of economic importance will become a more or less fixed tool based upon a definite type, like a conserved generic name, and will be subject to change only if the species is divided or united with another species having an older name.

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