



Proposal for the Recognition of Super Ranks

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Source: *Taxon*, Vol. 23, No. 4 (Aug., 1974), pp. 650-652

Published by: [International Association for Plant Taxonomy \(IAPT\)](#)

Stable URL: <http://www.jstor.org/stable/1218807>

Accessed: 13/04/2014 09:08

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PROPOSAL FOR THE RECOGNITION OF SUPER RANKS

*Royall T. Moore**

Summary

A proposal is made to recognize super ranks, including the new rank of dominion (*Dominium*) above that of the kingdom (*Regnum*), and to designate suffixes for those of superfamily and above.

Introduction

In their respective Codes of Nomenclature the botanist and the zoologist have provisions for sub-dividing the principal taxonomic ranks. Only the zoologist, however, has the additional provision for associating these ranks into super taxa. Our simpler system of classifying plants sufficed when algal divisions were solely defined on pigmentation, the bacteria were regarded as very simple fungi, the lower fungi were a single class, the higher plants a single division, and the viruses poorly understood. Now, however, most of the old classes and many of the families have been raised to divisional rank, the bacteria and blue-green "algae" are on the other side of the major cytological divide, and the viruses are a well defined assemblage. These relatively recent taxonomic promotions, the lack of over taxa, and the adherence, for lack of a really better alternative, to the two kingdom system has engendered great confusion in general textbooks of biology and botany. This is reflected, e.g., in *An Evolutionary Survey of the Plant Kingdom* (Scagel et al., 1965) in which Nonvascular Plants comprise the Slime Molds, True Fungi, Bacteria and Viruses, Algae (including the blue-greens), and Bryophytes; in *Nonseed Plants: Form and Function* (Doyle, 1970) in which it is stated that "Nonseed plants form a heterogeneous group that includes bacteria, fungi, algae, bryophytes, ferns, and the so-called fern allies. They are separated from seed plants by a single distinctive feature: they do not reproduce by seeds. Thus nonseed plants (like the invertebrates of the animal kingdom) are defined by negation, a conceptually unsatisfactory but occasionally useful procedure." and in *Bergey's Manual of Determinative Bacteriology* (Breed et al.) in which the Rickettsiales, Mycoplasmatales, and Virales are encompassed in the Microtatiobites. The consequence of these and similar presentations is that a plant is now any genetic system that is non-animal and that the available hierarchial nomenclature within this botanical amalgam now fails in its primary purpose of distinguishing and grouping major assemblages.

Recognizing that previous proposals to open out the system by a horizontal

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addition of kingdoms had proved unacceptable, Moore (1971) proposed a vertical expansion by the introduction of super ranks that provided ligatures for reassociating major taxa. He also proposed a new principal rank, the dominion to precede the kingdom. It is proposed that these new ranks be recognized and included in the International Code of Botanical Nomenclature. The parts of the Code to be amended are set forth below with additions indicated by type in capital letters and deletions by square brackets.

Proposal to the XIIth International Botanical Congress

34 bis: *Article 3*

The principal ranks of taxa in ascending sequence are: species (*species*), genus (*genus*), family (*familia*), order (*ordo*), class (*classis*), [and] division (*divisio*), KINGDOM (*REGNUM*), AND DOMINION (*DOMINIUM*).

NOTE 2. THERE ARE THREE DOMINIONS: *DOMINIUM VIRUS*, *DOMINIUM PROKARYOTA*, AND *DOMINIUM EUKARYOTA*.

35 bis: *Article 4*

If a greater number of ranks of taxa is required, the terms for these are made either by adding the prefixes SUPER (*SUPER-*) OR sub (*sub-*) to the terms denoting the ranks or by the introduction of supplementary terms. A plant OR FUNGUS may be assigned to taxa of the following SUPER OR subordinate ranks of the [plant kingdom] EUKARYOTE DOMINION (*DOMINIUM EUKARYOTA*): Regnum Vegetabile, SUB-REGNUM, SUPERDIVISIO, Divisio, Subdivisio, SUPERCLASSIS, Classis, Subclassis, SUPERORDO, Ordo, Subordo, SUPERFAMILIA, Familia, Subfamilia, SUPERTRIBUS, Tribus, Subtribus, SUPERGENUS, Genus, Subgenus, SUPERSECTIO, Sectio, Subsectio, SUPERSERIES, Series, Subseries, SUPERSPECIES, Species, Subspecies, SUPER-VARIETAS, Varietas, Subvarietas, SUPERFORMA, Forma, Subforma.

36 bis: *Recommendation 16A*

(A) Two subkingdoms are recognized: the plant subkingdom (Subregnum Planta) and the fungous subkingdom (Subregnum Fungi).

[(a)](B) The name of a division is preferably taken from characters indicating the nature of the division as closely as possible; it should end in *-phyta*, except when it is a division of Fungi, in which case it should end in *-mycota*. Words of Greek origin are generally preferable.

THE NAME OF A SUPERDIVISION IS FORMED IN A SIMILAR MANNER; IT IS DISTINGUISHED FROM A DIVISIONAL NAME BY AN APPROPRIATE PREFIX OR SUFFIX OR BY THE ENDING *-PHYTERA*, EXCEPT WHEN IT IS A SUPERDIVISION OF FUNGI, IN WHICH CASE IT SHOULD END IN *-MYCOTERA*.

The name of a subdivision is formed in a similar manner; it is distinguished from a divisional name by an appropriate prefix or suffix or by the ending *-phytina*, except when it is a subdivision of Fungi, in which case it should end in *-mycotina*.

[(b)](C) The name OF A SUPERCLASS, of a class, of a subclass OR OF A SUPER-ORDER is formed in a similar manner and should end as follows:

1. In the Algae: *-PHYCIA* (SUPERCLASS), *-phyceae* (class), *-phycidae* (subclass), and *-PHYCODES* (SUPERORDER);
2. In the Fungi: *-MYCIA* (SUPERCLASS), *-mycetes* (class), *-mycetidae* (subclass), and *-MYCODES* (SUPERORDER);
3. In the Cormophyta: *-ITIA* (SUPERCLASS), *-opsida* (class), *-idae* (subclass), and *-ATA* (SUPERORDER).

37: *Article 19*

The name OF A SUPERFAMILY OR of a subfamily is a plural adjective used as a substantive; it is formed by adding, RESPECTIVELY, THE SUFFIX *-ORAE* (SUPER-FAMILY) OR the suffix *-oideae* (SUBFAMILY) to the stem of a legitimate name of an included genus.

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ARTICLE 36 AND NUMERICAL CLASSIFICATION

*B. R. Baum**

The purpose of this contribution is (1) to point out the need to update the Code according to recent trends in taxonomy and (2) to make a specific proposal along this line.

During the last decade the rapid development in classificatory techniques has brought about changes in our approaches to taxonomic philosophy. This is particularly true of numerical techniques. Certainly biometric methods have been used in botany for classification purposes since the beginning of this century, e.g. by K. Pearson, and for identification purposes since Fisher's discriminant function. However, it is only with the advent of computers that these and many more and recent techniques became practicable (Sneath 1957) and that Numerical Taxonomy as we know it today (Sneath and Sokal, 1973) has evolved and progressed. Computer techniques are becoming essential tools to the practicing taxonomist.

The time has come for the Botanical Code of Nomenclature to recognize this fact. The need for change has already been voiced in connection with the Bacteriological Code (e.g. Cowan, 1970) and the Zoological Code (e.g. Oldroyd, 1966), and suggestions for improvements have been made. The way in which new approaches and new principles of nomenclature might accommodate the taxonomies based on quantitative methods has been discussed by Michener (1963).

A botanical case in point is my classification of the species of *Avena* (Gramineae) into sections within the genus (Baum, in press). The content of each of the sections of *Avena* is clear-cut in the sense that each section is unique in the various species it contains, but the descriptions or diagnoses of these sections cannot be done effectively by orthodox taxonomy. Taximetric methods of classification have established many taxa as polythetic with overlapping circumscriptions which do not lend themselves to orthodox definitions. Furthermore, identification of an unknown candidate to one or other of these polythetic classes can most profitably be made by usage of discriminant functions or similar techniques. Since these new classificatory approaches are coming increasingly into practice, it is anticipated that new taxa will, more and more, be described or diagnosed on the basis of quantitative techniques. Is the Botanical Code of Nomenclature prepared for them? At the present time, the Code recognizes only one kind of validation, by means of a Latin description or diagnosis, as expressed in Article 36 as follows:

"In order to be validly published, a name of a new taxon of plants, the bacteria,

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