International Commission on Zoological Nomenclature

INTERNATIONAL CODE OF ZOOLOGICAL NOMENCLATURE

Fourth Edition

adopted by the
International Union of Biological Sciences

The provisions of this Code supersede those of the previous editions with effect from 1 January 2000

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The author of this Code is the International Commission on Zoological Nomenclature

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Explanatory Note

This Code has been adopted by the International Commission on Zoological Nomenclature and has been ratified by the Executive Committee of the International Union of Biological Sciences (IUBS) acting on behalf of the Union's General Assembly. The Commission may authorize official texts in any language, and all such texts are equivalent in force and meaning (Article 87).

The Code proper comprises the Preamble, 90 Articles (grouped in 18 Chapters) and the Glossary. Each Article consists of one or more mandatory provisions, which are sometimes accompanied by Recommendations and/or illustrative Examples. In interpreting the Code the meaning of a word or expression is to be taken as that given in the Glossary (see Article 89). The provisions of the Code can be waived or modified in their application to a particular case when strict adherence would cause confusion, but this can only be done by the Commission, acting on behalf of all zoologists and using its plenary power (Articles 78 and 81), and never by an individual.

In addition to the Code itself, the present volume contains a Preface (by the present and preceding Presidents of the Commission) and an Introduction (by the Chairman of the Editorial Committee). There are three Appendices; the first two of these have the status of Recommendations, and the third is the Constitution of the Commission.

The English and French texts of the Code are published on behalf of the Commission by the International Trust for Zoological Nomenclature, a not-for-profit company established in the U.K. to provide financial and secretarial support for the Commission's work.

All enquiries regarding the Code, or the application of its provisions to particular cases, should be addressed to:

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Preface to the Fourth Edition

By the time the third edition of the *International Code of Zoological Nomenclature* was published, in February 1985, the need for an eventual fourth edition was already becoming apparent. To the International Commission on Zoological Nomenclature, and especially to the members of the Editorial Committee who drafted the third edition, it had for some time been clear that it would not be possible to deal with several problems and that solutions to them could only be incorporated in a future edition. Comments had been, and continued to be, received from the zoological community worldwide, partly derived from experience in the application of the Code, partly stimulated by the steady progress in the whole field of biological systematics, but also prompted by the development of information technologies. The project of formulating a fourth edition was formally launched by the Commission at its meeting in Canberra in October 1988, held in conjunction with the XXIII General Assembly of the International Union of Biological Sciences (IUBS). It was anticipated that the new edition of the Code would incorporate some major changes from the previous editions, although, like them, it obviously would have to be compatible with the actions taken by zoologists in times past. More than ten years of discussion and consultation were to follow; they and their outcome are recounted in more detail in the Introduction by W.D.L. Ride which follows this Preface.

An Editorial Committee for the new edition was appointed in Canberra with as its original members H. G. Cogger (Australia), C. Dupuis (France), R.V. Melville (U.K.), W.D.L. Ride (Australia), F. C. Thompson (U.S.A.; Chairman) and P.K. Tubbs (U.K.). In July 1989 O. Kraus (Germany) succeeded W.D.L. Ride in the Presidency of the Commission and joined the Editorial Committee ex officio. In 1990 Thompson resigned as the Chairman, although remaining as a member; he was succeeded by Ride, who thus resumed the role he had held in the preparation of the third edition.

The prospective edition of the Code was discussed at an open session during the Fourth International Congress of Systematic and Evolutionary Biology (ICSEB) at the University of Maryland in July 1990, and by the Commission meeting there. In August 1991 the Editorial Committee was invited by Prof L.B. Holthuis to Leiden and met for several days at the Nationaal Natuurhistorisch Museum, and in the following month the Code was discussed at the IUBS General Assembly in Amsterdam by both the Commission and the IUBS Section on Zoological Nomenclature. The Commission continued its consideration of the Code in Leiden, the first time it had assembled in that city since it was established there 96 years earlier for precisely the same purpose.

A pivotal stage in the preparation of the fourth edition was a meeting of the Editorial Committee held near Hamburg for several days in October 1993. After further revision, the resulting Discussion Draft was issued to the zoological community at large in May 1995. Some 700 copies of that Draft were distributed by the Secretariat in at least 43 countries; many others were circulated by the American Association for Zoological Nomenclature, and a discussion forum on the new Code was opened on the Internet. The new concepts and provisions embodied in the Draft were also presented by O. Kraus and D. Ride in the June 1995 issue of the *Bulletin of Zoological Nomenclature*, together with an appeal for comments and suggestions. In November 1995 A. Minelli (Italy) succeeded O. Kraus as the President of the Commission and joined the Editorial Committee *ex officio*. The number of zoologists and others from all over the world who contributed comments on the Discussion Draft reflected today's global dimension of human "networking". More than 800 pages of documents from some 500 people or groups were received within 12 months from the first public circulation of the draft, either by post or by electronic mail. A number of these were published in the *Bulletin of Zoological Nomenclature* (September 1995 to June 1996), and this elicited further discussion.

All the documents received were classified and annotated in preparation for a week-long meeting of the Editorial Committee held in Vicenza (Italy) in June 1996. Careful evaluation of this very extensive collection caused the Committee to redraft many provisions; some of the proposals in the Discussion Draft (such as the mandatory "registration" of all new names and the abandonment of gender agreement between generic and specific names) were abandoned, because of practical difficulties and/or because they were not acceptable to a sufficiently wide consensus of zoologists. The Committee's conclusions, together with changes to the Commission's Constitution which had been put forward by its Council, were discussed in detail by members of the Commission assembled on the

occasion of the Fifth ICSEB Congress (Budapest, August 1996), and their agreement on all major points was endorsed by a meeting of the IUBS Section on Zoological Nomenclature, as recorded in the December 1996 issue of the *Bulletin of Zoological Nomenclature*. The main features of the new Code were outlined by Minelli at a widely attended event, the XX International Congress of Entomology held in Florence in August 1996, and subsequently were publicized on the "World Wide Web".

In 1997 the major changes in the Code and Constitution were accepted in an "indicative" postal ballot of the whole Commission. The Editorial Committee (which had been joined by I.M. Kerzhner (Russia) in August 1996, although he resigned in February 1998 after making numerous extremely valuable contributions) proceeded with the task of polishing and checking the text; considerable and unexpected delay was caused by some serious health problems, but these happily proved temporary. Useful work was done at two- or three-people meetings in Padova, London and Canberra.

In the meantime, P. Bouchet, J. Le Renard and R. Roy, helped by C. Dupuis (all of the Muséum National d'Histoire Naturelle, Paris) started working on the French text of the Code. This proved of major importance for the final development of the English text also: inconsistencies or logical ambiguities detected during translation were taken into account by the Editorial Committee.

With only improvements in final wording awaiting completion, in October 1998 the Code (which consists of both the provisions and the Glossary) was circulated to the Commission for the definitive three-month vote to adopt it as the fourth edition; the same was done for the revised Constitution. The Commission voted by a very large majority (24 votes in favour, with two against) to adopt the new Code; in the case of the Constitution the vote was unanimous. At the same time the Code and Constitution were made available to the Executive Committee of IUBS, and this has ratified them on behalf of the Union's General Assembly.

This Fourth Edition of the *International Code of Zoological Nomenclature* takes effect from 1 January 2000, and so leads zoological nomenclature into the third millennium; more modestly, and less roundly, it marks the 242nd anniversary of the formal starting point of the subject, the publication of the 10th edition of Linnaeus's *Systema Naturae*. The new edition of course builds on the predecessor which it supersedes, the third (1985) edition, which in turn was largely modelled on that of 1961. The preparation of this edition (like that, it has to be said, of the earlier ones) has taken far longer than planned or envisaged by any of those involved. However, we have the satisfaction of knowing that (thanks primarily to electronic mail) it is the result of wider and more intensive consultations than were ever possible before. This Code is more than a mere revision: as recounted by David Ride in the Introduction which follows, the new provisions permit an individual zoologist to take a number of actions to maintain the existing usage of names in circumstances which have until now required reference to the Commission, and we believe this will be widely (though not universally) welcomed. Conversely, in some ways the rules are now less permissive: there are additional criteria which must be met before a new name can become available.

We can anticipate that zoologists and other users of scientific names will before long require still further changes in the Code, perhaps especially concerning procedures for the listing of existing names and the registration of new ones. With regard to the former, extensive databases are now appearing in quick succession and are being consolidated by such enterprises as Species 2000, and this fourth edition of the Code has already taken a significant step through the provisions for the development and adoption of *List(s) of Available Names in Zoology*. So far as registration of new names is concerned, this has already been introduced in bacteriology, and botanists and zoologists may come to accept it despite understandable doubts and objections. In these areas at least, the future of biological nomenclature will probably witness convergence between the various traditions which diverged during the 19th century.

The conventional Linnaean hierarchy will not be able to survive alone: it will have to coexist with the ideas and terminology of phylogenetic (cladistic) systematics. From a cladistic perspective, our traditional nomenclature is often perceived as too prescriptive and too permissive at the same time. Too prescriptive, in so far as it forces all taxa (and their names) to fit into the arbitrary ranks of the hierarchy; too permissive, in so far as it may be equally applied to paraphyletic as to monophyletic groups. New proposals are therefore to be expected. But even in the perspective of new developments, we believe that it will never be possible or desirable to dispose of 250 years of Linnaean zoological (and

botanical) taxonomy and nomenclature. One should always keep in mind that an important function of classifications is information retrieval. The Linnaean tradition will be supplemented, but not replaced, by new semantic and lexical tools.

In closing the Preface, we wish to express gratitude to the many who have contributed to the preparation of this Code; we do this on behalf of not only ourselves and the Commission but also on behalf of the entire zoological community, and indeed of the many other users of the scientific names of animal taxa.

Those we thank include, but are not confined to, the following: David Ride and the other members of the Editorial Committee over the years, retired and present members of the Commission (many of whom gave notable help at meetings and by correspondence), Philippe Bouchet, Jacques Le Renard and Roger Roy, the late Richard Melville and Curtis Sabrosky, those who hospitably made possible editorial meetings in Canberra, Hamburg, Leiden and Vicenza, the Officers of IUBS, and the staff of the Commission Secretariat and of Biosis U.K. (publishers of *Zoological Record*). We thank Robert Barnes, Senior Lecturer in Classics at the Australian National University, for advice on Latin and Greek gender. We and the Commission express special gratitude to the several hundred people from all over the world who made comments and suggestions, whether at meetings or by letter or e-mail; without their interest and contributions the Code could not possibly reflect the needs and views of present-day zoologists to the extent which we hope it does.

Lastly, we thank the Société Française de Systématique and the American Association for Zoological Nomenclature for their valuable financial support for the printing of this edition; in the context of the latter's assistance we mention once more the late Curtis Sabrosky, whose final contribution to the Code was the generous bequest to the Association which made possible their help.

The Preface of the 3rd edition concluded: "No Code is perfect. None will please everyone. Indeed, it is unlikely that any Code would be completely satisfactory to any individual". Those words will always remain true, but now, as was then done by our predecessors, we commend the new Code to zoologists.

ALESSANDRO MINELLI, President (1995-)

OTTO KRAUS, President (1989-95)

The International Commission on Zoological Nomenclature

Introduction

"Like all language, zoological nomenclature reflects the history of those who have produced it, and is the result of varying and conflicting practices. Some of our nomenclatural usage has been the result of ignorance, of vanity, obstinate insistence on following individual predilections, much, like that of language in general, of national customs, prides, and prejudices.

Ordinary languages grow spontaneously in innumerable directions; but biological nomenclature has to be an exact tool that will convey a precise meaning for persons in all generations".

J. Chester Bradley. *Preface to the 1st edition of the International Code of Zoological Nomenclature*, 1961.

The 4th edition of the *International Code of Zoological Nomenclature*, like the preceding editions and before them the *Règles internationales de la Nomenclature zoologique*, has one fundamental aim, which is to provide the maximum universality and continuity in the scientific names of animals compatible with the freedom of scientists to classify animals according to taxonomic judgments.

The Code consists of Articles (which are mandatory) and Recommendations. The Articles are designed to enable zoologists to arrive at names for taxa that are correct under particular taxonomic circumstances. The use of the Code enables a zoologist to determine the valid name for a taxon to which an animal belongs at any rank in the hierarchy species, genus, and family (including subspecies, subgenus, and ranks of the family group such as subfamily and tribe). The Code does not fully regulate the names of taxa above the family group and provides no rules for use below the rank of subspecies.

Principles

There are certain underlying principles upon which the Code is based. These are as follows:

(1) The Code refrains from infringing upon taxonomic judgment, which must not be made subject to regulation or restraint.

(2) Nomenclature does not determine the inclusiveness or exclusiveness of any taxon, nor the rank to be accorded to any assemblage of animals, but, rather, provides the name that is to be used for a taxon whatever taxonomic limits and rank are given to it.

(3) The device of name-bearing types allows names to be applied to taxa without infringing upon taxonomic judgment. Every name within the scope of the Code (except for the names of "collective groups" and of taxa above the family group) is permanently attached to a name-bearing type. For species and subspecies this name-bearing type is either a single specimen or a number of specimens that together constitute the name-bearer; for genera and subgenera it is a nominal species; for taxa at ranks of the family group it is a nominal genus. Accordingly, when a taxon at any rank is delineated by a taxonomist it may contain several name-bearing types, each with a name that is available for use at that rank. The Principle of Priority (which may be modified in its operation in the interests of stability and universality - see (4) below) is used to determine which of those names is the valid one.

(4) Nomenclatural rules are tools that are designed to provide the maximum stability compatible with taxonomic freedom. Accordingly, the Code recognises that the rigid application of the Principle of Priority may, in certain cases, upset a long-accepted name in its accustomed meaning through the validation of a little-known, or even long-forgotten, name. Therefore the rules must enable the Principle of Priority to be set aside on occasions when its application would be destructive of stability or universality, or would cause confusion. For use in such cases the Code contains provisions that modify the automatic application of the Principle of Priority, whether it concerns the establishment or precedence of names, the fixation of name-bearing types, the spelling of a name, or any other matter.

(5) To avoid ambiguity, the use of the same name for different taxa must not occur and is prohibited. This is the Principle of Homonymy.

(6) The Code provides guidance for zoologists needing to establish new names, and rules to determine whether any name, previously proposed, is available and with what priority; whether the name requires amendment for its correct use, and to enable the name-bearing type of the taxon it denotes to be ascertained (and, when necessary, to be fixed).

(7) The Code also provides for its own interpretation and administration, by prescribing the constitution and operation of the International Commission on Zoological Nomenclature and the conditions under which the Code may be amended.

(8) There is no "case law" in zoological nomenclature. Problems in nomenclature are decided by applying the Code directly, and never by reference to precedent. If the Commission is called on to make a ruling on a particular case, the decision relates to that case alone.

Historical Background

The origin of an internationally accepted Code of Rules for Zoological Nomenclature is a consequence of the confusion of names that occured in the zoological literature of the early part of the 19th century. Following the publication of the 10th edition of the *Systema Naturae* by Linnaeus in 1758, and his adoption in it of binominal names for species of animals, the next century saw the new system expanded and developed in different places, and in different ways for different animal groups. By the second quarter of the 19th century disparate usages were common and the need for an agreement to achieve universality in the scientific names of animals and a greater stability had become apparent everywhere.

Moreover, the great explosion in known species, caused by the growth of science and by active exploration in countries outside Europe, resulted in a multiplicity of names; many of these were synonyms resulting from the work of scientists researching independently. It became critical to devise universally accepted methods for choosing between them.

The most important of the early attempts to regulate zoological nomenclature was that by Hugh Strickland. The rules proposed by Strickland and his colleagues developed into what has since been called the British Association Code or the Stricklandian Code; its official title was *Series of Propositions for Rendering the Nomenclature of Zoology Uniform and Permanent*. Following its presentation at the British Association for the Advancement of Science in 1842, by a Committee that included such distinguished zoologists as Charles Darwin, Richard Owen and John Westwood, that Code was translated and circulated widely and had great influence. It was published in France, Italy and the United States of America. It was received by the Scientific Congress at Padua in 1843, by the American Society of Geologists and Naturalists in 1845, and was adopted by the British Association for the Advancement of Science in 1846. It was revised in succeeding years, and provided the basis for the code formulated by Henri Douvillé (1881) which was adopted internationally by geologists, and for the American Ornithologists' Union Code (1886).

Following discussion at International Congresses of Geology (Paris, 1878; Bologna, 1881) it became clear that there was need for a formal international agreement to be made for rules to cover all zoological names, irrespective of which bodies or disciplines required to use them and applicable to both fossil and extant animals. At the 1st International Congress of Zoology (Paris, 1889), the Congress adopted, in part, rules drawn up by Maurice Chaper and Raphael Blanchard and referred the matter for discussion at the 2nd Congress (Moscow, 1892). The 3rd Congress (Leiden, 1895) appointed a Commission of five zoologists (R. Blanchard, J.V. Carus, F.A. Jentink, P.L. Sclater and C.W. Stiles) to formulate a "codex" and to report to the 4th Congress (Cambridge, England, 1898). This was the birth of the present International Commission on Zoological Nomenclature. Following the addition of ten more members and further consideration, a report was adopted by the 5th Congress (Berlin, 1901) and a Code of rules embodying the decision of that Congress was published in French, English and German in 1905. This Code, entitled *Règles internationales de la Nomenclature zoologique*, with a series of amendments resulting from subsequent Congresses (Boston, 1907; Monaco, 1913; Budapest, 1927; Padua, 1930) remained in force until 1961 when it was replaced in its entirety by the first edition of the *International Code of Zoological Nomenclature*. This resulted from studies at Congresses following the 1939-45 War (Paris, 1948; Copenhagen, 1953; and London, 1958); a very detailed account of the work that culminated in the 1961 edition is given by Norman R. Stoll, Chairman of the Editorial Committee,

in his Introduction to that edition. A second edition was published in 1964 incorporating amendments adopted at Washington (1963).

To most zoologists at the time, the 17th International Congress of Zoology (Monaco, 1972) appeared likely to be the last general Congress of Zoology. Decisions were taken there to amend the second (1964) edition, and in addition, to ensure mechanisms for continuity and future up-dating, a decision was taken to transfer responsibility for future Codes (and the Commission) from the International Zoological Congresses to the International Union of Biological Sciences (IUBS).

Responsibility for the Code and the Commission was accepted by IUBS at the XVIII IUBS General Assembly (Ustaoset, Norway, 1973). In response to proposals for major and substantive changes to the Code, made by the community of zoologists at that time, and to eliminate ambiguities, a third edition of the Code was prepared and was approved by the Commission, with the authority of IUBS, late in 1983 and published in 1985. An account of the changes adopted in that edition, comments on proposals, and the Commission's voting, are given in the Introduction to the edition.

A more detailed account of the development of zoological nomenclature and the events leading to the modern Code are given by Richard Melville, former Secretary of the Commission, in the centenary history of the Commission which was published in 1995 entitled Towards stability in the names of animals.

The decades of the 1970s and 1980s witnessed further marked changes in professional orientation and education of zoologists, changes in the methodology of taxonomy mostly resulting from new genetic information and the application of computers, a burgeoning literature, and accelerating changes in information technology including electronic publishing. It became clear that the Commission should work towards a fourth edition to accommodate the consequences of these and other factors, including a greater ecumenism in biological science leading to pressure within IUBS for greater consistency between the various codes of nomenclature.

An Editorial Committee was appointed by the Commission in Canberra in October 1988, and proposals were canvassed and discussed at meetings of the Commission and of the IUBS Section of Zoological Nomenclature in Maryland (1990) and Amsterdam (1991), and at meetings of the Committee in Leiden (1991) and Hamburg (1993). Following these, a Discussion Draft was publicly issued in May 1995. Within a year this resulted in almost 800 pages of comments from some 500 sources, many of which consisted of groups of zoologists; a number of these comments were published in the *Bulletin of Zoological Nomenclature*. All the comments (mostly transmitted by electronic mail) and the text were considered by the Editorial Committee in Vicenza in June 1996, and in August of that year a report was presented to the Commission and the Section of Zoological Nomenclature in Budapest. The comments showed that some of the tentative proposals in the Discussion Draft (such as a proposal for mandatory "registration" of new names and the abolition of gender agreement within combinations of generic and specific names) were not sufficiently acceptable to zoologists to be adopted. A revised draft was accepted by the Commission by postal vote (1997) with minor amendment. The Commission, in voting, made a number of suggestions for clarification which have been incorporated in this edition.

Concurrently with the work of the Editorial Committee of the present edition, and impacting on it, IUBS strongly supported studies and symposia to assess need for uniformity in biological nomenclature, and to examine difficulties that would have to be overcome before an acceptable code of biological nomenclature (a "Biocode") could be developed. The work has revealed that it would be premature to introduce into this edition major changes to the established principles and structure which underlie the Code. The separate codes have so diverged in fundamental ways since their earliest beginnings, that the introduction of common rules today, and their application to the names established under the separate codes and which are in stable use, would result in much nomenclatural instability. Presently, a greater degree of terminological uniformity is being striven for in all codes. But the lack of direct equivalence in meaning of such universally applicable concepts as "availability" (zoology) and "validly published" (botany and bacteriology - where the same term has different meanings) has made the task impossible for the present. However, despite this, work has advanced under the auspices of IUBS on developing a "Biocode" applicable for new names. Looking ahead to the future, if progress in all disciplines continues towards developing acceptable systems for registering new names, and officially

listing all extant available names, so that rules protecting them can become a thing of the past, a single code will become a possibility.

The present edition

The modern *International Code of Zoological Nomenclature* is a complex and closely integrated document, no less so than its predecessors. In part its complexity results from its network of interdependent Articles. But the principal cause is the requirement that rules that are mandatory for current acts and new names must not upset actions taken by past generations operating under different, and less restrictive, nomenclatural rules or conventions.

For instance, many such names are products of the period before the *Règles* when the application of the principle of name-bearing types, seen to be so fundamental today to the objective identification of names and for establishing synonymy, was not regulated. This principle was introduced into the rules for genus-group names with effect from 1931, and the obligation to explicitly fix name-bearing types for new species-group taxa is introduced only in the present edition. Prior to a strictly objective basis for identifying names to taxa, names could easily have been misapplied and very often they were. Therefore, as well as mandating for the precise identification of name-bearing types, the provisions relating to types must also provide for the protection of names which were established under less precise rules.

Because of the extent to which the provisions of the Code are interdependent, contradictory provisions and different wordings leading to conflicting interpretations can arise easily. Accordingly, its language must be precise; identical words and phrases must be used and re-used, and there must be extensive cross-referencing. To many zoologists, these requirements result in tedious and pedantic prose that will seem unduly legalistic to some. We make no apologies for the wording chosen, because we believe that interpretation must be beyond doubt even at the expense of elegance. Also to reduce ambiguity, the Glossary is an integral part of the Code: when a meaning is given in the Glossary, it is that meaning alone that must be used in interpretation.

Whether the Committee has succeeded in achieving the aim of providing a Code that can be interpreted easily by most practising taxonomists and others, only its application will tell. It is sobering to think that all who have drafted previous editions of the modern Code (and its predecessors) have hoped for the same.

Where experience has shown that some rearrangement of material from that in the previous editions would be desirable, we have done it. Otherwise, the fourth edition follows the arrangement of the third.

Development of underlying principles

The Code has always followed the underlying principle that, to be available, names must be published in multiple, identical, and durable copies. By this means it has effectively ensured that, irrespective of when and where they were published, names and the descriptions of new taxa would be permanently accessible and could be consulted most easily; moreover, there would be no doubt as to whether any name had been publicly presented in a form identical to all zoologists. However, it may be questioned whether the present policy effectively meets the aims of permanency and accessibility today, when electronic publication and communication is becoming an increasingly common medium of information exchange and search, and enormous quantities of ephemera meet the criteria of "publication".

During the last half-century the Code has gradually shifted away from the assumption, and later the requirement, that new names must be published by a method employing ink on paper. The *Règles* of 1905 did not specify a particular method, but at that time most scientific information was distributed in works that were typeset and then printed with ink. Technology changed, and in 1948 the Paris Congress found it necessary to restrict publication to reproduction by ink on paper, a requirement that was incorporated in the 1961 edition of the Code. In the third edition (1985), the requirement for ink on paper was removed for new works with certain safeguards intended to eliminate most forms of ephemera. In the fourth edition read-only laser disks are admitted (subject to certain restrictions) as

an acceptable method, but distribution by electronic signals is not. But it seems likely, in the longer term, and with the development of new information systems, that the solution will not lie in patching up a definition of publication but, rather, in scrapping it and finding a means of replacing "publication" as a primary determinant of availability.

A proposal to introduce registration of all new names as such a determinant was considered by the Commission in the development of the present edition. Public reaction was against it, a principal difficulty perceived by objectors being that no acceptable procedure is currently available; however, botanists seem likely to implement a system of registration for new names and it may be that their experience will, in time, produce a mechanism acceptable to solve the far greater difficulty (in terms of numbers of new names) in zoology. The most that the Commission has been able to achieve in this edition is to recommend to authors that all new names be brought to the attention of the *Zoological Record* and to require that every new name is explicitly identified as new in its original publication.

Progress is made in this edition to establish a mechanism to facilitate access to previously established names, and to achieve certainty that searches made for names are complete, by enabling international groups of specialists to compile lists of extant and known available names in major taxonomic fields, and to have these lists adopted by the Commission. Names not in a relevant adopted *List* would not be available. A similar policy has already been adopted for all genera and species in microbiology, where neither past nor new names are available unless they have been officially recorded.

Another major underlying policy issue currently being questioned is the adherence to Latin grammar which the Code requires in a number of its Articles; few zoologists today, or in the future, can be expected to have any understanding of that language and many find the requirements burdensome.

As in previous Codes, the present edition retains the requirement that Latin or latinized adjectival species-group names must always agree in gender with the generic name with which they are combined. A proposal was considered that would have allowed the names of species and subspecies to be treated as though they were arbitrary words (i.e. they were never to be treated as Latin adjectives), so that their spellings would be invariable irrespective of the gender of the generic name with which they are combined at any time. The proposal would not only have eased the burden on those without Latin, but would also have facilitated electronic searching. But, because the various ways proposed of achieving unchanging spellings were all considered to have drawbacks by the majority of respondents, and were not acceptable to them, the proposal was dropped. However, some changes are made in this edition to simplify the identification of gender in genus-group names, and the formation of stems for family-group names, and the Commission hopes these will reduce some of the difficulties of those without knowledge of Latin.

Perhaps the most significant operational change which the Commission has approved, is to introduce a number of automatic courses of action in cases which previously called for intervention by the Commission. These include requiring automatic departure from the Principle of Priority in certain cases in which the existing usage of names or spellings is threatened by the threatened revival of unused names proposed before 1900. Also when individual zoologists discover that the type species had been misidentified when a genus or subgenus was established, they are given the power to fix as the type species either the species actually nominated by the original author or the nominal species in conformity with the name in use. Cases in these two categories have been amongst the most common of those referred to the Commission, and the elimination of the need to refer them will prevent delay and uncertainty. Referral to the Commission remains the prescribed course in cases in which individual action by an author would be more likely to hinder than promote an acceptable outcome, and is always open as an avenue of appeal; it also remains open as a course of action for cases for which the Code does not provide an automatic solution.

The principal changes introduced in this edition are paraphrased below. The Code itself must be consulted for the wording of the actual provisions. The first three, concerning proposals of new names, confirm current professional practice.

Changes affecting proposals of new names

1. A new name published after 1999 is not made available unless it is explicitly indicated as being new (preferably by the use of a term such as "sp. nov.", "gen. nov.", "fam. nov.", "nom. nov.", or by a directly equivalent term in the language in which the paper is written).

2. After 1999 the proposal of a new species-group nominal taxon must include the fixation for it of a name-bearing type (a holotype or expressly indicated syntypes) in a manner that enables the subsequent recognition of that type.

3. When the name-bearing type of a species-group taxon proposed after 1999 consists of a preserved specimen or specimens, the proposer is required to include a statement naming the collection in which the name-bearing type is or will be deposited.

4. The proposal after 1999 of a new genus-group nominal taxon for trace fossils (an ichnotaxon) must include the designation of a type species.

5. An author establishing a new family-group name after 1999 may adopt a stem from the name of the type genus which is not properly derived from the genitive of the generic name according to the principles of Latin grammar, and the resulting spelling of the family-group name is to be maintained by subsequent authors (is recommended that, when necessary to avoid homonymous family-group names, authors take advantage of this provision and adopt the entire generic name as the stem).

Making lectotype designations

6. Lectotype designations made after 1999 are required to use the term "lectotype" or a direct translation of it, and be accompanied by a statement to the effect that the designation is made with the purpose of clarifying the application of the name to a taxon.

Matters affecting neotypes

7. If a previously lost holotype, syntype or lectotype of a species subsequently typified by a neotype is rediscovered, the original type specimen(s) will automatically displace the neotype and become the name-bearing type. If this causes confusion or instability an author should apply to the Commission for reinstatement of the neotype.

8. If the existing name-bearing type of a species-group taxon is indeterminate, so that the correct application of the name to a particular taxon is doubtful (i.e. the name is a *nomen dubium*), an author should request the Commission to set it aside and designate a neotype.

Changes affecting publication

9. A work not printed on paper issued after 1999 in numerous identical, durable and unalterable copies (e.g. on read-only laser disks) may be treated as published if the work itself contains a statement that copies in the form in which it was published have been deposited in at least five major publicly accessible libraries named in the work itself.

10. For purposes of zoological nomenclature, the following kinds of material are treated as unpublished:

(a) electronically distributed text or illustrations;

(b) down-loaded copies or printouts of such material;

(c) abstracts of papers, posters, lectures, etc., issued to participants at congresses, symposia and other meetings but not otherwise published;

(d) offprints (separates) distributed after 1999 in advance of the date of publication specified in the work of which the offprint forms part.

Measures empowering authors to act in the interests of preserving established usage

11. An author will be required (without a ruling by the Commission) not to displace a name which has been used as valid by at least 10 authors in 25 publications during the past 50 years, and encompassing a span of not less than ten years, by an earlier synonym or homonym which has not been used as valid since 1899.

12. In most cases an author will be required to maintain the particular spelling in prevailing usage for a name, even if it is found not to be the original spelling; for example, the spellings of family-group names currently in use are to be maintained even if formed from grammatically incorrect stems.

13. As already mentioned, if an author discovers that the type species fixation of a genus-group taxon was based on a misidentification of the type species, the author may, in the interests of stability and without making application to the Commission, fix as type species either the taxonomic species actually involved or the misidentified nominal species fixed previously.

14. If it is found that a name currently in general use for a family-group taxon is later than the name currently in use for one of its subordinate family-group taxa, the name used for the higher rank taxon is not to be displaced by the name of the subordinate taxon.

Lists of Available Names

15. The Commission is empowered, with safeguards, to adopt lists of names in major taxonomic fields. Names within the scope of such an adopted list but not listed in it will be treated as unavailable. Lists may only be adopted by the Commission which have been proposed by international bodies, and only after publication of the proposals, wide consultation with specialist committees and others, and taking into account public comment.

Conclusion

Taxonomists and other users of the Code will find in this edition, as in the previous ones, a compromise between adventure and conservatism that will not please everybody. Yet, in this compromise, the Code reflects the many contemporary voices of practising zoologists heard by the Commission in reaching its conclusions on proposals made by the Editorial Committee and published for comment in the 1995 Discussion Draft. Like its predecessors, the resulting Code is a mixture of clarifications of what was already in previous editions and new measures designed to meet the challenges of modern science.

The fourth edition will not be the last word. Zoologists generally, and the Commission in particular, will go on refining the wording of the Code to further reduce ambiguity and to make good deficiencies in its treatment of products of the past and present (and, as far as they can be foreseen, of the future). Both science itself and the social and technical systems within which scientists work are constantly changing, and the Code must continue to evolve to provide for these changes. Zoologists may remain confident that it will do so.

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PREAMBLE

The International Code of Zoological Nomenclature is the system of rules and recommendations originally adopted by the International Congresses of Zoology and, since 1973, by the International Union of Biological Sciences (IUBS).

The objects of the Code are to promote stability and universality in the scientific names of animals and to ensure that the name of each taxon is unique and distinct. All its provisions and recommendations are subservient to those ends and none restricts the freedom of taxonomic thought or actions.

Priority of publication is a basic principle of zoological nomenclature; however, under conditions prescribed in the Code its application may be modified to conserve a long-accepted name in its accustomed meaning. When stability of nomenclature is threatened in an individual case, the strict application of the Code may under specified conditions be suspended by the International Commission on Zoological Nomenclature.

Precision and consistency in the use of terms are essential to a code of nomenclature. The meanings given to terms used in this Code are those shown in the Glossary. Both this Preamble and the Glossary are integral parts of the Code's provisions.

The International Commission on Zoological Nomenclature is the author of the Code.

Article 1. Definition and scope.

1.1. **Definition**. Zoological nomenclature is the system of scientific names applied to taxonomic units (taxa; singular: taxon) of extant or extinct animals.

1.1.1. For the purposes of this Code the term "animals" refers to the Metazoa and also to protistan taxa when workers treat them as animals for the purposes of nomenclature (see also Article 2).

1.2. **Scope**.

1.2.1. The scientific names of extant or extinct animals include names based on domesticated animals, names based on fossils that are substitutions (replacements, impressions, moulds and casts) for the actual remains of animals, names based on the fossilized work of organisms (ichnotaxa), and names established for collective groups (see, in particular, Articles 10.3, 13.3.2, 23.7, 42.2.1, 66.1, 67.14), as well as names proposed before 1931 based on the work of extant animals.

1.2.2. The Code regulates the names of taxa in the family group, genus group, and species group. Articles 1-4, 7-10, 11.1-11.3, 14, 27, 28 and 32.5.2.5 also regulate names of taxa at ranks above the family group.

1.3. **Exclusions**. Excluded from the provisions of the Code are names proposed

1.3.1. for hypothetical concepts;

1.3.2. for teratological specimens as such;

1.3.3. for hybrid specimens as such (for taxa which are of hybrid origin see Article 17.2);

1.3.4. for infrasubspecific entities unless the name was subsequently deemed to be an available name under Article 45.6.4.1;

1.3.5. as means of temporary reference and not for formal taxonomic use as scientific names in zoological nomenclature;

1.3.6. after 1930, for the work of extant animals;

1.3.7. as modifications of available names [Art. 10] throughout a taxonomic group by addition of a standard prefix or suffix in order to indicate that the taxa named are members of that group.

Example. Herrera (1899) proposed that all generic names be prefixed by a formula to indicate the Class to which the genus belongs, so that, e.g. all generic names in Insecta would be prefixed by *Ins-*. Words so formed are "zoological formulae" (Opinion 72) and do not enter into zoological nomenclature.

1.4. **Independence**. Zoological nomenclature is independent of other systems of nomenclature in that the name of an animal taxon is not to be rejected merely because it is identical with the name of a taxon that is not animal (see Article 1.1.1).

Recommendation 1A. Names already in use for taxa that are not animals. Authors intending to establish new genus-group names are urged to consult the *Index Nominum Genericorum (Plantarum)* and the *Approved List of Bacterial Names* to determine whether identical names have been established under the International Codes of Nomenclature relevant to those lists and, if so, to refrain from publishing identical zoological names.

Article 2. Admissibility of certain names in zoological nomenclature.

2.1. Names of taxa later but not at first classified as animals. For the conditions under which such names enter zoological nomenclature, see Article 10.5.

2.2. Names of taxa at some time but not later classified as animals. Any available name of a taxon that has at any time been classified as animal continues to compete in homonymy in zoological nomenclature even though the taxon is later not classified as animal.

Article 3. Starting point. The date 1 January 1758 is arbitrarily fixed in this Code as the date of the starting point of zoological nomenclature.

3.1. Works and names published in 1758. Two works are deemed to have been published on 1 January 1758:

- Linnaeus's *Systema Naturae*, 10th Edition;

- Clerck's *Aranei Svecici*.

Names in the latter have precedence over names in the former, but names in any other work published in 1758 are deemed to have been published after the 10th Edition of *Systema Naturae*.

3.2. Names, acts and information published before 1758. No name or nomenclatural act published before 1 January 1758 enters zoological nomenclature, but information (such as descriptions or illustrations) published before that date may be used. (See Article 8.7.1 for the status of names, acts and information in works published after 1757 which have been suppressed for nomenclatural purposes by the Commission).

Article 4. Names of taxa at ranks above the species group.

4.1. Names uninominal. The scientific name of a taxon of higher rank than the species group consists of one word (i.e. the name is uninominal); it must begin with an upper-case letter [Art. 28].

4.2. Use of names of subgenera. The scientific name of a subgenus must not be used as the first name in a binomen or trinomen unless it is being used at the rank of genus [Art. 6.1].

Article 5. Principle of Binominal Nomenclature.

5.1. Names of species. The scientific name of a species, and not of a taxon of any other rank, is a combination of two names (a binomen), the first being the generic name and the second being the specific name. The generic name must begin with an upper-case letter and the specific name must begin with a lower-case letter [Art. 28].

5.1.1. For the application of the Principle of Binominal Nomenclature to the availability of genus-group names published without associated nominal species and of subspecific names published in trinomina see Article 11.4.

5.1.2. For the application of the Principle of Binominal Nomenclature in the use of subgeneric names and names for aggregates of species and subspecies see Article 6.

5.2. Names of subspecies. The scientific name of a subspecies is a combination of three names (a trinomen, i.e. a binomen followed by a subspecific name) [Art. 11.4.2]. The subspecific name must begin with a lower-case letter [Art. 28].

5.3. Typographical signs and qualifying abbreviations excluded. A typographical sign such as ?, and an abbreviation such as aff., prox. or cf., when used to qualify the application of a scientific name, does not form part of the name of a taxon even when inserted between the components of a name.

Article 6. Interpolated names.

6.1. Names of subgenera. The scientific name of a subgenus, when used with a binomen or trinomen, must be interpolated in parentheses between the generic name and the specific name; it is not counted as one of the words in the binomen or trinomen. It must begin with an upper-case letter.

Recommendation 6A. Undesirable interpolation of certain genus-group names in binomina or trinomina. No genus-group name other than a valid subgeneric name should be interpolated between a

generic name and a specific name, even in square brackets or parentheses. An author who desires to refer to a former generic combination should do so in some explicit form such as "*Branchiostoma lanceolatum* [formerly in *Amphioxus*]".

6.2. Names of aggregates of species or subspecies. A specific name may be added in parentheses after the genus-group name, or be interpolated in parentheses between the genus-group name and the specific name, to denote an aggregate of species within a genus-group taxon; and a subspecific name may be interpolated in parentheses between the specific and subspecific names to denote an aggregate of subspecies within a species; such names, which must always begin with a lower-case letter and be written in full, are not counted in the number of words in a binomen or trinomen. The Principle of Priority applies to such names [Art. 23.3.3]; for their availability see Article 11.9.3.5.

Recommendation 6B. Taxonomic meaning of interpolated names. An author who wishes to denote an aggregate at either of the additional taxonomic levels mentioned in Article 6.2 should place a term to indicate the taxonomic meaning of the aggregate in the same parentheses as its interpolated species-group name on the first occasion that the notation is used in any work.

Example. In the butterfly genus *Ornithoptera* Boisduval, 1832 the species *O. priamus* (Linnaeus, 1758) is the earliest-named member of an aggregate of vicarious species that includes also *O. lydius* Felder, 1865 and *O. croesus* Wallace, 1865. The taxonomic meaning accorded to the *O. priamus* aggregate may be expressed in the notation "*Ornithoptera* (superspecies *priamus*)", and the members of the aggregate by the notations "*O.* (*priamus*) *priamus* (Linnaeus, 1758)", "*O.* (*priamus*) *lydius* Felder, 1865", and "*O.* (*priamus*) *croesus* Wallace, 1865".

Article 7. Application. The provisions of this Chapter apply to the publication not only of a new scientific name, but also to that of any nomenclatural act or information likely to affect nomenclature.

Article 8. What constitutes published work. A work is to be regarded as published for the purposes of zoological nomenclature if it complies with the requirements of this Article and is not excluded by the provisions of Article 9.

8.1. Criteria to be met. A work must satisfy the following criteria:

8.1.1. it must be issued for the purpose of providing a public and permanent scientific record,

8.1.2. it must be obtainable, when first issued, free of charge or by purchase, and

8.1.3. it must have been produced in an edition containing simultaneously obtainable copies by a method that assures numerous identical and durable copies.

8.2. Publication may be disclaimed. A work that contains a statement to the effect that it is not issued for public and permanent scientific record, or for purposes of zoological nomenclature, is not published within the meaning of the Code.

8.3. Names and acts may be disclaimed. If a work contains a statement to the effect that all or any of the names or nomenclatural acts in it are disclaimed for nomenclatural purposes, the disclaimed names or acts are not available. Such a work may be a published work (i.e. taxonomic information in it may have the same nomenclatural status as the taxonomic information in a published but suppressed work: see Article 8.7.1).

8.4. Works produced before 1986. To be published, a work produced before 1986 must have been produced on paper, by a printing method then conventional (such as letterpress, offset printing) or by hectographing or mimeographing.

8.5. Works produced after 1985 and before 2000. A work produced between 1985 and 2000 by a method other than conventional printing may be accepted as published within the meaning of the Code if

8.5.1. it meets the other requirements of this Article and is not excluded by the provisions of Article 9, and

8.5.2. contains a statement by the author that any new name or nomenclatural act within it is intended for public and permanent scientific record, and

8.5.3. contains a statement in words in the work itself that it is produced in an edition containing simultaneously obtainable copies.

8.6. Works produced after 1999 by a method that does not employ printing on paper. For a work produced after 1999 by a method other than printing on paper to be accepted as published within the meaning of the Code, it must contain a statement that copies (in the form in which it is published) have been deposited in at least 5 major publicly accessible libraries which are identified by name in the work itself.

8.7. Status of suppressed works. A work that has been suppressed for nomenclatural purposes by the Commission by use of the plenary power [Art. 81] and that satisfies the provisions of this Article remains published within the meaning of the Code, unless the Commission has ruled that it is to be treated as not having been published;

8.7.1. such a work remains available as a source of published descriptions and illustrations, but not as a work in which a name or nomenclatural act (such as the fixation of a name-bearing type, or the determination of precedence under Article 24.2) can be made available.

Recommendation 8A. Wide dissemination. Authors have a responsibility to ensure that new scientific names, nomenclatural acts, and information likely to affect nomenclature are made widely known. This responsibility is most easily discharged by publication in appropriate scientific journals or well-known monographic series and by ensuring that new names proposed by them are entered into the *Zoological Record*. This is most easily achieved by sending a copy of the work to the *Zoological Record*, published by BIOSIS U.K.

Recommendation 8B. Desirability of works on paper. Authors and publishers are strongly urged to ensure that a new scientific name or nomenclatural act is first published in a work printed on paper.

Recommendation 8C. Public accessibility of published works. Copies of published works which contain a new scientific name or nomenclatural act should be permanently conserved in libraries whose works are publicly accessible (but for the deposition of works produced after 1999 by a method other than printing on paper see Article 8.6).

Recommendation 8D. Responsibilities of authors, editors and publishers. Authors, editors and publishers have a responsibility to ensure that works containing new names, nomenclatural acts, or information likely to affect nomenclature are self-evidently published within the meaning of the Code. Editors and publishers should ensure that works contain the date of publication, and information about where they may be obtained.

Recommendation 8E. Inclusion of disclaimers. Editors and publishers should avoid including new names and the information that might appear to make the names available, or new nomenclatural acts, in works that are not issued for public and permanent scientific record (such as pre-symposium abstracts, or notices of papers to be delivered at a meeting). They should ensure that such documents contain a disclaimer (see Article 8.2), so that new names published for the first time therein do not enter zoological nomenclature unintentionally and pre-empt intended publication in another work.

Article 9. What does not constitute published work. Notwithstanding the provisions of Article 8, none of the following constitutes published work within the meaning of the Code:

9.1. after 1930 handwriting reproduced in facsimile by any process;

9.2. photographs as such;

9.3. proof sheets;

9.4. microfilms;

9.5. acoustic records as such made by any method;

9.6. labels of specimens;

9.7. copies obtained on demand of an unpublished work [Art. 8], even if previously deposited in a library or other archive;

9.8. text or illustrations distributed by means of electronic signals (e.g. by means of the World Wide Web); or

9.9. abstracts of articles, papers, posters, texts of lectures, and similar material when issued primarily to participants at meetings, symposia, colloquia or congresses.

Recommendation 9A. Authors to avoid unintentional publication in abstracts. Authors submitting abstracts of conference papers primarily for issue to participants, should ensure that names and acts affecting zoological nomenclature in such works are not liable to unintended publication. They should ensure that volumes of abstracts contain appropriate disclaimers [Art. 8.2].

Article 10. Provisions conferring availability. A name or nomenclatural act becomes available only under the following conditions.

10.1. General conditions to be met. A name or nomenclatural act is available, and takes authorship and date, only when it has satisfied the provisions of this Article and, when relevant, of Articles 11 to 20 (for date and author see Articles 21 and 50). A name may be ruled to be available by the Commission [Arts. 78-81] if these conditions are not fully met.

10.1.1. If publication of the data relating to a new nominal taxon or a nomenclatural act is interrupted and continued at a later date, the name or act becomes available only when the requirements of the relevant Articles have been met.

Recommendation 10A. Responsibility of editors and publishers. An editor should ensure that the whole of the description and illustrations relating to a new nominal taxon, and particularly any nomenclatural acts or data necessary to confer availability on its name, are published in the same work and on the same day.

10.2. Availability of infrasubspecific names. An infrasubspecific name is not available [Art. 45.5] from its original publication, unless it was published before 1961 for a "variety" or "form" and is deemed to be available under Art. 45.6.4.1. If an author uses a name, previously published at infrasubspecific rank, in a way which makes it available for a species or subspecies, that author thereby establishes it as a new name and it takes his or her authorship [Art. 45.5.1] (see also Articles 23.3.4 and 50.3.1).

10.3. Availability of names proposed for collective groups and ichnotaxa. A name proposed for a collective group is treated as a genus-group name [Art. 42.2.1]; a name proposed for an ichnotaxon is a family-group name, or genus-group name, or species-group name, according to the way in which it is first established (for names established for ichnotaxa for use at genus-group level, see Article 42.2.1).

10.4. Availability of names for divisions of genera. A uninominal name proposed for a genus-group division of a genus, even if proposed for a secondary (or further) subdivision, is deemed to be a subgeneric name even if the division is denoted by a term such as "section" or "division"; but a name used for an aggregate of species which is denoted by a term such as "superspecies" is not deemed to be a genus-group name [Art. 6.2].

10.5. Availability of names of taxa later but not at first classified as animals. The name (or names) of a taxon, including a taxon based on the work of an organism not at first classified as animal but later so classified, is available from its original publication provided that it satisfies the relevant provisions of this Chapter, provided that it is not excluded from the Code [Arts. 1.3, 3], and provided that it is a potentially valid name under another Code (the International Code of Botanical Nomenclature or the International Code of Nomenclature of Bacteria) relevant to the taxon.

10.6. Effect of invalidity upon availability. A name once available remains so irrespective of its invalidity as a junior synonym, a junior homonym, an unjustified emendation, an unnecessary

substitute name, or a suppressed name, unless the Commission has ruled otherwise [Arts. 78.1, 78.2]. (Even if the taxon concerned is no longer classified as animal its name remains available [Art. 2.2]).

10.7. Availability of names not listed in a relevant adopted Part of the *List of Available Names in Zoology*. No unlisted name within the scope of an adopted Part of the *List of Available Names in Zoology* is available, despite any previous availability [Art. 79.4.3].

Article 11. Requirements. To be available, a name or, where relevant, a nomenclatural act must satisfy the following provisions:

11.1. Publication. The name or nomenclatural act must have been published, in the meaning of Article 8, after 1757.

11.2. Mandatory use of Latin alphabet. A scientific name must, when first published, have been spelled only in the 26 letters of the Latin alphabet (taken to include the letters j, k, w and y); the presence in a name when first published of diacritic and other marks, apostrophes or ligatures, or a hyphen, or a numeral in a compound species-group name, does not render the name unavailable (for corrections, see Articles 27 and 32.5.2).

11.3. Derivation. Providing it meets the requirements of this Chapter, a name may be a word in or derived from Latin, Greek or any other language (even one with no alphabet), or be formed from such a word. It may be an arbitrary combination of letters providing this is formed to be used as a word.

Examples. *Toxostoma* and *brachyrhynchos* from the Greek; *opossum* from the Algonquian Indian; *Abudefduf* from the Arabic; *korsac* from the Russian; *nakpo* from the Tibetan; *canguru* from the Kokoimudji Aboriginal; *Gythemon*, an arbitrary combination of letters. The arbitrary combination of letters cbafdg cannot be used as a word and does not form a name.

Recommendation 11A. Use of vernacular names. An unmodified vernacular word should not be used as a scientific name. Appropriate latinization is the preferred means of formation of names from vernacular words.

11.4. Consistent application of binominal nomenclature. The author must have consistently applied the Principle of Binominal Nomenclature [Art. 5.1] in the work in which the name or nomenclatural act was published; however, this Article does not apply to the availability of names of taxa at ranks above the family group.

11.4.1. A published work containing family-group names or genus-group names without associated nominal species is accepted as consistent with the Principle of Binominal Nomenclature in the absence of evidence to the contrary.

11.4.2. The scientific name of a subspecies, a trinomen [Art. 5.2], is accepted as consistent with the Principle of Binominal Nomenclature.

11.4.3. An index published before 1931 in a work that is not consistently binominal is acceptable itself as a work consistent with the Principle of Binominal Nomenclature provided that the Principle is consistently applied to scientific names in the index; thus a scientific name published in such an index is available if the name satisfies the other provisions of this Chapter and of Articles 4, 5 and 6, and if there is an unambiguous link between the entry in the index and the description, illustration, or indication in the text.

11.5. Names to be used as valid when proposed. To be available, a name must be used as valid for a taxon when proposed, unless it was first published as a junior synonym and subsequently made available under the provisions of Article 11.6.1.

11.5.1. A name proposed conditionally for a taxon before 1961 is not to be excluded on that account alone [Art. 15].

11.5.2. The status of a previously unavailable name is not changed by its mere citation (that is, without adoption for a taxon) even if accompanied by a reference to the work in which the name was published but was not made available.

Example. Chemnitz in 1780 described the gastropod *Conus moluccensis* and treated its name as valid, but in a work which was not consistently binominal and thus the name is unavailable. Dillwyn in 1817 cited the name *Conus moluccensis*, but did not use it as the valid name of a taxon. The name *Conus moluccensis* is not made available by Dillwyn's act, even though his citation was accompanied by a reference to Chemnitz's work. Küster (1838) applied the name to a taxon and attributed it to Chemnitz by bibliographic reference, thereby making the name *Conus moluccensis* Küster, 1838 available.

11.6. Publication as a synonym. A name which when first published in an available work was treated as a junior synonym of a name then used as valid is not thereby made available.

11.6.1. However, if such a name published as a junior synonym had been treated before 1961 as an available name and either adopted as the name of a taxon or treated as a senior homonym, it is made available thereby but dates from its first publication as a synonym (for type species if a genus-group name see Article 67.12; for name-bearing type if a species-group name see Article 72.4.3; for authorship see Article 50.7).

Examples. Meigen (1818), in discussion under *Ceratopogon flavipes* Meigen (Diptera), stated that he had received the material from Megerle under the manuscript name *Palpomyia geniculata*. *Palpomyia*, there published as a synonym of *Ceratopogon*, is an available name because before 1961 it was used as a valid name; it is attributed to Meigen, 1818. The specific name *geniculata*, never having been adopted, is not available from Meigen (1818).

11.6.2. A name published before 1758 but after 1757 cited as a synonym of a name used as valid cannot be made available under Article 11.6.

Example. The name "*Cidaris miliaris* Klein" (i.e. of Klein, 1734) cited by Linnaeus (1758) in the synonymy of *Echinus esculentus* Linnaeus, 1758 does not become available from Linnaeus (1758) as a result of its mere adoption for a taxon by another author.

11.6.3. A name first published after 1960 and treated as a junior synonym on that occasion cannot be made available from that act under Article 11.6.

11.7. Family-group names.

11.7.1. A family-group name when first published must meet all the following criteria. It must:

11.7.1.1. be a noun in the nominative plural formed from the stem of an available generic name [Art. 29] (indicated either by express reference to the generic name or by inference from its stem, but for family-group names proposed after 1999 see Article 16.2); the generic name must be a name then used as valid in the new family-group taxon [Arts. 63, 64] (use of the stem alone in forming the name is accepted as evidence that the author used the generic name as valid in the new family-group taxon unless there is evidence to the contrary);

Examples. The name ERYCIINAE Robineau-Desvoidy, 1830 (originally spelled ERYCINAE) is available because it was published for a family-group taxon that included the genus *Erycia* Robineau-Desvoidy, 1830. The name TRICHOCERIDAE Rondani, 1841 is available, although proposed without explicit mention of *Trichocera* Meigen, 1803, because it was published in a classification of the families of the Diptera of Europe with reference to Meigen and with a clear statement of Rondani's basic principle of forming all family names on the name of an included genus. PINNIDAE Leach, 1819 included not only *Modiola* Lamarck, 1801 and *Mytilus* Linnaeus, 1758, but also, by inference from the stem, *Pinna* Linnaeus, 1758, for which it was obviously founded; it is available.

The name "Macromydae" of Robineau-Desvoidy (1830) is not available because, although a formal latinized group name (not a vernacular), it was a descriptive term for a group of genera that did not

include Macromya Robineau-Desvoidy, 1830, a genus placed in context in a different and distant division of the family Tachinidae.

11.7.1.2. be clearly used as a scientific name to denote a suprageneric taxon and not merely as a plural noun or adjective referring to the members of a genus;

Example. Osten Sacken (1882) published a key to eleven species of the dipteran genus *Graptomyza* under the heading "*Graptomyzae* of the Indo-Malayan Archipelago". The word "*Graptomyzae*" is a plural noun referring only to "the species of the genus *Graptomyza*"; it is not available as a family-group name.

11.7.1.3. end with a family-group name suffix except as provided in Article 11.7.2; a family-group name of which the family-group name suffix [Art. 29.2] is incorrect is available with its original authorship and date, but with a corrected suffix [Arts. 29, 32.5.3];

Example. Latreille (1802) established a family Tipulariae, based on *Tipula* Linnaeus, 1758. The suffix -ariae is corrected to -IDAE; TIPULIDAE is attributed to Latreille, not to the author who first corrected the spelling.

11.7.1.4. not be based on certain names applied only to fossils and ending in the suffix *-ites*, *-ytes* or *-ithes* [Art. 20];

11.7.1.5. not be based on a genus-group name that has been suppressed by the Commission [Art. 78].

11.7.2. If a family-group name was published before 1900, in accordance with the above provisions of this Article but not in latinized form, it is available with its original author and date only if it has been latinized by later authors and has been generally accepted as valid by authors interested in the group concerned and as dating from that first publication in vernacular form.

Example. The mite family name TETRANYCHIDAE is generally attributed to Donnadieu, 1875. He published the name as "Tétranycidés", but in view of the general acceptance of TETRANYCHIDAE from 1875 it is to be attributed to his work and date, not to Murray (1877), who first latinized it.

11.8. Genus-group names. A genus-group name (see also Article 10.3) must be a word of two or more letters and must be, or be treated as, a noun in the nominative singular.

11.8.1. A genus-group name proposed in Latin text but written otherwise than in the nominative singular because of the requirements of Latin grammar is available, provided that it meets the other requirements of availability, but it is to be corrected to the nominative singular.

Example. The generic name *Diplotoxa* (Diptera) was proposed by Loew (1863) in a note under "*Chlorops versicolor* nov. sp." as follows: "Chlor. versicolor cum similibus proprium genus ... constituit, cui nomen Diplotoxae propono" [*Chlor. versicolor* and similar species constitute a separate genus, for which I propose the name of *Diplotoxa*].

11.9. Species-group names.

11.9.1. A species-group name must be a word of two or more letters, or a compound word (see Article 11.9.5), and, if a Latin or latinized word must be, or be treated as,

11.9.1.1. an adjective or participle in the nominative singular (as in *Echinus esculentus*, *Felis marmorata*, *Seioptera vibrans*), or

11.9.1.2. a noun in the nominative singular standing in apposition to the generic name (as in *Struthio camelus*, *Cercopithecus diana*), or

11.9.1.3. a noun in the genitive case (e.g. *rosae*, *sturionis*, *thermopylarum*, *galliae*, *sanctipauli*, *sanctaehelenae*, *cuvieri*, *merianae*, *smithorum*), or

11.9.1.4. an adjective used as a substantive in the genitive case and derived from the specific name of an organism with which the animal in question is associated (as in *Lernaeocera lusci*, a copepod parasitic on *Trisopterus luscus*).

11.9.2. An adjectival species-group name proposed in Latin text but written otherwise than in the nominative singular because of the requirements of Latin grammar is available provided that it meets the other requirements of availability, but it is to be corrected to the nominative singular if necessary.

Example. Accompanying his treatment of the species *Musca grossa* and *M. tremula*, Illiger (1807) described a new fly stating "... species occurrit, *Grossae* et *Tremulae* intermedia ... quam *Pavidam* nuncupamus" [there is a species intermediate between *M. grossa* and *M. tremula*, which is here called *pavida*]. The specific name published in the accusative case as *pavidam* is corrected to the nominative *pavida*.

11.9.3. A species-group name must be published in unambiguous combination with a generic name (either explicit, or implicit by context);

Example. In the Example to Article 11.9.2 above, the combinations are not revealed explicitly by juxtaposition, or language (i.e. the use of Latin names distinct from the rest of the text), but are clear from the context. The specific name *pavida* is taken to have been published in combination with *Musca*.

11.9.3.1. the generic name need not be valid or even available;

11.9.3.2. a species-group name is deemed to have been published in combination with the correct original spelling of the generic name, even if it was actually published in combination with an emendation or incorrect spelling of the generic name [Art. 33];

11.9.3.3. the generic name may be cited as an abbreviation providing it is unambiguous in the context in which the new species-group name is published;

11.9.3.4. the generic combination, although it must be unambiguous, can be tentative;

Example. In the binomen *Dysidea*? *papillosa* Johnston, 1842, the tentative generic combination does not affect the availability of the specific name.

11.9.3.5. a species-group name first published as an interpolated name [Art. 6.2] cannot be made available from that act;

11.9.3.6. a species-group name first published before 1961 in combination with a previously available generic name, but accompanied in the same work by a new nominal genus conditionally proposed [Art. 15] to contain the new species or subspecies, is deemed to have been made available in combination with the previously available generic name (see Articles 15.1 and 51.3.3).

Example. Lowe (1843) established the new fish species *Seriola gracilis* and at the same time conditionally proposed a new genus *Cubiceps* to contain that nominal species. By that action he is deemed to have established first the nominal species *Seriola gracilis* Lowe, 1843 and then to have transferred it to the conditionally proposed genus *Cubiceps*, in which its name is cited as *Cubiceps gracilis* (Lowe, 1843).

11.9.4. A species-group name must not consist of words related by a conjunction nor include a sign that cannot be spelled out in the Latin alphabet (see Article 11.2; for the use of the hyphen, see Article 32.5.2.4.3).

Examples. Expressions like "rudis planusque" (in which "-que" is a conjunction) and "?-album" are not admissible as species-group names.

11.9.5. If a species-group name is published as separate words that together represent or refer to a single entity (e.g. host species, geographical area), in a work in which the author has otherwise consistently applied the Principle of Binominal Nomenclature [Art. 5.1], the component words are deemed to form a single word and are united without a hyphen [Art. 32.5.2.2].

Examples. The specific names in *Coluber novaehispaniae*, *Calliphora terraenovae* and *Cynips quercusphellos* (the last named based on the binominal name of the host plant) were originally published as two words, but they are admissible because together they denote a single entity. However, the words "*aquilegiae flava*" in *Aphis aquilegiae flava* (i.e. the yellow aphis of *Aquilegia*) do not form an admissible species-group name because they are a descriptive phrase not based on the name of a single entity.

11.10. Deliberate employment of misidentifications. If an author employs a specific or subspecific name for the type species of a new nominal genus-group taxon, but deliberately in the sense of a previous misidentification of it, then the author's employment of the name is deemed to denote a new nominal species and the specific name is available with its own author and date as though it were newly proposed in combination with the new genus-group name (see Article 67.13 for fixation as type species of a species originally included as an expressly stated earlier misidentification, and Article 69.2.4 for the subsequent designation of such a species as the type species of a previously established nominal genus or subgenus).

Example. Leach (1817) when establishing the nominal genus *Plea* (Heteroptera) fixed *Notonecta minutissima* as the type species by monotypy, but he expressly employed the name *N. minutissima* in the sense of a misidentification used by Geoffroy in Fourcroy (1785) and other authors and not in the taxonomic sense of Linnaeus (1758), the original author of the binomen. By that act Leach is deemed to have established the new nominal species *Plea minutissima* Leach, 1817 for the taxon actually involved and to have fixed this (and not *Notonecta minutissima* Linnaeus, 1758) as the type species of *Plea*.

Article 12. Names published before 1931.

12.1. Requirements. To be available, every new name published before 1931 must satisfy the provisions of Article 11 and must be accompanied by a description or a definition of the taxon that it denotes, or by an indication.

12.2. Indications. For the purposes of this Article the word "indication" denotes only the following:

12.2.1. a bibliographic reference to a previously published description or definition even if the description or definition is contained in a work published before 1758, or that is not consistently binominal, or that has been suppressed by the Commission (unless the Commission has ruled that the work is to be treated as not having been published [Art. 8.7]);

12.2.2. the inclusion of a name in an index to a work that is not consistently binominal, provided that the provisions of Article 11.4.3 are satisfied;

12.2.3. the proposal of a new replacement name (nomen novum) for an available name, whether or not required by any provision of the Code;

12.2.4. the formation of a family-group name from an available generic name [Art. 29];

12.2.5. in the case of a new genus-group name, the use of one or more available specific names in combination with it, or clearly included under it, or clearly referred to it by bibliographic reference, provided that the specific name or names can be unambiguously assigned to a nominal species-group taxon or taxa;

Example. A beetle genus-group name *Isarthron* was proposed by Dejean (1835) with eight associated species-group names. The latter were cited with an author (e.g. "*luridum* Fabr."); although no bibliographic references were given, by context the names can be assigned unambiguously to nominal species and *Isarthron* was therefore made available.

12.2.6. a combined description or definition of a new nominal genus and a single new nominal species, which then provides an indication for each name irrespective of whether the names are stated to be new;

12.2.7. the proposal of a new genus-group name or of a new species-group name in association with an illustration of the taxon being named, or with a bibliographic reference to such an illustration, even if the illustration is contained in a work published before 1758, or in one that is not consistently binominal, or in one that has been suppressed by the Commission (unless the Commission has ruled that the work is to be treated as not having been published [Art. 8.7]); and

12.2.8. the description of the work of an organism [Arts. 23.3.2.3, 72.5.1].

12.3. Exclusions. The mention of any of the following does not in itself constitute a description, definition, or indication: a vernacular name, locality, geological horizon, host, label, or specimen.

Article 13. Names published after 1930.

13.1. Requirements. To be available, every new name published after 1930 must satisfy the provisions of Article 11 and must

13.1.1. be accompanied by a description or definition that states in words characters that are purported to differentiate the taxon, or

13.1.2. be accompanied by a bibliographic reference to such a published statement, even if the statement is contained in a work published before 1758, or in one that is not consistently binominal, or in one that has been suppressed by the Commission (unless the Commission has ruled that the work is to be treated as not having been published [Art. 8.7]), or

13.1.3. be proposed expressly as a new replacement name (nomen novum) for an available name, whether required by any provision of the Code or not.

Recommendation 13A. Intent to differentiate. When describing a new nominal taxon, an author should make clear his or her purpose to differentiate the taxon by including with it a diagnosis, that is to say, a summary of the characters that differentiate the new nominal taxon from related or similar taxa.

Recommendation 13B. Language. Authors should publish diagnoses of new taxa in languages widely used internationally in zoology. The diagnoses should also be given in languages used in the regions relevant to the taxa diagnosed.

13.2. Family-group names. To be available, every new family-group name published after 1930 must satisfy the provisions of Article 13.1 and must be formed from an available genus-group name then used as valid by the author in the family-group taxon [Arts. 11.7.1.1, 29].

13.2.1. A family-group name first published after 1930 and before 1961 which does not satisfy the provisions of Article 13.1 is available from its original publication only if it was used as valid before 2000, and also was not rejected by an author who, after 1960 and before 2000, expressly applied Article 13 of the then current editions of the Code.

13.3. Genus-group names. To be available, every new genus-group name published after 1930 (except those proposed for collective groups or ichnotaxa) must, in addition to satisfying the provisions of Article 13.1, be accompanied by the fixation of a type species in the original publication [Art. 68] or be expressly proposed as a new replacement name (nomen novum) [Art. 67.8].

13.3.1. If the name of a genus-group taxon established before 1931 is replaced by a new replacement name (nomen novum) after 1930, the type species of the nominal taxon must then be designated, if one has not already been fixed.

13.3.2. A name published at any time for a collective group [Art. 66] need not be accompanied by a type species fixation, since collective groups have no type species [Art. 42.3.1].

13.3.3. A name published for an ichnotaxon at the genus-group level before 2000 need not be accompanied by a type species fixation; but if such a name is replaced after 1999 by a new replacement name (nomen novum) a type species must then be designated, if one has not already been fixed [Art. 66.1].

13.4. Combined description of new genus-group taxon and new species. The combined description or definition of a new nominal genus or subgenus and a single included new nominal species, if marked by "gen. nov., sp. nov." or an equivalent expression, is deemed to confer availability on each name under Article 13.1.1 (a species-group taxon so described after 1999 must also satisfy the conditions of Article 16.4).

13.5. Combined description of new family-group taxon and new genus. The combined description or definition of a new nominal family-group taxon and a single new nominal genus of which the name provides the basis for the new family-group name [Art. 11.5] is deemed to confer availability on each name under Article 13.1.1, but for such names published after 1930 availability is not conferred on either name unless a type species is fixed for the new nominal genus [Arts. 13.2 and 13.3].

Recommendation 13C. Individual descriptions and definitions. Authors are urged to avoid publishing combined descriptions and definitions. Each new nominal taxon should be differentiated from other taxa at the same rank.

13.6. Exclusions.

13.6.1. A name proposed after 1930 cannot be made available by the methods of "indication" listed in Article 12.2.2, 12.2.4 (but see Article 13.2.1), 12.2.5 and 12.2.7.

13.6.2. A name proposed after 1930 which is based on the work of an extant animal is excluded from zoological nomenclature [Art. 1.3.6].

Article 14. Anonymous authorship of names and nomenclatural acts. A new name or nomenclatural act published after 1950 with anonymous authorship [Art. 50.1] is not thereby made available; such publication before 1951 does not prevent availability. This Article does not apply to nomenclatural acts published by the Commission.

Article 15. Names and nomenclatural acts published after 1960.

15.1. Conditional proposal. A new name or nomenclatural act proposed conditionally and published after 1960 is not thereby made available. A new name or nomenclatural act proposed conditionally and published before 1961 may be available (for Articles concerning type fixation see Articles 67.2.5 and 67.5.3; for species-group names first published at the same time as conditionally proposed generic names see Articles 11.9.3.6 and 51.3.3, and for those published in tentative combinations see Article 11.9.3.4).

15.2. Names published after 1960 with the term "variety" or "form" excluded. A new name published after 1960 expressly as the name of a "variety" or "form" is deemed to be infrasubspecific and as such is not regulated by the Code [Art. 1.1.1] and is excluded from its provisions [Arts. 1.3.4, 45.6.3].

15.2.1. For names published before 1961 for "varieties" or "forms" see Article 45.6.4.

Article 16. Names published after 1999.

16.1. All names: intention of authors to establish new nominal taxa to be explicit. Every new name published after 1999, including new replacement names (nomina nova), must be explicitly indicated as intentionally new.

Recommendation 16A. Means of explicitly indicating names as intentionally new. To avoid uncertainty about their intentions, authors proposing new names (nomina nova), including new replacement names, are advised to make their intentions explicit by using in headings, or at first use of new names in proposals, appropriate abbreviations of Latin terms such as "fam. nov.", "g. nov.", "sp. nov.", "ssp. nov.", or some strictly equivalent expression such as "new family", "new genus", "new species", "new subspecies", "n. fam.", "n. g.", "n. sp.", "n. ssp.", "nomen novum". The abbreviation "nom. nov." should only be used to indicate a new replacement name.

The term "stat. nov." should not be used. But when it has been used to indicate that the former name of an infrasubspecific entity is being applied to a species or subspecies an author should accept

that this explicitly indicated its user's intention to establish the former name of the infrasubspecific entity as a new name (see Article 45.5.1).

16.2. Family-group names: type genus to be cited. In addition to satisfying the provisions of Articles 13-15, a new family-group name published after 1999 must be accompanied by citation of the name of the type genus (i.e. the name from which the family-group name is formed).

Recommendation 16B. To avoid ambiguity with possible homonyms and similar names, authors are advised, when citing the name of the type genus, to cite its authorship and date of publication and also a bibliographic reference to the work in which it was established.

16.3. Genus-group names: ichnotaxa and collective groups. For names proposed for ichnotaxa see Article 13.3.3; for names proposed for collective groups see Article 13.3.2.

16.4. Species-group names: fixation of name-bearing types to be explicit. Every new specific and subspecific name published after 1999, except a new replacement name (a nomen novum), for which the name-bearing type of the nominal taxon it denotes is fixed automatically [Art. 72.7], must be accompanied in the original publication

16.4.1. by the explicit fixation of a holotype, or syntypes, for the nominal taxon [Arts. 72.2, 72.3, 73.1.1, 73.2 and Recs. 73A and 73C], and,

16.4.2. where the holotype or syntypes are extant specimens, by a statement of intent that they will be (or are) deposited in a collection and a statement indicating the name and location of that collection (see Recommendation 16C).

Recommendation 16C. Preservation and deposition of type specimens. Recognizing that name-bearing types are international standards of reference (see Article 72.10) authors should deposit type specimens in an institution that maintains a research collection, with proper facilities for preserving them and making them accessible for study (i.e. one which meets the criteria in Recommendation 72F).

Recommendation 16D. Publication of information distinguishing type specimens. When providing information to distinguish the type specimen(s) from other specimens (Article 16.4.1) authors should include information such as specimen numbers and descriptions of labels (see Recommendations 73C and 73D for data recommended).

Recommendation 16E. Preference for holotype over syntypes. Whenever possible, authors should select a holotype rather than syntypes.

Recommendation 16F. Illustrations of type specimens. Whenever possible a holotype or syntypes should be illustrated, showing characteristic features of the taxon, in the work in which the new nominal taxon is established.

Article 17. Names found to denote more than one taxon, or taxa of hybrid origin, or based on parts or stages of animals or on unusual specimens. The availability of a name is not affected even if

17.1. it is found that the original description or name-bearing type specimen(s) relates to more than one taxon, or to parts of animals belonging to more than one taxon; or

17.2. it is applied to a taxon known, or later found, to be of hybrid origin (see also Article 23.8); or

17.3. it is based on only part of an animal, or one sex, or one stage in the life cycle, or one of several dissimilar generations, or one morph or caste of a polymorphic species, or a parthenogenetic form, or a specimen which is an unusual example of the taxon (for exclusions see Articles 1.3 and 45.6).

Article 18. Inappropriate and tautonymous names. The availability of a name is not affected by inappropriateness or tautonymy [Art. 23.3.7].

Examples. Names such as *Polyodon*, *Apus*, *albus* or *sinensis* are not to be rejected because of a claim that they denote a character or distribution not possessed by the taxon. Species-group names such as *bison* in *Bison bison* and *troglodytes* in *Troglodytes troglodytes troglodytes* are not to be rejected because of tautonymy.

Article 19. Status of emendations, incorrect spellings, and mandatory changes.

19.1. Unjustified emendations and incorrect spellings. An unjustified emendation of an available name is itself an available name [Art. 33.2.3], provided that it meets the other requirements for availability, but an incorrect subsequent spelling is not [Art. 33.3].

19.2. Justified emendations. A justified emendation replaces the incorrect original spelling and, as a corrected original spelling, retains the authorship and date of the original name [Arts. 32.2.2, 33.2.2, 50.4];

19.3. Multiple original spellings. Alternative original spellings that are not adopted by the First Reviser [Art. 24.2] are deemed to be incorrect original spellings and are not separately available [Art. 32.4].

19.4. Mandatory changes. The availability of a name is not affected by a mandatory change made under the provisions of Article 34.

Article 20. Genus-group names ending in *-ites*, *-ytes* or *-ithes* given to fossils. A name formed by adding the suffix *-ites*, *-ytes* or *-ithes* to the whole or the stem of an available name of a genus-group taxon, and applied to fossils to distinguish them from extant members of that taxon, without clear evidence of intent to establish a new genus-group taxon, is available only for the purposes of the Principle of Homonymy. Such a name cannot be used as the valid name of a taxon [Art. 23.1] or as the basis of a family-group name [Art. 11.7.1.4].

Example. The generic names *Pectinites* and *Tellinites* Schlotheim, 1813, used to denote fossil shells thought to belong to the Recent genera *Pecten* Müller, 1776 and *Tellina* Linnaeus, 1758, are available only for the purposes of the Principle of Homonymy. However, names proposed for genus-group taxa of fossils (such as *Pentacrinites* Blumenbach, 1804) and not merely to indicate fossil members of genera of extant animals are not affected by this Article and may be available.

Article 21. Determination of date.

21.1. Date to be adopted. Except as provided in Article 3, the date to be adopted as the date of publication of a work and of a contained name or nomenclatural act is to be determined in accordance with the following provisions.

21.2. Date specified. The date of publication specified in a work is to be adopted as correct in the absence of evidence to the contrary.

21.3. Date incompletely specified. If the day of publication is not specified in a work, the earliest day on which the work is demonstrated to be in existence as a published work is to be adopted as the date of publication, but in the absence of such evidence the date to be adopted is

21.3.1. the last day of the month, when month and year, but not day, are specified or demonstrated, or

21.3.2. the last day of the year when only the year is specified or demonstrated.

21.4. Date incorrect. If the date of publication specified in a work is found to be incorrect, the earliest day on which the work is demonstrated to be in existence as a published work is to be adopted. In the absence of evidence as to day, the provisions of Article 21.3 apply.

21.5. Dates of work issued in parts. If parts of a work were published on different days, the date of publication of each part is to be separately determined.

21.6. Range of dates. If the date of publication specified in a work is a range of dates, the work is to be dated from the final day of the range; however, if evidence demonstrates that the date so determined is incorrect or that the work was issued in parts, the date or dates of publication are to be determined according to the relevant provisions of Articles 21.3-21.5.

21.7. Date not specified. If the date of publication is not specified in a work, the earliest day on which the work, or a part of it, is demonstrated to be in existence as a published work is to be adopted as the date of publication of the work or of that part. In the absence of evidence as to day, the provisions of Article 21.3 apply.

21.8. Advance distribution of separates and preprints. Before 2000, an author who distributed separates in advance of the specified date of publication of the work in which the material is published thereby advanced the date of publication. The advance issue of separates after 1999 does not do so, whereas preprints, clearly imprinted with their own date of publication, may be published works from the date of their issue (see Glossary: "separate", "preprint").

Recommendation 21A. Publication on other than specified date. An author, editor or publisher should not publish, permit to be published, or distribute a work, in whole or in part, for the first time other than on the specified date of publication. An author who receives separates in advance of the specified date of publication should not distribute them until he or she is certain that the work has been published.

Recommendation 21B. Simultaneous publication of relevant data. An editor or publisher should require that all matter submitted by an author and affecting the availability of a new scientific name, including type fixation, be published in the same work and on the same day [Recommendation 10A].

Recommendation 21C. Specification of date. An editor or publisher should state the day of publication of a work, and of each component part of a serial publication, and of any work issued in parts. In a volume made up of parts brought out separately, the day of publication of each part, and the exact pages, plates, maps, etc. that constitute it, should be specified.

Recommendation 21D. Retention of information on date. A librarian should not remove, or allow to be removed by a binder, the cover or pages bearing information relevant to the date of publication, the contents of the work or its parts, or the day or dates of receipt by the library.

Recommendation 21E. Bibliographic information on separates and preprints. An author, editor or publisher should ensure that a separate contains a complete bibliographic citation of the original work (including its date of publication) and has the same pagination as that work. Preprints, incorporating their own date of publication, should be identified clearly as such.

Recommendation 21F. Correction of date. If an author of a new scientific name or other nomenclatural act is aware that the date specified in the work containing it is incorrect or incomplete, he or she should publish a correction in some suitable manner.

Article 22. Citation of date. When cited, the date of publication of a name follows the name of the author (see Article 51).

Recommendation 22A. Citation.

22A.1. Citation of date. It is strongly recommended that the date of publication (and the authorship; see Article 50) of a name be cited at least once in a work which deals with a taxon. This is particularly important for homonyms and for species-group names not in their original combinations.

22A.2. Method of citation. In citing the date of publication of a name, an author

22A.2.1. should not interpose more than a comma between the name of the author and the date;

22A.2.2. if the actual date of publication is different from the date specified in the work (imprint date), should cite the actual date of publication; except that

22A.2.3. if wishing to cite both the actual and the imprint dates, should first cite the actual date (cited as above), followed by the imprint date for information and enclosed in parentheses or other brackets and quotation marks; for a different use of parentheses for the dates of family-group replacement names maintained under Article 40.2.1, see Recommendation 40A.

Examples. *Ctenotus alacer* Storr, 1970 ("1969"), or *Ctenotus alacer* Storr, 1970 ["1969"], or *Ctenotus alacer* Storr, 1970 (imprint 1969), or *Ctenotus alacer* Storr, 1970 (not 1969), was established in a work which, although published in 1970, carried an imprint date of 1969; *Anomalopus truncatus* (Peters, 1876 ["1877"]) was established in a different genus from *Anomalopus* in a work which, although published in 1876, carried an imprint date of 1877.

22A.3. Date in a changed combination. When the original date of publication of a species-group name is cited with the name in a changed combination, the date should be enclosed within the same parentheses as the name of the original author [Art. 51.3].

Example. *Limax ater* Linnaeus, 1758 should be cited as *Arion ater* (Linnaeus, 1758) when the species is included in the genus *Arion.*

Article 23. Principle of Priority.

23.1. Statement of the Principle of Priority. The valid name of a taxon is the oldest available name applied to it, unless that name has been invalidated or another name is given precedence by any provision of the Code or by any ruling of the Commission. For this reason priority applies to the validity of synonyms [Art. 23.3], to the relative precedence of homonyms [Arts. 53-60], the correctness or otherwise of spellings [Arts. 24, 32], and to the validity of nomenclatural acts (such as acts taken under the Principle of the First Reviser [Art. 24.2] and the fixation of name-bearing types [Arts. 68, 69, 74.1.3, 75.4]).

23.1.1. For exceptions for certain family-group names see Articles 35.5 and 40.

23.1.2. For the case of disused family-group names which are homonyms see Article 55.3.1.1.

23.1.3. For the circumstances in which certain genus-group names are excluded from application of the Principle of Priority see Articles 20 and 23.7.

23.1.4. For the circumstances in which certain species-group names are partly excluded from the application of the Principle of Priority see Articles 23.7.3 and 23.8.

23.2. Purpose. In accordance with the objects of the Code (see Preamble), the Principle of Priority is to be used to promote stability and it is not intended to be used to upset a long-accepted name in its accustomed meaning by the introduction of a name that is its senior synonym or homonym (for certain such cases see Article 23.9), or through an action taken following the discovery of a prior and hitherto unrecognized nomenclatural act (such as a prior type fixation; for such cases see Articles 70.2 and 75.6).

23.3. Application to Synonymy. The Principle of Priority requires that a taxon formed by bringing together into a single taxon at one rank two or more previously established nominal taxa within the family group, genus group or species group takes as its valid name the name determined in accordance with the Principle of Priority [Art. 23.1] and its Purpose [Art. 23.2], with change of suffix if required in the case of a family-group name [Art. 34].

Example. The valid name of a genus formed by the union of the genera *Aus* 1850 and *Cus* 1870, and the subgenus *Bus* 1800 (transferred from the genus *Xus* 1758), is *Bus* 1800.

23.3.1. Priority of the name of a nominal taxon is not affected by elevation or reduction in rank of the taxon within the family group, genus group or species group [Arts. 36, 43, 46], nor by any mandatory change in suffix of a family-group name consequent upon change in rank [Art. 34].

23.3.2. The Principle of Priority applies even if

23.3.2.1. any part of an animal is named before the whole animal, or

23.3.2.2. two or more generations, forms, stages, or sexes of a species are named as different nominal taxa, or

23.3.2.3. a name was established before 1931 on the work of an extant animal before one was established for the animal itself (for ichnotaxa see Article 23.7).

23.3.3. The Principle of Priority applies to interpolated specific names added in parenthesis after a genus-group name to denote aggregates of species or interpolated in parenthesis between specific and subspecific names to denote aggregates of subspecies [Art. 6.2]. The precedence of such an interpolated name is that which it has in the species group (see Article 11.9.3.5).

23.3.4. The Principle of Priority does not apply to names applied to infrasubspecific entities, since they are excluded from zoological nomenclature [Art. 1.3.4]. If a name which had been published for such an entity is later established for a species or subspecies (see Articles 10.2, 45.5 and 45.6), then the Principle of Priority applies from the date the name becomes available as the result of that establishment.

23.3.5. The Principle of Priority requires that if a name in use for a taxon is found to be unavailable or invalid it must be replaced by the next oldest available name from among its synonyms, including the names of the contained taxa of the same group (e.g. subgenera within genera), providing that that name is not itself invalid. If the rejected name has no potentially valid synonym a new substitute name (see Article 60.3) must be established in its place.

Examples. The genus *Aus* 1850 is considered to contain subgenera with the valid names *Aus* 1850, *Bus* 1900 and *Cus* 1860. If the name *Aus* is found to be unavailable or invalid, the name of the genus and nominotypical subgenus becomes *Cus* 1860; however, if the former subgenus *Aus (Aus)* had a synonym *Dus* 1855 (i.e. it contains the type species of *Dus*) then the name of the genus becomes *Dus* 1855.

23.3.6. The Principle of Priority continues to apply to an available name when treated as a junior synonym; it may be used as the valid name of a taxon by an author who considers the synonymy to be erroneous, or if the senior synonym is found to be unavailable or invalid (for names first published as junior synonyms, see Article 11.6).

23.3.7. An available name valid according to the Principle of Priority is not to be rejected, even by its author(s), for a reason such as its inappropriateness or tautonymy (for examples see Article 18), or incorrect spelling (such a name remains valid, but in its correct form: see Article 19).

23.4. Application to Homonymy. The Principle of Priority requires that the relative precedence of homonyms, including secondary homonyms in the species group, is determined in accordance with the Principle of Priority (see Articles 23.1 and 23.2) and the Principle of Homonymy [Art. 52]; for its application to homonyms published simultaneously, see Article 24.

23.4.1. The Principle of Priority applies to a family-group name if either the name itself or the name of its type genus is found to be a junior homonym; for such cases see Articles 55 and 39 respectively.

23.5. Application to spellings. The Principle of Priority applies to the spellings of an available name, unless an incorrect spelling has been preserved in accordance with Article 33.3.1, or, in the case of family-group names, with Articles 29.4 or 29.5. (For the preservation of unjustified emendations see Article 33.2.3.1).

23.6. Application to nomenclatural acts. In accordance with the Principle of Priority the first nomenclatural act taken in respect of a name or a nominal taxon to achieve any of the following constitutes the only valid such act: i.e. acts taken under the First Reviser Principle [Art. 24.2], fixation of type species [Arts. 68, 69], first inclusion of nominal species in a genus-group taxon [Art. 67.2], designation of lectotypes [Art. 74.1.3] and neotypes [Art. 75.5] (types in the family group are fixed automatically and are not subject to subsequent fixation [Art. 63]; but for names published after 1999 see Article 16.2).

23.7. Application to collective groups and ichnotaxa. Except for the application of the Principle of Homonymy [Arts. 55, 56, 57],

23.7.1. a name established expressly for a collective group does not compete in priority with other genus-group names;

23.7.2. a name established for a nominal genus-group taxon but subsequently brought into use for a collective group no longer competes in priority with other genus-group names while so used (see also Article 67.14);

23.7.3. a name established for an ichnotaxon does not compete in priority with a name established for an animal (even for the animal that formed, or may have formed, the trace fossil).

Example. Krebs (1966) associated the footprints named *Chirotherium* by Kaup (1835) with the Triassic fossil reptile *Ticinosuchus* Krebs, 1965. *Ticinosuchus* must not be rejected as a junior synonym of *Chirotherium* on that account.

23.8. Application to species-group names established on hybrids. A species-group name established for an animal later found to be a hybrid [Art. 17] must not be used as the valid name for either of the parental species, even if it is older than all other available names for them. Such a name may enter into homonymy. For names based on taxa which are of hybrid origin see Article 17.2.

23.9. Reversal of precedence. In accordance with the purpose of the Principle of Priority [Art. 23.2], its application is moderated as follows:

23.9.1. prevailing usage must be maintained when the following conditions are both met:

23.9.1.1. the senior synonym or homonym has not been used as a valid name after 1899, and

23.9.1.2. the junior synonym or homonym has been used for a particular taxon, as its presumed valid name, in at least 25 works, published by at least 10 authors in the immediately preceding 50 years and encompassing a span of not less than 10 years.

23.9.2. An author who discovers that both the conditions of 23.9.1 are met should cite the two names together and state explicitly that the younger name is valid, and that the action is taken in accordance with this Article; at the same time the author must give evidence that the conditions of Article 23.9.1.2 are met, and also state that, to his or her knowledge, the condition in Article 23.9.1.1 applies. From the date of publication of that act the younger name has precedence over the older name. When cited, the younger but valid name may be qualified by the term nomen protectum and the invalid, but older, name by the term nomen oblitum (see Glossary). In the case of subjective synonymy, whenever the names are not regarded as synonyms the older name may be used as valid.

Example. The valid name of a species formed by including the nominal taxa *Aus xus* Schmidt, 1940 and *Aus wus* Jones, 1800 in a single taxonomic species is *Aus wus* Jones, 1800. But if the conditions in Article 23.9.1.1 and 23.9.1.2 are met, then *Aus xus* Schmidt, 1940 becomes (unless the Commission rules otherwise) the valid name of that species. However, if the nominal taxa do refer to separate taxonomic species the names of these are *Aus xus* Schmidt, 1940 and *Aus wus* Jones, 1800. If, on the other hand, the two taxa are treated as subspecies of a single species then the names of these are *Aus xus xus* Schmidt, 1940 and *Aus xus wus* Jones, 1800 - not *Aus wus xus* Schmidt, 1940 and *Aus wus wus* Jones, 1800.

Recommendation 23A. If suppression desired. If in the opinion of an author suppression of the older name, rather than a change in the relative precedence of the two names involved, is desirable, in addition to taking action under Article 23.9.2 to maintain prevailing usage, the author should refer the case to the Commission with an appropriate recommendation for a ruling.

23.9.3. If the conditions of 23.9.1 are not met but nevertheless an author considers that the use of the older synonym or homonym would threaten stability or universality or cause confusion, and so wishes to maintain use of the younger synonym or homonym, he or she must refer the matter to the

Commission for a ruling under the plenary power [Art. 81]. While the case is under consideration use of the junior name is to be maintained [Art. 82].

23.9.4. If the case is one of homonymy in family-group names resulting from similarity but not identity in the names of type-genera, see Article 55.3.

23.9.5. When an author discovers that a species-group name in use is a junior primary homonym [Art. 53.3] of another species-group name also in use, but the names apply to taxa not considered congeneric after 1899, the author must not automatically replace the junior homonym; the case should be referred to the Commission for a ruling under the plenary power and meanwhile prevailing usage of both names is to be maintained [Art. 82].

23.9.6. The deliberate use of a name contrary to Article 23.9.1, or the mentioning of a name in a synonymy, or its mere listing in an abstracting publication, or in a nomenclator or other index or list of names must not be taken into account in determining usage under Articles 23.9.1.1 and 23.9.1.2.

23.10. Erroneous reversal of precedence. If action taken under Article 23.9.2 is found later to have been taken in error in that conditions 23.9.1.1 and 23.9.1.2 were not met, the case is to be referred to the Commission. Prevailing usage must be maintained [Art. 82] until the Commission has made a ruling (i.e. an author discovering that such an erroneous action has occurred must not automatically use the older synonym or homonym).

23.11. Application of strict priority desired. If an author wishes to replace a name in prevailing usage by its older synonym when the conditions of Article 23.9.1 are met, he or she must apply to the Commission for a ruling under the plenary power [Art. 81].

23.12. Names rejected under former Article 23b. A name that was rejected between 6 November 1961 and 1 January 1973, by an author who explicitly applied Article 23b in force between those dates under the then current editions of the Code, on the grounds that it was a *nomen oblitum* (see Glossary) is not to be given precedence over a junior synonym in prevailing usage, unless the Commission rules that the older but rejected name is to take precedence.

23.12.1. The term "rejected" in this Article must be construed rigidly; mere disregarding of a name is not to be construed as rejection (even if the Article 23b, then in force, was mentioned). The rejected name must have been cited and a junior synonym used instead of it as the valid name.

23.12.2. A name which was rejected under the former Article 23b may, in the absence of any other cause of invalidity, be used as valid if it is no longer considered to be a synonym of another name, or if its synonyms are themselves invalid under the provisions of the Code.

Article 24. Precedence between simultaneously published names, spellings or acts.

24.1. Automatic determination of precedence of names. When homonyms or synonyms are established simultaneously, but proposed at different ranks, in the family group, genus group or species group the name proposed at higher rank takes precedence [Arts. 55.5, 56.3, 57.7]. See Article 61.2.1 for the precedence of simultaneous but different type fixations for taxa and their nominotypical subordinate taxa.

Example. The simultaneously established species-group names *vulgaris* Schmidt and *sinensis* Chang are considered to be synonyms; *sinensis*, proposed for a species, takes precedence over *vulgaris* because the latter was proposed for a subspecies.

24.2. Determination by the First Reviser.

24.2.1. Statement of the Principle of the First Reviser. When the precedence between names or nomenclatural acts cannot be objectively determined, the precedence is fixed by the action of the first author citing in a published work those names or acts and selecting from them; this author is termed the "First Reviser".

24.2.2. Determination of precedence of names or acts by the First Reviser. If two or more names, different or identical, and based on the same or different types, or two or more nomenclatural acts, are

published on the same date in the same or different works, the precedence of the names or acts is fixed by the First Reviser unless Article 24.1 applies.

Example. The names *Strix scandiaca* and *S. nyctea* (Aves) were published together by Linnaeus (1758) and are considered to be subjective synonyms. Lönnberg (1931) acted as First Reviser and gave precedence to the name *Strix scandiaca*; thus, the valid name for the species (the Snowy Owl) is *Nyctea scandiaca* (Linnaeus, 1758) rather than *N. nyctea* (Linnaeus, 1758).

24.2.3. Selection of correct original spellings. If a name is spelled in more than one way in the original work, the first author to have cited them together and to have selected one spelling as correct is the First Reviser. The selected spelling (if not incorrect under Articles 32.4. or 32.5) is thereby fixed as the correct original spelling; any other spelling is incorrect (and therefore unavailable [Art. 32.4]).

24.2.4. Original authors may be deemed to be First Revisers of spellings. When the author, or one of joint authors, of two different original spellings of the same name subsequently uses one of them as valid in a work (including the author's or publisher's corrigenda), and neither had previously been selected as the correct spelling by a First Reviser, the author is deemed to be the First Reviser, whether or not the author cites both spellings together (that used as valid becomes the correct original spelling).

24.2.5. Unnecessary action by a First Reviser. If it is shown subsequently that the precedence of names, spellings or acts can be objectively determined, the action of the First Reviser is nullified.

Recommendation 24A. Action of First Reviser. In acting as First Reviser in the meaning of this Article, an author should select the name, spelling or nomenclatural act that will best serve stability and universality of nomenclature.

Recommendation 24B. First Revisers choosing between identical names should follow contemporary attributions of authorship. Zoologists acting as First Revisers to determine the precedence of identical names published in the same or different works, and on the same day, are advised to follow attributions by the authors concerned if these are known (see Article 50.6).

Article 25. Formation and treatment of names. A scientific name must be formed and treated in accordance with the relevant provisions of Article 11 and Articles 26 to 34 (also see Appendix B, General Recommendations).

Recommendation 25A. Abbreviations. On first mention of a scientific name in a published work all components should be printed in full. Subsequently, if an abbreviation is used for any part of a binomen or a trinomen, the abbreviation should be unambiguous and it should always be followed by a full stop (period) to avoid it being thought to be a complete word.

Example. The mosquito name *Aedes aegypti* should be so printed on first mention, but subsequently may be given as *A. aegypti* (and *A. a. aegypti* for *Aedes aegypti aegypti*) but in a case where confusion is likely (e.g. with *Anopheles*), *Aedes aegypti* might be abbreviated to *Ae. aegypti* (and *An. maculipennis* used without ambiguity for a species of *Anopheles*).

Recommendation 25B. Derivation. In publishing a new scientific name an author should state its derivation.

Recommendation 25C. Responsibility of authors forming new names. Authors should exercise reasonable care and consideration in forming new names to ensure that they are chosen with their subsequent users in mind and that, as far as possible, they are appropriate, compact, euphonious, memorable, and do not cause offence.

Article 26. Assumption of Greek or Latin in scientific names. If the spelling of a scientific name, or of the final component word of a compound name [Art. 31.1], is the same as a Greek or Latin word, that name or that component is deemed to be a word in the relevant language unless the author states otherwise when making the name available.

Article 27. Diacritic and other marks. No diacritic or other mark (such as an apostrophe), or ligature of the letters *a* and *e* (*æ*) or *o* and *e* (*œ*) is to be used in a scientific name; the hyphen is to be used only as specified in Article 32.5.2.4.3.

Article 28. Initial letters. A family-group or genus-group name or the name of a taxon above the family group is always to begin with an upper-case initial letter, and a species-group name always with a lower-case initial letter, regardless of how they were originally published.

Recommendation 28A. Initial words. A species-group name should not be put as the first word in a sentence, to avoid its beginning with an upper-case initial letter.

Article 29. Family-group names.

29.1. Formation of family-group names. A family-group name is formed by adding to the stem of the name [Art. 29.3] of the type genus, or to the entire name of the type genus [see Article 29.6], a suffix as specified in Article 29.2.

29.2. Suffixes for family-group names. The suffix -OIDEA is used for a superfamily name, -IDAE for a family name, -INAE for a subfamily name, -INI for the name of a tribe, and -INA for the name of a subtribe. These suffixes must not be used at other family-group ranks. The suffixes of names for taxa at other ranks in the family-group are not regulated.

29.2.1. Names in the genus and species groups which have endings identical with those of the suffixes of family-group names are not affected by this Article.

Examples. The names of the following taxa at ranks below the family group are not affected by their having endings identical to those of suffixes of family-group names: the genus *Ranoidea* (Amphibia) and the species *Collocalia terraereginae* (Aves), *Concinnia martini* (Reptilia) and *Hyla mystacina* (Amphibia).

29.3. Determination of stem in names of type genera. The stem of a family-group name is based on the name of its type genus [Art. 63] and determined as follows.

29.3.1. If a generic name is or ends in a Greek or Latin word, or ends in a Greek or Latin suffix, the stem for the purposes of the Code is found by deleting the case ending of the appropriate genitive singular.

Examples. *Coccinella* (genitive Coccinellae, stem Coccinell-) gives the family name COCCINELLIDAE. Similarly *Culex* (genitive Culicis, stem Culic-) gives CULICIDAE, *Reduvius* (genitive Reduvii, stem Reduvi-) gives REDUVIIDAE, *Archaeopteryx* (genitive Archaeo-pterygis, stem Archaeopteryg-) gives ARCHAEOPTERYGIDAE.

29.3.1.1. If the stem so formed ends in -id, those letters may be elided before adding the family-group suffixes. If, however, the unelided form is in prevailing usage, that spelling is to be maintained, whether or not it is the original spelling.

Example. The family-group names HALIOTIDAE and HALIOTOIDEA are not changed to HALIOTIDIDAE and HALIOTIDOIDEA, even though the stem of *Haliotis* is Haliotid-, as the latter spellings are not in prevailing usage.

29.3.2. If the name of a genus is or ends in a Greek word latinized with a change in ending, the stem is that appropriate to the latinized form, as determined in Article 29.3.1.

Example. In the generic name *Leptocerus*, of which the second part is latinized from the Greek word keras, the stem for the formation of the family-group name is Leptocer-, not Leptocerat-, as it would be if it were not latinized.

29.3.3. If a generic name is or ends in a word not Greek or Latin, or is an arbitrary combination of letters, the stem for the purposes of the Code is that adopted by the author who establishes the new family-group taxon, either the entire generic name (see Article 29.6), or the entire generic name with

the ending elided, or the entire generic name with one or more appropriate linking letters incorporated in order to form a more euphonious family-group name.

29.4. Acceptance of originally formed stem. If after 1999 a new family-group name is based on a generic name which is or ends in a Greek or Latin word or ends in a Greek or Latin suffix, but its derivation does not follow the grammatical procedures of Articles 29.3.1 or 29.3.2, its original spelling must be maintained as the correct original spelling, provided

29.4.1. it has a correctly formed suffix [Art. 29.2], and

29.4.2. its stem is formed from the name of the type genus as though it were an arbitrary combination of letters [Art. 29.3.3].

Example. If an author proposes after 1999 the name PROREXIDAE based on the generic name *Prorex* (genitive: Proregis) that spelling is to be maintained, even though the spelling PROREGIDAE would have been proper under Article 29.3.1.

29.5. Maintenance of current spellings. If a spelling of a family-group name was not formed in accordance with Article 29.3 but is in prevailing usage, that spelling is to be maintained, whether or not it is the original spelling and whether or not its derivation from the name of the type genus is in accordance with the grammatical procedures in Articles 29.3.1 and 29.3.2.

29.6. Avoidance of homonymy in family-group names. An author wishing to establish a new family-group name must avoid its homonymy with any known previously established names by forming an appropriate stem from the name of the type genus. (See Article 55.3.1 for the elimination of homonymy between existing family-group names).

Recommendation 29A. Use of entire generic name as the stem as the preferred means of avoiding homonymy between family-group names. As a means of avoiding homonymy between a new family-group name and a previously established one, due to the respective type genera having identical stems (as determined by Article 29.3), an author is advised to use the entire name of the type genus of the new family-group taxon as the stem.

Example. An author proposing a new family name based on a type genus *Mirum* can avoid its homonymy with MIRIDAE Hahn, 1833 (Heteroptera, type genus *Miris* Fabricius, 1794) by taking the stem to be Mirum-, and hence forming the name MIRUMIDAE. (The Commission followed an analogous course in Opinion 898 (1970) when ruling that the stem of *Mira* Schellenberg, 1803 (Hymenoptera) is Mira-, thereby emending the spelling of the family-group name MIRINI Ashmead, 1900 to MIRAINI and so removing homonymy with MIRIDAE Hahn).

Article 30. Gender of genus-group names. The gender of a genus-group name is determined by the provisions of this Article.

30.1. Gender of names formed from Latin or Greek words. Subject to the exceptions specified in Article 30.1.4,

30.1.1. a genus-group name that is or ends in a Latin word takes the gender given for that word in standard Latin dictionaries; if it is a compound word formed from two or more components, the gender is given by the final component (in the case of a noun, the gender of that noun; in the case of any other component, such as a Latin suffix, the gender appropriate to that component);

Examples. *Felis* and *Tuba*, feminine; *Salmo*, *Passer*, *Ursus* and *Turdus*, masculine; *Argonauta*, masculine from the final noun nauta (a sailor), masculine; *Lithodomus*, feminine from the final noun domus (a home), feminine; *Anser* (a goose), masculine, as are names ending in it; *Anseranas*, feminine (a compound name of two nouns: *Anser*, masculine, but the final noun *anas* (a duck) is feminine); *Anserina* (*Anser* with the suffix -ina), feminine; *Oculina*, feminine (from the Latin masculine noun oculus and the feminine suffix -ina); *Orca* (from orca, a large-bellied pot), feminine; names formed from it by the addition of suffixes: *Orcaella*, feminine, and *Orcinus*, masculine.

30.1.2. a genus-group name that is or ends in a Greek word transliterated into Latin without other changes takes the gender given for that word in standard Greek dictionaries;

Examples. Greek nouns transliterated without change into Latin as the whole or part of a name: *Ichthyornis*, ending in *-ornis* (ornis), is masculine; *Lepas* (lepas) is feminine; *Diadema* (diadema) is neuter. Names ending in *-caris* (caris), *-gaster* (gaster), *-lepis* (lepis), or *-opsis* (opsis) are feminine; names ending in *-ceras* (keras), *-nema* (nema), *-soma* (soma), *-stigma* (stigma), or *-stoma* (stoma) are neuter.

30.1.3. a genus-group name that is a Greek word latinized with change of ending, or with a Latin or latinized suffix, takes the gender normally appropriate to the changed ending or the Latin suffix.

Examples. Names with the Latin gender ending *-us*, latinized from the Greek endings -os (masculine or feminine), -e (feminine), -a (neuter) or -on (neuter), are masculine: e.g. *-cephalus* (kephale), *-cheilus* and *-chilus* (cheilos), *-crinus* (krinon), *-echinus* (echinos), *-gnathus* (gnathos), *-rhamphus* (rhamphos), *-rhynchus* (rhynchos), *-somus* (soma), *-stethus* (stethos), and *-stomus* (stoma). Names ending in the Latin gender ending *-a*, latinized from the Greek ending -on are feminine, e.g. *-metopa* (metopon). Names derived from the Greek -keras (neuter) may have the ending *-cerus* (masculine) or -cera (feminine), although simple transliteration of the Greek ending as *-ceras* retains the neuter gender; *Phorella* (feminine) is derived from the Greek word phor (a robber, masculine) and the Latin diminutive suffix *-ella* (feminine); *Scatella*, feminine, is derived from skatos (neuter) and the Latin suffix *-ella* (feminine); *Doridunculus* (masculine) from Doris, Greek, the name of a sea godess (feminine), and *-unculus* a Latin suffix (masculine).

30.1.4. The following exceptions apply:

30.1.4.1. If the author states when establishing the name that it is not formed from, or is not treated as, a Latin or Greek word [Art. 26], the gender is determined as though the name is an arbitrary combination of letters (Article 30.2.2).

30.1.4.2. A genus-group name that is or ends in a word of common or variable gender (masculine or feminine) is to be treated as masculine unless its author, when establishing the name, stated that it is feminine or treated it as feminine in combination with an adjectival species-group name [Art. 31.2].

Examples. *Bos* is of common gender (meaning ox or cow); it and compound names ending in it (such as *Ovibos*), are treated as masculine. Compound Latin nouns ending in *-cola* (masculine or common gender in Latin): *Agricola* ("tiller of fields", masculine in Latin) is masculine, *Sylvicola* ("inhabitant of woods") and *Monticola* ("highlander") are treated as masculine. *Petricola* ("dweller among rocks", common gender in Latin) is feminine because it was originally treated as feminine by being combined with the specific names *costata*, *striata* and *sulcata*.

30.1.4.3. A compound genus-group name ending in -ops is to be treated as masculine, regardless of its derivation or of its treatment by its author.

30.1.4.4. A compound genus-group name ending in the suffix *-ites*, *-oides*, *-ides*, *-odes*, or *-istes* is to be treated as masculine unless its author, when establishing the name, stated that it had another gender or treated it as such by combining it with an adjectival species-group name in another gender form.

Examples. *Hoplitoides* and *Harpides* are masculine, but *Aleptinoides* (meaning "like *Aleptina*") is treated as feminine because that was the gender adopted by its original authors.

30.1.4.5. A genus-group name that is or ends in a Latin word of which the ending has been changed takes the gender appropriate to the new ending; if the ending is such as not to indicate a particular gender, the name is to be treated as masculine.

Example. *Dendrocygna* is feminine, although the second word in the combination is formed from cygnus (a swan), masculine.

30.2. Gender of names formed from words that are neither Latin nor Greek.

30.2.1. If a name reproduces exactly a noun having a gender in a modern European language (without having to be transliterated from a non-Latin alphabet into the Latin alphabet) it takes the gender of that noun.

Example. *Pfrille*, from the feminine German noun Pfrille (a minnow), is feminine.

30.2.2. Unless Article 30.2.1 applies, a name that is not formed from a Latin or Greek word takes the gender expressly specified by its author.

30.2.3. If no gender was specified, the name takes the gender indicated by its combination with one or more adjectival species-group names of the originally included nominal species [Art. 67.2.].

30.2.4. If no gender was specified or indicated, the name is to be treated as masculine, except that, if the name ends in *-a* the gender is feminine, and if it ends in *-um*, *-on*, or *-u* the gender is neuter.

Examples. *Jackmahoneya* (from Jack Mahoney) is masculine because its author specified it. *Oldfieldthomasia* (from Oldfield Thomas) and *Dacelo* (anagram of *Alcedo*) are feminine, being so treated by their authors. *Abudefduf* (from Arabic), *Gekko* (from Malay) and *Milax* (an anagram of *Limax*) are treated as masculine, because no gender was specified or indicated by their authors. *Buchia* (from von Buch), *Cummingella* (from Cumming), *Zyzza* (an arbitrary combination of letters) and *Solubea* (an anagram) are all treated as feminine, and the anagram *Daption* as neuter.

Recommendation 30A. Gender and derivation to be made explicit. Authors should expressly state the gender and derivation of a new genus-group name when establishing it.

Recommendation 30B. Gender to be made self-evident. So that the gender of new genus-group names is self-evident, authors, when forming new names based on words that are not Latin or Greek and stating their genders, are advised to choose genders for them appropriate to their endings.

Article 31. Species-group names.

31.1. Species-group names formed from personal names. A species-group name formed from a personal name may be either a noun in the genitive case, or a noun in apposition (in the nominative case), or an adjective or participle [Art. 11.9.1].

31.1.1. A species-group name, if a noun in the genitive case formed from a personal name that is Latin, or from a modern personal name that is or has been latinized, is to be formed in accordance with the rules of Latin grammar.

Examples. Margaret, if latinized to Margarita or Margaretha, gives the genitives *margaritae* or *margarethae*; similarly Nicolaus Poda, even though the name of a man, if accepted as a Latin name, gives *podae*; Victor and Hercules, if accepted as Latin names, give *victoris* and *herculis*; the name of Plinius, a Roman, even though anglicized to Pliny, gives *plinii*; Fabricius and Sartorius, if treated as Latin names, give *fabricii* and *sartorii*, but if treated as modern names give *fabriciusi* and *sartoriusi*; Cuvier, if latinized to Cuvierius, gives *cuvierii*.

31.1.2. A species-group name, if a noun in the genitive case (see Article 11.9.1.3) formed directly from a modern personal name, is to be formed by adding to the stem of that name -i if the personal name is that of a man, *-orum* if of men or of man (men) and woman (women) together, *-ae* if of a woman, and *-arum* if of women; the stem of such a name is determined by the action of the original author when forming the genitive.

Example. Under this provision, the species-group names *podai* from Poda, *victori* from Victor, and *cuvieri* from Cuvier are admissible. The names *puckridgei* and *puckridgi* may be formed from Puckridge.

31.1.3. The original spelling of a name formed under Articles 31.1.1 and 31.1.2 is to be preserved [Art. 32.2] unless it is incorrect [Arts. 32.3, 32.4] (for treatment of incorrect subsequent spellings of such species-group names see Articles 33.3 and 33.4).

Example. The species-group names *cuvierii* and *cuvieri* are admissible under Arts. 31.1.1 and 31.1.2 respectively, and, if available, are preserved as distinct and correct original spellings. (For homonymy between such names when combined with the same generic name, see Article 58.14).

Recommendation 31A. Avoidance of personal names as nouns in apposition. An author who establishes a new species-group name based on a personal name should preferably form the name in the genitive case and not as a noun in apposition, in order to avoid the appearance that the species-group name is a citation of the authorship of the generic name.

Examples. Gould (1841) established the specific name *geoffroii* in the genus *Dasyurus* Geoffroy, 1796. Had he proposed *geoffroy* as a noun in apposition, the combination *Dasyurus geoffroy* would have been confusing and misleading. Names such as *Picumnus castelnau* and *Acestrura mulsant*, in which the specific names are identical to personal names, are also confusing (and especially so when the specific name is wrongly given an upper case initial letter [Art. 28]).

31.2. Agreement in gender. A species-group name, if it is or ends in a Latin or latinized adjective or participle in the nominative singular, must agree in gender with the generic name with which it is at any time combined.

31.2.1. A species-group name that is a simple or compound noun (or noun phrase) in apposition need not agree in gender with the generic name with which it is combined (the original spelling is to be retained, with gender ending unchanged; see Article 34.2.1).

Examples. The specific name in *Simia diana* (*Simia* and *diana* both feminine) remains unchanged in *Cercopithecus diana* (*Cercopithecus* masculine); and the noun phrases in *Melanoplus femurrubrum* (*Melanoplus* masculine; but *rubrum* agreeing with *femur*, neuter) and *Desmometopa m-nigrum* (*Desmometopa* feminine; *nigrum* neuter, agreeing with *m*, because letters of the alphabet are neuter).

31.2.2. Where the author of a species-group name did not indicate whether he or she regarded it as a noun or as an adjective, and where it may be regarded as either and the evidence of usage is not decisive, it is to be treated as a noun in apposition to the name of its genus (the original spelling is to be retained, with gender ending unchanged; see Article 34.2.1).

Example. Species-group names ending in *-fer* and *-ger* may be either nouns in apposition, or adjectives in the masculine gender. *Cephenemyia phobifer* (Clark) has often been used as *C. phobifera, but the original binomen was Oestrus phobifer; since Oestrus is masculine, phobifer in that binomen may be either a masculine adjective or a noun in apposition; hence it is to be treated as a noun in apposition and not changed when combined with the feminine generic name Cephenemyia.*

31.2.3. If a species-group name (or, in the case of a compound species-group name, its final component word) is not a Latin or latinized word [Arts. 11.2, 26], it is to be treated as indeclinable for the purposes of this Article, and need not agree in gender with the generic name with which it is combined (the original spelling is to be retained, with ending unchanged; see Article 34.2.1).

Example. Species-group names such as *melas*, *melaina*, *melan*; *polychloros*, *polychloron*; *celebrachys*; *nakpo* (from the Tibetan word meaning black) remain unchanged when transferred from combination with a generic name of one gender to combination with one of another gender. But *melaena* is a latinized adjective (derived from the Greek melaina) and must be changed when so transferred, with an appropriate Latin gender ending (*-us* masculine, *-um* neuter).

Article 32. Original spellings.

32.1. Definition. The "original spelling" of a name is the spelling used in the work in which the name was established.

32.2. Correct original spelling. The original spelling of a name is the "correct original spelling", unless it is demonstrably incorrect as provided in Article 32.5.

32.2.1. If a name is spelled in more than one way in the work in which it was established, then, except as provided otherwise in this Article, the correct original spelling is that chosen by the First Reviser [Art. 24.2.3] (or, if applicable, by an original author when acting as First Reviser [Art. 24.2.4]).

32.2.2. A justified emendation [Art. 33.2.2] is treated as though it is a correct original spelling (and therefore takes the authorship and date of the original publication [Art. 19.2]).

32.3. Preservation of correct original spelling. The correct original spelling of a name is to be preserved unaltered, except where it is mandatory to change the suffix or the gender ending under Article 34 (for treatment of emendations and incorrect subsequent spellings see Articles 32.5, 33.2, 33.3, 33.4).

32.4. Status of incorrect original spellings. An original spelling is an "incorrect original spelling" if it must be corrected as required in Article 32.5. An incorrect original spelling has no separate availability and cannot enter into homonymy or be used as a substitute name.

32.5. Spellings that must be corrected (incorrect original spellings).

32.5.1. If there is in the original publication itself, without recourse to any external source of information, clear evidence of an inadvertent error, such as a lapsus calami or a copyist's or printer's error, it must be corrected. Incorrect transliteration or latinization, or use of an inappropriate connecting vowel, are not to be considered inadvertent errors.

32.5.1.1. The correction of a spelling of a name in a publisher's or author's corrigendum issued simultaneously with the original work or as a circulated slip to be inserted in the work (or if in a journal, or work issued in parts, in one of the parts of the same volume) is to be accepted as clear evidence of an inadvertent error.

Examples. If an author in proposing a new species-group name were to state that he or she was naming the species after Linnaeus, yet the name was published as *ninnaei*, it would be an incorrect original spelling to be corrected to *linnaei*. *Enygmophyllum* is not an incorrect original spelling (for example of *Enigmatophyllum*) solely on the grounds that it was incorrectly transliterated or latinized.

32.5.2. A name published with a diacritic or other mark, ligature, apostrophe, or hyphen, or a species-group name published as separate words of which any is an abbreviation, is to be corrected.

32.5.2.1. In the case of a diacritic or other mark, the mark concerned is deleted, except that in a name published before 1985 and based upon a German word, the umlaut sign is deleted from a vowel and the letter "e" is to be inserted after that vowel (if there is any doubt that the name is based upon a German word, it is to be so treated).

Examples. *nuñezi* is corrected to *nunezi*, and *mjøbergi* to *mjobergi*, but *mülleri* (published before 1985) is corrected to *muelleri*.

32.5.2.2. In a compound species-group name published as separate words that are deemed to form a single word [Art. 11.9.5], the component words are to be united without a hyphen.

Examples. *bonae spei* becomes *bonaespei*, *terrae novae* becomes *terraenovae*.

32.5.2.3. In a compound species-group name published as words united by an apostrophe or a hyphen, the words are to be united by removing the mark concerned (but see Article 32.5.2.4.3).

Examples. *d'urvillei* becomes *durvillei*, *striato-radiatus* becomes *striatoradiatus*.

32.5.2.4. In a compound species-group name of which the first part consists of an abbreviation in Latin letters, or a Latin letter or a number of Latin letters qualifying the second part, whether or not separated by punctuation or a hyphen, the parts are to be united as follows.

32.5.2.4.1. If any of the separate parts is an abbreviation of a name (or part of the name) of a place or a saint, it is to be written in full and united without any intervening mark.

Examples. *s. johannis*, *s-johannis*, *st. johannis*, and *sti johannis* become *sanctijohannis*; *s. catharinae* and variants become *sanctaecatharinae*; *n. hollandiae* is corrected to *novaehollandiae*.

32.5.2.4.2. If the abbreviation represents a title, function, rank or honour for the person named in the species-group name, it is to be omitted.

Example. *R.P.Podae*, a specific name dedicated to the Reverendissimus Pater (Most Reverend Father) Poda, becomes *podae*.

32.5.2.4.3. If the first element is a Latin letter used to denote descriptively a character of the taxon, it must be retained and connected to the remainder of the name by a hyphen.

Example. *c-album*, in *Polygonia c-album*, so named because a white mark on the wing of the butterfly is similar to the letter c.

32.5.2.4.4. If the first element is a Latin letter or group of Latin letters not identifiable as fitting into the preceding three categories, punctuation (if any) must be deleted and the components united.

Example. *j-beameri*, a specific name dedicated to Jack Beamer, becomes *jbeameri*.

32.5.2.5. In a species-group name first published with an initial upper-case letter the initial letter must be replaced with a lower-case letter; in a genus-group or family-group name, or name of a taxon above the family group, first published with a lower-case initial letter the initial letter must be replaced with an upper-case letter.

32.5.2.6. In a compound species-group name of which the first part consists of a numeral (representing a number, numerical adjective or numerical adverb), the numeral is to be written in full as a Latin word and united with the remainder without any intervening mark.

Example. *10-lineata becomes decemlineata*.

32.5.2.7. In the case of a genus-group name or a species-group name first published in a Latin text and which because of the grammatical requirements of the Latin text is written otherwise than in the nominative singular, the spelling of the genus-group name is to be corrected to the nominative singular, and that of the species-group name corrected if necessary.

Examples. See the examples of "*Diplotoxae*" corrected to *Diplotoxa* and "*Pavidam*" corrected to *pavida* (*Musca pavida*) given in Articles 11.8.1 and 11.9.2 respectively.

32.5.3. A family-group name is an incorrect original spelling and must be corrected if it

32.5.3.1. has an incorrectly formed suffix [Art. 29.2], or

32.5.3.2. is formed from an unjustified emendation of a generic name (unless the unjustified emendation has become a substitute name), or

32.5.3.3. is formed from an incorrect subsequent spelling of a generic name [Art. 35.4.1], or

32.5.3.4. is formed from one of two or more original spellings of a genus-group name which was not that selected by the First Reviser [Art. 24.2.3].

Article 33. Subsequent spellings.

33.1. Kinds of subsequent spellings. A subsequent spelling of a name, if different from the original spelling [Art. 32.1], is either an emendation [Art. 33.2], or an incorrect subsequent spelling [Art. 33.3], or a mandatory change [Art. 34].

33.2. Emendations. Any demonstrably intentional change in the original spelling of a name other than a mandatory change is an "emendation", except as provided in Article 33.4.

33.2.1. A change in the original spelling of a name is only to be interpreted as "demonstrably intentional" when in the work itself, or in an author's (or publisher's) corrigenda, there is an explicit

statement of intention, or when both the original and the changed spelling are cited and the latter is adopted in place of the former, or when two or more names in the same work are treated in a similar way.

33.2.2. The correction of an incorrect original spelling in accordance with Article 32.5 is a "justified emendation", and the name thus corrected retains the authorship and date of the original spelling [Art. 19.2].

33.2.3. Any other emendation is an "unjustified emendation"; the name thus emended is available and it has its own author and date and is a junior objective synonym of the name in its original spelling; it enters into homonymy and can be used as a substitute name, but

33.2.3.1. when an unjustified emendation is in prevailing usage and is attributed to the original author and date it is deemed to be a justified emendation.

Example. Because *Helophorus*, an unjustified emendation by Illiger (1801) of *Elophorus* Fabricius, 1775, is in prevailing use in the Coleoptera and attributed to Fabricius, it is deemed to be a justified emendation; the name *Helophorus* Fabricius, 1775 is to be maintained as the correct spelling.

33.3. Incorrect subsequent spellings. Any subsequent spelling of a name different from the correct original spelling, other than a mandatory change or an emendation, is an "incorrect subsequent spelling"; it is not an available name and, like an incorrect original spelling [Art. 32.4], it does not enter into homonymy and cannot be used as a substitute name, but

33.3.1. when an incorrect subsequent spelling is in prevailing usage and is attributed to the publication of the original spelling, the subsequent spelling and attribution are to be preserved and the spelling is deemed to be a correct original spelling.

Example. The specific name in *Trypanosoma brucii* Plummer & Bradford, 1899 is in prevailing usage but is spelled *brucei*; *brucei* is deemed to be correct and its use is to be maintained.

33.4. Use of *-i* for *-ii* and vice versa, and other alternative spellings, in subsequent spellings of species-group names. The use of the genitive ending *-i* in a subsequent spelling of a species-group name that is a genitive based upon a personal name in which the correct original spelling ends with *-ii*, or vice versa, is deemed to be an incorrect subsequent spelling, even if the change in spelling is deliberate; the same rule applies to the endings *-ae* and *-iae*, *-orum* and *-iorum*, and *-arum* and *-iarum*.

Example. The subsequent use by Waterhouse of the spelling *bennettii* for the name established as *Macropus bennetti* Waterhouse, 1837 does not make the subsequent spelling an available name even if the act was intentional.

33.5. Cases of doubt. In any case of doubt whether a different subsequent spelling is an emendation or an incorrect subsequent spelling, it is to be treated as an incorrect subsequent spelling (and therefore unavailable), and not as an emendation.

Article 34. Mandatory changes in spelling consequent upon changes in rank or combination.

34.1. Family-group names. The suffix of a family-group name must be changed when the taxon denoted by the name is raised or lowered in rank; the author and date of the name remain unchanged [Arts. 23.3.1, 29.2, 50.3.1].

34.2. Species-group names. The ending of a Latin or latinized adjectival or participial species-group name must agree in gender with the generic name with which it is at any time combined [Art. 31.2]; if the gender ending is incorrect it must be changed accordingly (the author and date of the name remain unchanged [Art. 50.3.2]).

34.2.1. If a species-group name is a noun in apposition its ending need not agree in gender with the generic name with which it is combined and must not be changed to agree in gender with the generic name [Art. 31.2.1].

Article 35. The family group.

35.1. Definition. The family group encompasses all nominal taxa at the ranks of superfamily, family, subfamily, tribe, subtribe, and any other rank below superfamily and above genus that may be desired (see also Article 10.3 for collective groups and ichnotaxa).

35.2. Provisions applicable to all family-group nominal taxa and their names. Family-group nominal taxa and their names are subject to the same provisions whatever their rank, except in respect of their suffixes [Art. 29.2] (for the application of the Principle of Coordination to family-group names, see Article 36).

35.3. Application of family-group names. The application of each family-group name is determined by reference to the type genus of the nominal taxon [Arts. 61 to 65].

35.4. Formation and treatment of family-group names. A family-group name is to be formed and treated in accordance with Article 11.7 and the relevant provisions of Articles 25 to 34.

35.4.1. A family-group name based upon an unjustified emendation (but see Article 35.4.2) or an incorrect spelling of the name of the type genus must be corrected, unless it is preserved under Article 29.5 or unless the spelling of the genus-group name used to form the family-group name is preserved under Articles 33.2.3.1 or 33.3.1.

Example. Goldfuss (1820) published the family-group name Phascolomyda, based on the incorrect spelling Phascolomys (introduced by Duméril, 1806) of Phascolomis Geoffroy, 1803 (Mammalia). The corrected name is PHASCOLOMIDAE Goldfuss, 1820.

35.4.2. If an unjustified emendation of the name of the type genus becomes its substitute name, the family-group name is then to be based on it by correcting the name to the spelling formed from the stem of the substitute name, or the whole substitute name [Art. 29.1]; the author and date of the family-group name remain unchanged.

35.5. Precedence for names in use at higher rank. If after 1999 a name in use for a family-group taxon (e.g. for a subfamily) is found to be older than a name in prevailing usage for a taxon at higher rank in the same family-group taxon (e.g. for the family within which the older name is the name of a subfamily) the older name is not to displace the younger name.

Example. The subfamily ROPHITINAE Schenck, 1866 (Hymenoptera) is universally included in the family HALICTIDAE Thomson, 1869, even though on priority alone the name of the family would be ROPHITIDAE. The precedence of HALICTIDAE over ROPHITIDAE is to be maintained as long as they are treated as subjective synonyms (at family rank), and HALICTINAE and ROPHITINAE are used for different subfamilies within the HALICTIDAE.

Article 36. Principle of Coordination.

36.1. Statement of the Principle of Coordination applied to family-group names. A name established for a taxon at any rank in the family group is deemed to have been simultaneously established for nominal taxa at all other ranks in the family group; all these taxa have the same type genus, and their names are formed from the stem of the name of the type genus [Art. 29.3] with appropriate change of suffix [Art. 34.1]. The name has the same authorship and date at every rank.

Example. The family name HESPERIIDAE (Lepidoptera), based on *Hesperia* Fabricius, 1793, was established in 1809 by Latreille (as Hesperides). Latreille is deemed also to have simultaneously established the coordinate superfamily name HESPERIOIDEA and the coordinate subfamily name HESPERIINAE (even though the former was first used by Comstock & Comstock (1904) and the latter by Watson (1893)). The authorship and date of all three names is Latreille, 1809.

36.2. Type genus. When a nominal taxon is raised or lowered in rank in the family group its type genus remains the same [Art. 61.2.2].

Article 37. Nominotypical taxa.

37.1. Definition. When a family-group taxon is subdivided, the subordinate taxon that contains the type genus of the superior taxon is denoted by the same name (except for suffix) with the same author and date [Art. 36.1]; this subordinate taxon is termed the "nominotypical taxon".

Example. . The family TIPULIDAE Latreille, [1802] (type genus *Tipula* Linnaeus, 1758) is divided into a number of subfamilies, each named after its own type genus. The subfamily containing *Tipula* is called TIPULINAE Latreille, [1802] and is the nominotypical subfamily.

37.2. Effect of change of name on nominotypical taxa. If the name in use for a family-group taxon is unavailable or invalid it must be replaced by the name valid under Article 23.3.5; any subordinate taxa containing the type genus of the substitute nominal taxon (and therefore denoted by the valid family-group name, with appropriate suffixes) become nominotypical taxa.

Article 38. Homonymy between family-group names. For homonymy between family-group names, see Articles 39 and 55.

Article 39. Invalidity due to homonymy or suppression of the name of the type genus. The name of a family-group taxon is invalid if the name of its type genus is a junior homonym or has been totally or partially suppressed (see Articles 81.2.1 and 81.2.2) by the Commission. If that family-group name is in use it must be replaced either by the next oldest available name from among its synonyms [Art. 23.3.5], including the names of its subordinate family-group taxa, or, if there is no such synonym, by a new name based on the valid name (whether a synonym or a new replacement name (nomen novum)) of the former type genus.

Example. In the Collembola the family name DEGEERIIDAE Lubbock, 1873 was based on *Degeeria* Nicolet, 1842, a junior homonym of *Degeeria* Meigen, 1838 in Diptera. DEGEERIIDAE had no synonyms and a new name (nom. nov.) ENTOMOBRYIDAE Tömösváry, 1882 was based upon *Entomobrya* Rondani, 1861, a new replacement name (nomen novum) for *Degeeria* Nicolet.

Article 40. Synonymy of the type genus.

40.1. Validity of family-group names not affected. When the name of a type genus of a nominal family-group taxon is considered to be a junior synonym of the name of another nominal genus, the family-group name is not to be replaced on that account alone.

Example. The name NEOSITTINAE Ridgeway, 1904 (Aves) is valid rather than DAPHOENOSITTINAE Rand, 1936, even though the name of the type genus *Neositta* Hellmayr, 1901 is a junior synonym of *Daphoenositta* De Vis, 1897.

40.2. Names replaced before 1961. If, however, a family-group name was replaced before 1961 because of the synonymy of the type genus, the substitute name is to be maintained if it is in prevailing usage.

40.2.1. A name maintained by virtue of this Article retains its own author but takes the priority of the replaced name, of which it is deemed to be the senior synonym.

Recommendation 40A. Citation of author and date. If the author and date are cited, a family-group name maintained under the provisions of Article 40.2.1 should be cited with its original author and date (see Recommendation 22A.2.2), followed by the date of its priority as determined by this Article; the date of priority should be enclosed in parentheses.

Example. The dipteran family name ORPHNEPHILIDAE Rondani, 1847, based on *Orphnephila* Haliday, 1832, was used until Bezzi (1913) synonymized *Orphnephila* with *Thaumalea* Ruthe, 1831 and adopted THAUMALEIDAE, based on the senior synonym *Thaumalea*. This family name has been almost universally used since that time and it is to be maintained. Had THAUMALEIDAE not come into prevailing usage, ORPHNEPHILIDAE would continue in use despite the fact that *Orphnephila* is a junior synonym. THAUMALEIDAE is cited with its own author and date, followed by the date of the replaced name in parentheses: THAUMALEIDAE Bezzi, 1913 (1847). It takes precedence over ORPHNEPHILIDAE Rondani, 1847, and any subsequently published synonyms.

Article 41. Misidentified type genera and overlooked type fixations. If stability and continuity in the meaning of a family-group name are threatened by the discovery that the type genus of the taxon is misidentified (i.e. interpreted in a sense other than that defined by its type species), or that the type genus was based on a misidentified type species, or that a valid fixation of type species for the type genus had been overlooked, see Article 65.2.

Article 42. The genus group.

42.1. Definition. The genus group, which is next below the family group and next above the species group in the hierarchy of classification, encompasses all nominal taxa at the ranks of genus and subgenus (see also Articles 10.3 and 10.4).

42.2. Provisions applicable to all genus-group nominal taxa and their names. Genus-group nominal taxa and their names are subject to the same provisions whatever their rank, except when these apply explicitly at one rank alone.

42.2.1. The names established expressly for certain assemblages of taxonomic convenience known as "collective groups" and names for trace fossils (ichnotaxa) established at the genus-group level are to be treated as genus-group names in the meaning of the Code [Art. 10.3], unless there is a statement to the contrary in a particular Article (as in Articles 13.3.2, 13.3.3, 23.7, 42.3.1, 66, 67.14); each takes its original author and date.

Examples. (a) Of a collective group name: *Agamofilaria* Stiles, 1907 (Nematoda). (b) Of names proposed for trace fossils: *Helicolithus* Azpeitia Moros, 1933 and *Stelloglyphus* Vyalov, 1964.

42.3. Application of genus-group names. The application of each genus-group name is determined by reference to the type species [Arts. 61, 66 to 70] of the nominal taxon that it denotes.

42.3.1. Collective groups have no type species (see also Articles 13.3.2 and 67.14).

42.3.2. Nominal taxa of the genus group established before 1931 (in the case of ichnotaxa, before 2000 [Art. 13.3.3]) may have had no type species fixed; in such cases Article 69 applies.

42.4. Formation and treatment of genus-group names. A genus-group name is to be formed and treated in accordance with Articles 10.3, 10.4 and 11.8, and the relevant provisions of Articles 25 to 33.

Article 43. Principle of Coordination.

43.1. Statement of the Principle of Coordination applied to genus-group names. A name established for a taxon at either rank in the genus group is deemed to have been simultaneously established by the same author for a nominal taxon at the other rank in the group; both nominal taxa have the same type species, whether it was fixed originally or subsequently.

43.2. Name-bearing types. When a nominal taxon in the genus group is raised or lowered in rank its type species remains the same [Art. 61.2.2] whether the type species was fixed originally or subsequently.

Article 44. Nominotypical taxa.

44.1. Definition. When a genus is considered to contain subgenera, the subgenus that contains the type species of the nominal genus is denoted by the same name as the genus, with the same author and date [Art. 43.1]; this subgenus is termed the nominotypical subgenus.

44.2. Change of nominotypical subgenus. If the name in use for a genus, and hence for its nominotypical subgenus, is unavailable or invalid it must be replaced by the name valid under Article 23.3.5; the subgenus containing the type species of the valid nominal genus and denoted by the valid name of the genus becomes the nominotypical subgenus.

Article 45. The species group.

45.1. Definition. The species group encompasses all nominal taxa at the ranks of species and subspecies (see also Article 10.2).

45.2. Provisions applicable to all species-group nominal taxa and their names. Species-group nominal taxa and their names are subject to the same provisions irrespective of rank within the species group, except when these apply explicitly to names at one rank alone (for interpolated names to denote aggregates of species or subspecies see Article 6.2).

45.3. Application of species-group names. The application of each species-group name is determined by reference to the name-bearing type [Arts. 61, 71 to 75] of the nominal taxon denoted by the combination in which the species-group name was established.

45.4. Formation and treatment of species-group names. A species-group name is to be formed and treated in accordance with Article 11 and the relevant provisions of Articles 19, 20, 23 to 34.

45.5. Infrasubspecific names. A name expressly proposed to denote an infrasubspecific entity (see Glossary) is not an available name unless the provisions of Article 45.6 specify otherwise; it is excluded from the species group and is not regulated by the Code [Art. 1.3.4]. A fourth name published as an addition to a trinomen automatically denotes an infrasubspecific entity (however an interpolated species-group name [Art. 6.2] is not regarded as an addition to a trinomen).

45.5.1. A name that has infrasubspecific rank under the provisions of this Article cannot be made available from its original publication by any subsequent action (such as "elevation in rank") except by a ruling of the Commission. When a subsequent author applies the same word to a species or subspecies in a manner that makes it an available name [Arts. 11-18], even if he or she attributes authorship of the name to the author of its publication as an infrasubspecific name, that subsequent author thereby establishes a new name with its own authorship and date.

Example. The name *ferganensis* in *Vulpes vulpes karagan* natio *ferganensis* (published by Ognev, 1927) is an addition to a trinomen and hence infrasubspecific; it is available from, and should be attributed to, Flerov (1935) who first used it for a subspecies, *Vulpes vulpes ferganensis*.

45.6. Determination of subspecific or infrasubspecific rank of names following a binomen. The rank denoted by a species-group name following a binomen is subspecific, except that

45.6.1. it is infrasubspecific if its author expressly gave it infrasubspecific rank, or if the content of the work unambiguously reveals that the name was proposed for an infrasubspecific entity (see also Article 45.6.4);

45.6.2. it is deemed to be infrasubspecific if its author used one of the terms "aberration", "ab." or "morph";

Example. The name *pallasi* in *Arvicola amphibius* ab. *pallasi* published by Ognev (1913) is infrasubspecific; it is available as a species-group name from, and should be attributed to, Ognev (1950) who first used it for a subspecies, *Arvicola terrestris pallasi*.

45.6.3. it is deemed to be infrasubspecific if it was first published after 1960 and the author expressly used one of the terms "variety" or "form" (including use of the terms "var.", "forma", "v." and "f.");

45.6.4. it is subspecific if first published before 1961 and its author expressly used one of the terms "variety" or "form" (including use of the terms "var.", "forma", "v." and "f."), unless its author also expressly gave it infrasubspecific rank, or the content of the work unambiguously reveals that the name was proposed for an infrasubspecific entity, in which case it is infrasubspecific [see also Art. 45.6.1]; except that

45.6.4.1. a name that is infrasubspecific under Article 45.6.4 is nevertheless deemed to be subspecific from its original publication if, before 1985, it was either adopted as the valid name of a species or subspecies or was treated as a senior homonym.

Examples. Spencer (1896) described and named *Sminthopsis murina* var. *constricta*, a small carnivorous marsupial, from a specimen which he considered morphologically intermediate between two congeneric species, *Sminthopsis murina* and *S. crassicaudata*; his work does not unambiguously reveal that the name was proposed for an infrasubspecific entity, and accordingly constricta has subspecific rank from its original publication.

In the Heteroptera, Westhoff (1884) explicitly gave the name *Pyrrhocoris apterus* var. *pennata* to a macropterous form as such, and Wagner (1947) explicitly gave the name *Stenodema trispinosum* f. *pallescens* to freshly emerged adults as such; the names *pennata* and *pallescens* are therefore of infrasubspecific rank, and since neither was adopted for a species or subspecies before 1985 they are both unavailable.

Polinski (1929) described a terrestrial gastropod *Fruticicola unidentata subtecta* as a "variété (natio) n.", explicitly stating that it was only "une forme" which did not merit subspecific rank. However, Klemm (1954) adopted *Trichia* (*Petasina*) *unidentata subtecta* (Polinski) as the valid name of a subspecies, and the subspecific name *subtecta* is therefore deemed to be available from Polinski, 1929.

Article 46. Principle of Coordination.

46.1. Statement of the Principle of Coordination applied to species-group names. A name established for a taxon at either rank in the species group is deemed to have been simultaneously established by the same author for a taxon at the other rank in the group; both nominal taxa have the same name-bearing type, whether that type was fixed originally or subsequently.

46.2. Name-bearing types. When a nominal taxon is raised or lowered in rank in the species group its name-bearing type [Art. 72.1.2] remains the same [Art. 61.2.2] whether the name-bearing type was fixed originally or subsequently.

Article 47. Nominotypical taxa.

47.1. Definition. When a species is considered to contain subspecies, the subspecies that contains the name-bearing type of the nominal species is denoted by the same species-group name as the species, with the same author and date [Art. 46.1]; this subspecies is termed the nominotypical subspecies.

47.2. Change of nominotypical subspecies. If the species-group name in use for a species, and hence for its nominotypical subspecies, is unavailable or invalid it must be replaced by the name valid under Article 23.3.5; the subspecies then containing the name-bearing type of the valid nominal species becomes the nominotypical subspecies.

Example. Hemming (1964) noted that the butterfly name *Papilio coenobita* Fabricius, 1793 is a junior primary homonym of *Papilio coenobita* Cramer, 1780, and established *Pseudoneptis ianthe* Hemming, 1964 as a new replacement name (nom. nov.) for Pseudoneptis coenobita (Fabricius). However, Stoneham (1938) had established a subspecies *Pseudoneptis coenobita bugandensis*, so that the valid name of the species is *Pseudoneptis bugandensis* Stoneham, 1938. The nominotypical subspecies is *Ps. bugandensis bugandensis*. The name *ianthe* denotes a different subspecies, *Ps. bugandensis ianthe* Hemming, 1964.

Article 48. Change of generic assignment. An available species-group name, with change in gender ending if required [Art. 34.2], becomes part of another combination whenever it is combined with a different generic name.

Article 49. Use of species-group names wrongly applied through misidentification. A previously established specific or subspecific name wrongly applied to denote a species-group taxon because of misidentification cannot be used as an available name for that taxon (even if the taxon and the taxon to which the specific or subspecific name correctly applies are in, or are later assigned to, different genera), except when a previous misidentification is deliberately employed in fixing the type species of a new nominal genus or subgenus [Arts. 11.10, 67.13].

Example. C.L. Koch (1847) recorded under the name *Polydesmus scaber* Perty a myriapod species different from that actually so named by Perty in 1833. Except as provided in Article 11.10, the species-group name *scaber* cannot be employed to denote Koch's previously undescribed species (even though he placed it in his new genus *Platyrhacus* without fixing it as the type species). For an example of a previous misidentification deliberately employed when fixing a type species of a new nominal genus, see Example to Article 11.10.

Article 50. Authors of names and nomenclatural acts.

50.1. Identity of authors. The author of a name or nomenclatural act is the person who first publishes it [Arts. 8, 11] in a way that satisfies the criteria of availability [Arts. 10 to 20] (but for certain names published in synonymy see Article 50.7). If a work is by more than one person but it is clear from the contents that only one of these is responsible for the name or act, then that person is the author; otherwise the author of the work is deemed to be the author of the name or act. If the author, or the person who publishes the work, cannot be determined from the contents, then the name or act is deemed to be anonymous (see Article 14 for the availability of anonymous names and nomenclatural acts).

50.1.1. However, if it is clear from the contents that some person other than an author of the work is alone responsible both for the name or act and for satisfying the criteria of availability other than actual publication, then that other person is the author of the name or act. If the identity of that other person is not explicit in the work itself, then the author is deemed to be the person who publishes the work.

50.1.2. In the case of original fixation of a type species by the deliberate employment of a species-group name in the sense of a previous misidentification, the person who deliberately uses the misidentification is deemed to be the author of a new specific name [Arts. 11.10, 67.13 and 70.4].

50.1.3. The provisions of this Chapter apply also to joint authors.

Example. The binomen *Dasyurus laniariu* (Mammalia) was published in an account of expeditions of which Mitchell (1838) is the author. The specific name *laniarius* in this binomen and the description of the taxon are contained in a letter from Owen to Mitchell that the latter published verbatim (explicitly demonstrating in the work itself that Owen alone was responsible both for the name and for the description which made it available). Owen is the author of *D. laniarius*, not Mitchell.

Recommendation 50A. Multiple authors. When a name is proposed in a multi-authored work, but only one (or some) of the authors is (are) directly responsible for the name and satisfying the criteria that make the name available, then the author(s) directly responsible should be identified explicitly. Co-authors of the whole work who have not had such direct responsibility for the name should not automatically be included as authors of the name. See Recommendation 51E for citing the names of such authors.

50.2. Authorship of names in reports of meetings. If the name of a taxon is made available by publication in a report or minutes of a meeting, the person responsible for the name, not the Secretary or other reporter of the meeting, is the author of the name.

Recommendation 50B. Information in minutes. Secretaries and other reporters of meetings should not include in their published reports new scientific names or nomenclatural acts.

50.3. Authorship unaffected by changes in rank or combination.

50.3.1. The authorship of the name of a nominal taxon within the family group, genus group or species group is not affected by the rank at which it is used. But if an infrasubspecific name that otherwise satisfies the criteria of availability is used in a manner that makes it available for a species or subspecies, its author is the one who first so uses it [Arts. 10.2, 45.5.1].

50.3.2. Change in generic combination of a species-group name does not affect its authorship (see Article 51.3 for the use of parentheses to indicate changed combinations).

50.4. Authorship of justified emendations. A justified emendation is attributed to the author of the name in its original incorrect spelling and not to the person making the emendation [Arts. 19.2, 33.2.2].

50.5. Authorship of unjustified emendations. An unjustified emendation is attributed to the author who first publishes it [Art. 33.2.3].

50.6. Authorship of a name published simultaneously by different authors. When two or more identical names for the same taxonomic taxon are published on the same date, by different authors in the same or different works, their precedence (and hence the authorship of the name) is determined by the application of Article 24.

Example. The name *Zygomaturus keani* (Mammalia) was published for the first time by Stirton and by Plane in two different papers in the same publication (1967). Different specimens are described in the two papers. Although Plane attributed the name to Stirton, the material described in Plane's paper is not the same as that in Stirton's and, hence, Plane was the sole author of the name in that place. Mahoney & Ride (1975) as First Revisers [Art. 24.2.2] gave precedence to Stirton's work and name (following Plane's intentions - see Recommendation 24B), and so the author of the name is Stirton and the type specimens are those fixed by him.

50.7. Authorship of names first published as junior synonyms. If a scientific name (taken, for example, from a label or manuscript) was first published in the synonymy of an available name and became available before 1961 through the provisions of Article 11.6, its author is the person who published it as a synonym, even if some other originator is cited, and is not the person who subsequently adopted it as a valid name [Art. 11.6].

Recommendation 50C. Authorship of excluded or unavailable names. When it is desirable, for bibliographic or other reasons, to refer to an excluded [Art. 1.3] or unavailable name, the authorship should be attributed to the person who published it with that status, unless that author cited some other person as the originator (for citation and examples see Recommendation 51F).

Article 51. Citation of names of authors.

51.1. Optional use of names of authors. The name of the author does not form part of the name of a taxon and its citation is optional, although customary and often advisable.

Recommendation 51A. Citation of author and date. The original author and date of a name should be cited at least once in each work dealing with the taxon denoted by that name. This is especially important in distinguishing between homonyms and in identifying species-group names which are not in their original combinations. If the surname and forename(s) of an author are liable to be confused, these should be distinguished as in scientific bibliographies.

Recommendation 51B. Transliteration of author's name. When the author's name is customarily written in a language that does not use the Latin alphabet it should be given in Latin letters with or without diacritic marks.

51.2. Form of citation of authorship. The name of an author follows the name of the taxon without any intervening mark of punctuation, except in changed combinations as provided in Article 51.3.

Recommendation 51C. Citation of multiple authors. When three or more joint authors have been responsible for a name, then the citation of the name of the authors may be expressed by use of the term "*et al.*" following the name of the first author, provided that all authors of the name are cited in full elsewhere in the same work, either in the text or in a bibliographic reference.

51.2.1. The name of a subsequent user, if cited, is to be separated from the name of the taxon in some distinctive and explicit manner, but not by parentheses (cf. Article 51.3), unless an explanation is included.

Example. Reference to *Cancer pagurus* Linnaeus as used by Latreille may be cited as "*Cancer pagurus* Linnaeus sensu Latreille", or as "*Cancer pagurus* Linnaeus (as interpreted by Latreille)" or in some other distinctive manner, but not as "*Cancer pagurus* Latreille" or "*Cancer pagurus* (Latreille)".

Recommendation 51D. Author anonymous, or anonymous but known or inferred.v If the name of a taxon was (or is deemed to have been) established anonymously, the term "Anon." may be used as though it was the name of the authors. However, if the authorship is known or inferred from external evidence, the name of the author, if cited, should be enclosed in square brackets to show the original anonymity. For availability of names proposed anonymously see Article 14.

Recommendation 51E. Citation of contributors. If a scientific name and the conditions other than publication that make it available [Arts. 10 to 20] are the responsibility not of the author of the work containing them, but of some other person(s), or of less than all of joint authors, the authorship of the name, if cited, should be stated as "B in A", or "B in A & B", or in whatever form is appropriate to facilitate information retrieval (normally the date should also be cited).

Recommendation 51F. Citation of author of unavailable or excluded names. If citation of authorship for an unavailable or excluded name [Rec. 50C] is necessary or desirable, the nomenclatural status of the name should be made evident.

Examples. *Halmaturus rutilis* Lichtenstein, 1818 (nomen nudum); *Yerboa gigantea* Zimmermann, 1777 (published in a work rejected by the Commission in Opinion 257); "Pseudosquille" (a vernacular name published by Eydoux & Souleyet (1842)).

51.3. Use of parentheses around authors' names (and dates) in changed combinations. When a species-group name is combined with a generic name other than the original one, the name of the author of the species-group name, if cited, is to be enclosed in parentheses (the date, if cited, is to be enclosed within the same parentheses).

Example. *Taenia diminuta* Rudolphi, when transferred to the genus *Hymenolepis*, is cited as *Hymenolepis diminuta* (Rudolphi) or *Hymenolepis diminuta* (Rudolphi, 1819).

51.3.1. Parentheses are not used when the species-group name was originally combined with an incorrect spelling or an emendation of the generic name (this applies even though an unjustified emendation is an available name with its own authorship and date [Art. 33.2.3]).

Example. The species-group name *subantiqua* d'Orbigny, 1850 was established in combination with *Fenestrella*, d'Orbigny's incorrect spelling of *Fenestella* Lonsdale, 1839. The species is cited as *Fenestella subantiqua* d'Orbigny, 1850, and not as *Fenestella subantiqua* (d'Orbigny, 1850).

51.3.2. The use of parentheses enclosing the name of the author and the date is not affected by the presence of a subgeneric name, by transfer to a different subgenus within the same genus, by a change of rank within the species group, or by transfer of a subspecies to a different species within the same genus.

Example. *Goniocidaris florigena* Agassiz, when transferred to the genus *Petalocidaris*, is cited as *Petalocidaris florigena* (Agassiz). When Petalocidaris is treated as a subgenus of *Goniocidaris* the parentheses are omitted, even when the complete citation is given as *Goniocidaris* (*Petalocidaris*) *florigena* Agassiz.

51.3.3. If before 1961 a new species-group name was established in combination with a previously available genus-group name and, at the same time, the author conditionally proposed a new nominal genus for it, parentheses are not used with the author's name when the species-group name is used in combination with the previously established generic name, but are used when the species-group name is combined with the conditionally proposed generic name (see Article 11.9.3.6).

Example. Lowe (1843) established the new fish species *Seriola gracilis* and at the same time conditionally proposed a new genus *Cubiceps* to contain that nominal species. When included in *Cubiceps*, the name is cited as *Cubiceps gracilis* (Lowe, 1843).

Recommendation 51G. Citation of person making new combination. If it is desired to cite both the author of a species-group nominal taxon and the person who first transferred it to another genus, the name of the person forming the new combination should follow the parentheses that enclose the name of the author of the species-group name (and the date, if cited; see Recommendation 22A.3).

Examples. *Limnatis nilotica* (Savigny) Moquin-Tandon; *Methiolopsis geniculata* (Stål, 1878) Rehn, 1957.

Article 52. Principle of Homonymy.

52.1. Statement of the Principle of Homonymy. When two or more taxa are distinguished from each other they must not be denoted by the same name.

52.2. Operation of the Principle of Homonymy. When two or more names are homonyms, only the senior, as determined by the Principle of Priority (see Article 52.3), may be used as a valid name; for exceptions see Articles 23.2 and 23.9 (unused senior homonyms) and Article 59 (secondary homonyms in the species group).

52.3. Principle of Priority applies. The relative precedence of homonyms (including primary and secondary homonyms in the case of species-group names) is determined by applying the relevant provisions of the Principles of Priority and the First Reviser [Arts. 23, 24].

52.4. Replacement of junior homonyms. See Articles 23.3.5, 23.9.5, 39, 55 and 60.

52.5. Suppression of senior homonyms. See Articles 54.4, 81.2.1.

52.6. Incorrect and corrected original spellings. The corrected spelling of an incorrect original spelling may enter homonymy but an incorrect original spelling cannot [Art. 32.4].

52.7. Homonymy with names of taxa which are not animals. The name of an animal taxon identical with the name of a taxon which has never been treated as animal is not a homonym for the purposes of zoological nomenclature [Arts. 1.4, 2.2].

Article 53. Definitions of homonymy in the family group, genus group and species group.

53.1. Homonyms in the family group. In the family group, two or more available names having the same spelling or differing only in suffix [Art. 29.2] and denoting different nominal taxa are homonyms.

Examples. The family-group names METOPIINAE> Foerster, [1869] (Hymenoptera; type genus *Metopius* Panzer, 1806), METOPIINI Raffray, 1904 (Coleoptera; type genus *Metopias* Gory, 1832) and METOPIINI Townsend, 1908 (Diptera; type genus *Metopia* Meigen, 1803) are homonyms. (Their homonymy was removed by the Commission emending the spellings of the latter two family-group names to METOPIASINI and METOPIAINI [Opinion 1772, 1994]).

53.2. Homonyms in the genus group. In the genus group, two or more available names established with the same spelling are homonyms.

Example. The generic names *Noctua* Linnaeus, 1758 (Lepidoptera) and *Noctua* Gmelin, 1771 (Aves) are homonyms.

53.3. Homonyms in the species group. Two or more available species-group names having the same spelling are homonyms if they were originally established in combination with the same generic name (primary homonymy), or when they are subsequently published in combination with the same generic name (secondary homonymy) (for species-group names combined with homonymous generic names see Article 57.8.1).

Example. *Cancer strigosus* Linnaeus, 1761 and *Cancer strigosus* Herbst, 1799 were established for different nominal species in the nominal genus *Cancer* Linnaeus, 1758, and the specific names are therefore primary homonyms. For an example of secondary homonymy see Article 57.3.1.

53.3.1. The variant spellings of species-group names listed in Article 58 are deemed to be identical spellings for the purposes of the Principle of Homonymy.

Article 54. Names that do not enter into homonymy. The following do not enter into homonymy:

54.1. a name that is excluded from the provisions of the Code [Arts. 1.3, 8.3] (see also Articles 1.4 and 52.7);

54.2. a name that is unavailable [Art. 10.1], except as provided in Article 20;

54.3. an incorrect spelling, whether original [Arts. 32.4, 32.5] or subsequent, since it is not available in its uncorrected form [Arts. 32.4, 33.3]; and

54.4. a name that has been suppressed for the purposes of the Principle of Homonymy by a ruling of the Commission [Art. 81.2.1].

Article 55. Family-group names.

55.1. Application of the Principle of Homonymy. The Principle of Homonymy applies to all family-group names, including names of ichnotaxa at the family-group level.

55.2. Homonymy from identical generic names. See Article 39.

55.3. Homonymy from similar generic names. Homonymy between family-group names may result from similarity but not identity of the names of their type genera.

55.3.1. Such a case involving family-group names must be referred to the Commission for a ruling to remove homonymy unless the senior homonym is a *nomen oblitum*.

55.3.1.1. When the senior homonym is determined to be a *nomen oblitum* under the conditions of Article 23.9.2, a new family-group name (a *nomen novum*) based on the same type genus may be proposed, but choosing a new stem from the name of the type genus which avoids the homonymy [Arts. 29.1, 29.4 and 29.6].

55.4. One-letter difference. Even if the difference between two family-group names is only one letter, they are not homonyms.

Example. The family names LARIDAE (Aves), based on *Larus* Linnaeus, 1758, and LARRIDAE (Hymenoptera), based on *Larra* Fabricius, 1793, differ by one letter and are not homonyms.

55.5. Precedence of names at higher rank. Of two homonymous family-group names of identical date but established at different ranks, the one established at the higher rank is deemed to be the senior homonym [Art. 24.1].

Article 56. Genus-group names.

56.1. Application of the Principle of Homonymy. The Principle of Homonymy applies to all genus-group names, including names of collective groups and of ichnotaxa at the genus-group level [Arts. 1.2, 23.7, 42.2].

56.2. One-letter difference. Even if the difference between two genus-group names is only one letter, they are not homonyms.

Example. Two generic names in Diptera, *Microchaetina* van der Wulp, 1891 and *Microchaetona* Townsend, 1919, are not homonyms.

56.3. Precedence of genus over subgenus. Of two homonymous genus-group names of identical date, one established for a genus and the other for a subgenus, the former takes precedence over the other [Art. 24.1].

Article 57. Species-group names.

57.1. Application of the Principle of Homonymy to names of species and subspecies. The Principle of Homonymy applies to species-group names that are or are deemed to be spelled identically [Art. 58] and are published originally or subsequently in combination with the same generic name [Art. 53.3], including names of collective groups and of ichnotaxa at genus-group level [Arts. 10.3 and 42.2.1].

57.2. Primary homonyms. Identical species-group names established for different nominal taxa when originally combined with the same generic name (see also Articles 11.9.3.2 and 57.8.1) are primary homonyms [Art. 53.3] and the junior name is permanently invalid (but see Article 23.9.5) except when:

57.2.1. its use as a valid name (a nomen protectum) is maintained under the conditions specified in Article 23.9, or

57.2.2. it is conserved by the Commission under Article 81, or

57.2.3. it, but not its senior homonym, is included in a relevant adopted Part of the *List of Available Names in Zoology* (see Article 79.4.3).

Examples. The following are primary homonyms: *Culex affinis* Stephens, 1825 and *Culex affinis* Adams, 1903; *Lycaena argus nevadensis* Oberthür, 1910 and *Lycaena nevadensis* Zullich, 1928; *Aporia hippia transiens* Alpheraky, 1897 and *Aporia crataegi transiens* Lempke, 1953.

57.3. Secondary homonyms.

57.3.1. Identical species-group names established for different nominal taxa and subsequently brought together in combination with the same generic name are secondary homonyms [Art. 53.3] and the junior is invalid (but see Article 57.8.1), but a junior secondary homonym may be reinstated under certain conditions [Art. 59.2-4].

Examples. The specific names in the names *Frontina acroglossoides* Townsend, 1891 and *Eophrissopolia acroglossoides* Townsend, 1926 become secondary homonyms when both species are placed in *Chaetogaedia*.

57.3.2. Identical species-group names established for different nominal taxa are secondary homonyms when one was originally combined with a junior generic homonym and the other was originally combined with a new replacement name (nomen novum) [Art. 60.1] for that generic homonym.

Example. *Xus albus* Smith, 1900 (where *Xus* is a junior homonym) became *Xoides albus* (Smith, 1900) when *Xoides* Dupont, 1909 was established to replace *Xus*. If a new species *Xoides albus* Jones, 1910 were proposed, the two specific names would be secondary homonyms.

57.4. Subgeneric name irrelevant. The presence of different subgeneric names placed in parentheses between the same generic name and identical species-group names is irrelevant to the homonymy between the names concerned.

Example. The specific names of *Aus (Bus) intermedius* Pavlov and *Aus (Cus) intermedius* Dupont were both originally established in the genus *Aus*, and so are primary homonyms. The specific name of *Aus (Dus) intermedius* (Nomura) was originally established in the genus *Xus*, and so is a secondary homonym of the species names of both *Aus (Bus) intermedius* and *Aus (Cus) intermedius*.

57.5. Difference in spelling of generic names. Identical species-group names (or species-group names deemed to be identical [Art. 58]) established for different nominal taxa are homonyms when combined with the same generic name (but see Article 57.8.1) even if the spelling of the generic name with which one or more of the species-group names is combined is an incorrect spelling or an emendation [Art. 11.9.3.2].

57.6. One-letter difference. Except as specified in Article 58, a one-letter difference between species-group names combined with the same generic name is sufficient to prevent homonymy.

57.7. Precedence of names of species over those of subspecies. Of two homonymous species-group names of identical date, one established for a species takes precedence over one established for a subspecies [Art. 24.1] or over one deemed to be of subspecific rank [Art. 45.6].

57.8. Exceptions.

57.8.1. Homonymy between identical species-group names in combination (originally or subsequently) with homonymous generic names having the same spelling but established for different nominal genera [Art. 53.2] is to be disregarded.

Example. *Noctua* Linnaeus, 1758 (Insecta) and *Noctua* Gmelin, 1771 (Aves) are homonyms, but homonymy between *variegata* Jung, 1792 in *Noctua* (Insecta) and *variegata* Quoy & Gaimard, 1830 in *Noctua* (Aves) is disregarded.

57.8.2. For the reinstatement of junior secondary homonyms in certain circumstances, see Article 59.2 - 59.4.

Article 58. Variant spellings of species-group names deemed to be identical. Species-group names established for different nominal taxa that differ in spelling only in any of the following respects and that are of the same derivation and meaning are deemed to be homonyms when the nominal taxa they denote are included in the same genus or collective group:

58.1. use of *ae*, *oe* or *e* (e.g. *caeruleus*, *coeruleus, ceruleus);*

58.2. use of *ei*, *i* or *y* (e.g. *cheiropus*, *chiropus*, *chyropus*);

58.3. use of *i* or *j* for the same Latin letter (e.g. *iavanus*, *javanus*; *maior*, *major*);

58.4. use of *u* or *v* for the same Latin letter (e.g. *neura*, *nevra*; *miluina*, *milvina*);

58.5. use of *c* or *k* for the same letter (e.g. *microdon*, *mikrodon*);

58.6. aspiration or non-aspiration of a consonant (e.g. *oxyrhynchus*, *oxyrynchus*);

58.7. use of a single or double consonant (e.g. *litoralis*, *littoralis*);

58.8. presence or absence of *c* before *t* (e.g. *auctumnalis*, *autumnalis*);

58.9. use of *f* or *ph* (e.g. *sulfureus*, *sulphureus*);

58.10. use of *ch* or *c* (e.g. *chloropterus*, *cloropterus*);

58.11. use of *th* or *t* (e.g. *thiara*, *tiara*; *clathratus*, *clatratus*);

58.12. use of different connecting vowels in compound words (e.g. *nigricinctus*, *nigrocinctus*);

58.13. transcription of the semivowel *i* as *y*, *ei*, *ej* or *ij* (e.g. *guianensis*, *guyanensis*);

58.14. use of *-i* or *-ii*, *-ae* or *-iae*, *-orum* or *-iorum*, *-arum* or *-iarum* as the ending in a genitive based on the name of a person or persons, or a place, host or other entity associated with the taxon, or between the elements of a compound species-group name (e.g. *smithi*, *smithii*; *patchae*, *patchiae*; *fasciventris*, *fasciiventris*);

58.15. presence or absence of *-i before a suffix or termination (e.g. timorensis, timoriensis; comstockana, comstockiana).*

Example. Because the specific names of *Chrysops calidus* (meaning: warm) and *Chrysops callidus* (meaning: clever) are derived from words of different origin and meaning, they are not homonyms even though they differ in one of the ways listed in this Article (see Article 58.7).

Recommendation 58A. Species-group names based on personal or geographical names. An author should not base a new species-group name on a personal or geographical name if another name

derived from the same word or from words of the same meaning (even if differently formed) is in use in the same or an allied or associated genus (e.g. *hispanus*, *hispanicus*; *moluccensis*, *moluccanus*; *sinensis*, *sinicus*, *chinensis*; *ceylonicus*, *zeylanicus*).

Article 59. Validity of secondary homonyms.

59.1. Taxa considered congeneric. A species-group name while a junior secondary homonym must be treated as invalid by anyone who considers that the two species-group taxa in question are congeneric.

59.2. Secondary homonyms not replaced when no longer considered congeneric. If in a case of secondary homonymy the junior species-group name has not been replaced [Art. 60], and the relevant taxa are no longer considered congeneric, the junior name is not to be rejected, even if one species-group name was originally proposed in the current genus of the other.

Example. Zetterstedt (1855) established the new species *Platyura nigriventris*, which is now placed in the genus *Orfelia*. In 1910 Johannsen established the new species *Apemon nigriventris*, which was later referred to *Platyura*, its present position. The two species are not now treated as congeneric, and inasmuch as *nigriventris* (Johannsen) was never renamed in *Platyura*, a substitute name is not necessary.

59.3. Secondary homonyms replaced before 1961 but no longer considered congeneric. A junior secondary homonym replaced before 1961 is permanently invalid unless the substitute name is not in use and the relevant taxa are no longer considered congeneric, in which case the junior homonym is not to be rejected on grounds of that replacement.

Example. Deignan (1947) on taxonomic grounds merged the avian genera *Muscicapa* Brisson, 1760, *Ficedula* Brisson, 1760 and *Niltava* Hodgson, 1837 and took the first name as valid. He replaced seven resulting junior secondary homonyms, but because his classification and substitute names are not in use the species-group names that were replaced are not to be rejected under this Article.

59.3.1. If the use of a substitute name for a junior secondary homonym is a cause of confusion, the case is to be referred to the Commission for a ruling (under the plenary power if necessary, see Article 81) as to which name will, in its judgment, best serve stability and universality, and that name is then the valid name.

59.4. Reinstatement of junior secondary homonyms rejected after 1960. A species-group name rejected after 1960 on grounds of secondary homonymy is to be reinstated as valid by an author who considers that the two species-group taxa in question are not congeneric, unless it is invalid for some other reason.

Example. *Aus niger* Smith, 1950, if transferred after 1960 to *Bus*, becomes a junior secondary homonym of *Bus niger* Dupont, 1940, and is renamed *Bus ater* Jones, 1970. However, an author who does not consider that the two species are congeneric is to reinstate *niger* Smith as the valid specific name for the species concerned, with *ater* Jones as a junior synonym.

Article 60. Replacement of junior homonyms.

60.1. Substitute names. A junior homonym [Art. 53] must be rejected and replaced either by an available and potentially valid synonym [Art. 23.3.5] or, for lack of such a name, by a new substitute name [Art. 60.3]. For unused senior homonyms see Article 23.9; for the replacement of homonymous family-group names see Articles 39 and 55.3; and for the replacement of secondary homonyms in the species group see Article 59.

60.2. Junior homonyms with synonyms. If the rejected junior homonym has one or more available and potentially valid synonyms, the oldest of these becomes the valid name of the taxon [Art. 23.3.5] with its own authorship and date.

60.2.1. Such a name can be retained as a valid name in place of a junior homonym only as long as it is regarded as a synonym of the latter.

60.3. Junior homonyms without synonyms. If the rejected junior homonym has no known available and potentially valid synonym it must be replaced by a new substitute name, with its own author and date; this name will then compete for priority with any synonym recognized later.

Recommendation 60A. Desirability of objective replacement. Unless the name-bearing type of the nominal taxon denoted by the rejected junior homonym is taxonomically inadequate (e.g. as described in Article 75.5 or, in the case of a genus-group homonym, the type species is poorly defined), authors are advised to use that same type to establish a new replacement name (nomen novum) as an objective replacement [Arts. 67.8, 72.7].

Article 61. Principle of Typification.

61.1. Statement of the Principle of Typification. Each nominal taxon in the family, genus or species groups has actually or potentially a name-bearing type. The fixation of the name-bearing type of a nominal taxon provides the objective standard of reference for the application of the name it bears.

61.1.1. No matter how the boundaries of a taxonomic taxon may vary in the opinion of zoologists the valid name of such a taxon is determined [Art. 23.3] from the name-bearing type(s) considered to belong within those boundaries.

61.1.2. Objectivity provided by typification is continuous through the hierarchy of names. It extends in ascending order from the species group to the family group. Thus the name-bearing type of a nominal species-group taxon is a specimen or a set of specimens (a holotype, lectotype, neotype or syntypes [Art. 72.1.2]), that of a nominal genus-group taxon is a nominal species defined objectively by its type; that of a nominal family-group taxon is the nominal genus on which its name is based.

61.1.3. Once fixed, name-bearing types are stable and provide objective continuity in the application of names. Thus the name-bearing type of any nominal taxon, once fixed in conformity with the provisions of the Code, is not subject to change except in the case of nominal genus-group taxa as provided in Article 70.3.2, of nominal species-group taxa as provided in Articles 74 and 75, and by use of the plenary power of the Commission [Art. 81].

61.2. Name-bearing types of nominotypical taxa. The name-bearing type of a nominal taxon is also the name-bearing type of its nominotypical taxon [Arts. 37.1, 44.1, 47.1], and the fixation of a name-bearing type for one constitutes fixation for the other also.

61.2.1. If different name-bearing types are fixed simultaneously for a nominal taxon and for its nominotypical taxon, the fixation for the taxon at higher rank takes precedence.

61.2.2. When a nominal taxon in the family group, or the genus group, or the species group is raised or lowered in rank, or its name is used at more than one rank simultaneously, the name-bearing type remains the same [Arts. 36.2, 43.1, 46.2].

61.3. Name-bearing types and synonymy.

61.3.1. If nominal taxa with different name-bearing types are referred to a single taxonomic taxon, their names are subjective synonyms at the rank of that taxon (but need not be synonyms at a subordinate rank).

Example. The different name-bearing types of *Psittacus elegans* Gmelin, 1788 and *Platycercus flaveolus* Gould, 1837 are considered to belong to a single taxonomic species of rosella parrot of which *Platycercus elegans* (Gmelin, 1788) is the valid name. Although the names are subjective synonyms at the rank of species, they are not synonyms at the subordinate rank of subspecies of *Platycercus elegans*, for which the valid names are *Pl. e. elegans* (Gmelin, 1788) and *Pl. e. flaveolus* Gould, 1837.

61.3.2. If two or more objectively synonymous generic names have been used as the basis for names in the family group, the family-group names are objective synonyms.

61.3.3. If two or more nominal genus-group taxa have the same type species, or type species with different names but based on the same name-bearing type, their names are objective synonyms.

61.3.4. If two or more nominal species-group taxa have the same name-bearing type, their names are objective synonyms.

61.4. Designation of a subgenus or subspecies as a name-bearing type. If a nominal subgenus is fixed as the name-bearing type of a nominal family-group taxon, it is deemed to have been raised first to the rank of genus. If a nominal subspecies is fixed as the name-bearing type of a nominal genus-group taxon, it is deemed to have been raised first to the rank of species.

Example. *Planigale* Troughton, 1928 (Mammalia) was established with the species *P. subtilissima* (Lönnberg, 1913), *P. tenuirostris* Troughton, 1928 and *P. ingrami* (Thomas, 1906) and the subspecies *vP. ingrami brunnea* Troughton, 1928. In the original description, the latter "subspecies of *ingrami*" was designated the type of *Planigale* by the term "Genotype". *P. brunnea* Troughton, 1928 is the type species by original designation, not *P. ingrami* (Thomas, 1906).

Article 62. Application. The provisions of this Chapter apply equally to nominal family-group taxa at any rank (superfamily, family, subfamily, tribe, subtribe and at any other rank below superfamily and above genus) [Art. 35.1].

Article 63. Name-bearing types. The name-bearing type of a nominal family-group taxon is a nominal genus called the "type genus"; the family-group name is based upon that of the type genus [Art. 29]. (See also Articles 11.7, 35, 39 and 40).

63.1. Coordinate nominal taxa. Coordinate nominal taxa of the family group have the same type genus [Arts. 36, 37, 61.2].

Article 64. Choice of type genus. An author who wishes to establish a new nominal family-group taxon may choose as type genus any included nominal genus the name of which he or she regards as valid [Art. 11.7.1], not necessarily that having the oldest name. The choice of type genus determines the stem of the name of the nominal family-group taxon [Art. 29.1].

Recommendation 64A. Type genus should be well known. So far as possible, an author who wishes to establish a nominal family-group taxon should choose as its type genus a genus that is both well known and representative of the family-group taxon.

Article 65. Identification of the type genus.

65.1. Correct identification assumed. It is to be assumed, unless there is clear evidence to the contrary, that an author who establishes a nominal family-group taxon has correctly identified its type genus.

65.2. Misidentification or altered concept. If stability or universality is threatened, or confusion is likely to be caused,

65.2.1. by the discovery that the type genus was misidentified (that is, interpreted in a sense other than that defined by its type species) when the family-group name was established, the case is to be referred to the Commission for a ruling;

65.2.2. by the discovery of an overlooked fixation of type species for the type genus (or of the name-bearing type for that type species), the case is to be referred to the Commission for a ruling [Art. 70.2];

65.2.3. by the discovery that the type genus was, when established, based on a type species then misidentified, the author may fix as the type species a nominal species as prescribed in Article 70.3. If the threat cannot be overcome by the fixation of a type species under the provisions of Article 70.3 the case is to be referred to the Commission for a ruling.

Article 66. Application. The provisions and recommendations of this Chapter apply equally to nominal genera and subgenera (including genus-group divisions deemed to be subgenera; see Article 10.4), but not to collective groups at the genus-group level, which have no type species [Arts. 13.3.2, 42.3.1, 67.14].

66.1. An ichnotaxon at the genus-group level proposed after 1999 must have a type species fixed for its name to be available. If established before 2000 it does not require a type species; however, one may have been, or may be, fixed in accordance with Article 69 (see also Article 13.3.3).

Article 67. General provisions.

67.1. Name-bearing types. The name-bearing type of a nominal genus or subgenus is a nominal species called the "type species" [Art. 42.3].

67.1.1. A nominal genus and its nominotypical subgenus [Art. 44.1] have the same type species [Art. 61.2].

67.1.2. The name of a type species remains unchanged even when it is a junior synonym or homonym, or a suppressed name (see Article 81.2.1).

Recommendation 67A. Terminology. Only the term "type species" or a strictly equivalent term in another language should be used in referring to the name-bearing type of a nominal genus or subgenus. To avoid ambiguity the term "genotype," which has widespread use in a different sense in genetics, should not be used instead of "type species."

Recommendation 67B. Citation of type species. The name of a type species should be cited by its original binomen. If the name of the type species is, or is currently treated as, an invalid name, authors may also cite its valid synonym.

Example. *Astacus marinus* Fabricius, 1775, one of the nominal species originally included in the decapod crustacean genus *Homarus* Weber, 1795, was subsequently designated by Fowler (1912) as the type species of *Homarus*. The type species is, and should be cited as, *Astacus marinus* Fabricius, 1775. *Astacus marinus* Fabricius is currently synonymized with *Cancer gammarus* Linnaeus, 1758, but the latter is not the type species of *Homarus* and should not be cited as such. If mention of the type species is required it should be made in some such manner as "Type species *Astacus marinus* Fabricius, 1775, a junior synonym of *Cancer gammarus* Linnaeus, 1758"; or "Type species *Astacus marinus* Fabricius, 1775, now regarded as a synonym of *Homarus gammarus* (Linnaeus, 1758)".

67.2. Species eligible for type fixation (originally included nominal species). A nominal species is only eligible to be fixed as the type species of a nominal genus or subgenus if it is an originally included nominal species.

67.2.1. In the meaning of the Code the "originally included nominal species" comprise only those included in the newly established nominal genus or subgenus, having been cited in the original publication by an available name (including citation by an incorrect spelling [Art. 67.6]) of a species or subspecies (see Articles 45.6 and 68.2), or having been cited there as the deliberate application of a previous misidentification (see Articles 11.10, 67.13 and 69.2.4).

67.2.2. If a nominal genus or subgenus was established before 1931 (in the case of an ichnotaxon, before 2000 [Art. 66.1]) without included nominal species [Art. 12], the nominal species that were first subsequently and expressly included in it are deemed to be the only originally included nominal species.

67.2.3. Mere reference in the original publication to a publication containing the name of a species does not by itself constitute an express reference of a nominal species to a nominal genus.

67.2.4. Mere citation of an available genus-group name as a synonym of another does not constitute inclusion of the nominal species of the latter in the former, or vice versa.

67.2.5. A nominal species is deemed not to be originally included if it was doubtfully or conditionally included, or was cited as a *species inquirenda*, or as a *species incertae sedis*.

67.3. Admissibility of actions relevant to fixation. Only the nomenclatural acts or other published statements of the author made when a nominal genus or subgenus is established are relevant in deciding

67.3.1. whether the type species has been fixed in conformity with the provisions of Articles 67.8 and 68, and

67.3.2. which are the originally included nominal species in the meaning of Article 67.2 (see Article 67.2.2 for originally included species of genus-group nominal taxa established without species).

67.4. Type fixation. The type species of a nominal genus or subgenus is fixed originally if fixed in the original publication [Art. 68], or subsequently if fixed after the nominal genus or subgenus was established [Art. 69].

67.4.1. A nominal genus-group taxon established after 1930 (or, in the case of an ichnotaxon, after 1999 [Art. 66.1]) must have its type species fixed in the original publication [Art. 13.3].

67.5. Designation. The term "designation" in relation to fixation of a type species [Arts. 68, 69] must be rigidly construed; the following are not designations under the Code:

67.5.1. mention of a species as an example of a genus or subgenus;

67.5.2. mention of a particular character or structure as "type" or "typical" of a genus or subgenus; and

67.5.3. one made in an ambiguous or conditional manner.

Examples. A statement such as any of the following is not to be regarded as a type designation in the meaning of the Code: "*Aus xus* is a typical example of the genus *Aus*"; "the venation of the anterior wings of *Aus xus* is typical of the genus *Aus*"; "*Aus xus* may possibly be the type of *Aus*".

67.6. Fixations using incorrect spellings or unjustified emendations. If the name of a type species, when fixed, is cited in the form of an incorrect spelling or an unjustified emendation, it is deemed to have been cited in its correct original spelling (see also Article 69.2.1).

67.7. Status of incorrect citations. If, in fixing the type species for a nominal genus or subgenus, an author wrongly attributes the name of the type species, or of the genus or subgenus, to an author or date other than that denoting its first establishment, or cites wrongly the first express inclusion of nominal species in that genus or subgenus, he or she is nevertheless to be considered, if the nominal species was otherwise eligible, to have validly fixed the type species. For previous misidentifications deliberately employed when fixing a type species, see Articles 11.10 and 67.13.

Example. *Aus* Dupont, 1790, established without a type species, is best known from the work of a later author, Smith (1810). If subsequently *Bus xus* is designated as the type species of "*Aus* Smith, 1810", that designation is to be accepted as a designation of the type species for *Aus* Dupont, 1790, providing *Bus xus* was eligible for designation as type species of the latter. Errors in attributing the authorship or date of *Bus xus* would also be immaterial.

67.8. Type species of nominal genus-group taxa denoted by new replacement names (nomina nova). If an author publishes a new genus-group name expressly as a new replacement name (nomen novum) for a previously established name, or replaces a previously established genus-group name by an unjustified emendation [Art. 33.2.3], both the prior nominal taxon and its replacement have the same type species, and type fixation for either applies also to the other, despite any statement to the contrary (see also Article 13.3).

67.8.1. The type species must be a nominal species eligible (see Article 67.2) for fixation as the type species of the prior nominal genus-group taxon.

Example. *Bus* Schmidt, 1890 was proposed expressly as a new replacement name (nomen novum) to replace a junior homonym, *Aus* Medina, 1880, non Dupont, 1860. If *Cus xus* is validly fixed as the type species of *Aus* Medina it is automatically the type species of *Bus*. If, on the other hand, no type species had been fixed for *Aus* Medina and *Cus yus* is validly fixed as the type species of *Bus*, it is also the type species of *Aus* Medina.

67.9. Misidentified type species. If a validly fixed type species is later found to have been misidentified, the provisions of Article 70.3 apply.

67.10. Union of nominal genus-group taxa. If two or more nominal genus-group taxa are included within a single taxonomic taxon at genus-group level, their respective type species remain unchanged (subject to Article 23, the valid name of the taxonomic taxon so formed is that of the nominal taxon with the oldest potentially valid name).

67.11. Nominal species that are already type species. The fact that a nominal species is the type species of a nominal genus or subgenus does not prevent it from being the type species of another. In such a case, the genus-group names are objective synonyms of one another [Art. 61.3.3].

67.12. Type species of nominal genera and subgenera first denoted by synonyms. If a genus-group name was first published in an available work as a synonym of another name there used as valid, and was subsequently made available before 1961 under the provisions of Article 11.6.1, the type species of the nominal genus or subgenus first published as a synonym is that nominal species (cited by an available name) first directly associated with it.

67.12.1. If more than one nominal species was first directly associated with a genus-group name first published as a synonym and made available under Article 11.6.1, those nominal species are the originally included nominal species for the purposes of Articles 68 and 69.

Example. Meigen (1818) synonymized the manuscript generic names *Palpomyia* and *Forcipomyia* with *Ceratopogon* Meigen, 1803 (Diptera), by mentioning them under species of the latter. Both are available under the provisions of Article 11.6.1. *Ceratopogon flavipes* Meigen, the only species with which *Palpomyia* was associated, is automatically its type species by monotypy. *Ceratopogon bipunctatus* (Linnaeus) and *C. albipennis* Meigen, the only species with which *Forcipomyia* was associated, are the originally included species that are eligible for subsequent type fixation for *Forcipomyia*. The type species of *Ceratopogon* is not automatically the type species of either *Palpomyia* or *Forcipomyia*.

67.13. Type species cited as deliberately used misapplications or misidentifications of previously established names.

67.13.1. If an author fixes as the type species of a new nominal genus or subgenus a species originally included deliberately in the sense of a misidentification or misapplication by an earlier author of a name which had been previously established [Art. 67.2.1], the type species fixed by that action is deemed to be a new nominal species [Arts. 11.10, 50.1.2 and 70.4; for the name-bearing type of this species see Article 72.4.2].

67.13.2. For the subsequent designation as the type species of a previously established genus-group taxon of a species originally included as an expressly stated misidentification, see Article 69.2.4.

67.14. Type species disregarded in collective groups. If the name of a nominal genus-group taxon is subsequently applied to a collective group, the type species of that taxon is disregarded while the name is used as a collective-group name (see also Article 23.7).

Example. *Cercaria* O.F. Müller, 1773, established for a genus of digenean helminths and treated as the name of a nominal genus by many 19th century authors as if *C. lemna* Müller, 1773 was its type species, is now used as a collective-group name for trematode larvae that cannot be placed with certainty in known genera; *Cercaria* is used in this way irrespective of any taxonomic treatment of it in synonymy.

Article 68. Type species fixed in the original publication.

68.1. Order of precedence in ways of fixation. If one (or more) species qualifies for fixation as the type species in more than one of the ways provided for in Articles 68.2-68.5, the valid fixation is that determined by reference to the following order of precedence: firstly, original designation [Art. 68.2], then monotypy [Art. 68.3], then absolute tautonymy [Art. 68.4], and lastly Linnaean tautonymy [Art. 68.5].

Recommendation 68A. Citation of type fixation. If a species is qualified for fixation as the type species in more than one of the ways provided for in this Article, only the valid fixation need be cited.

68.2. Type species by original designation. If one nominal species is explicitly designated [Art. 67.5] as the type species when a nominal genus-group taxon is established, that nominal species is the type species (type by original designation) unless the provisions of Article 70.3 apply.

68.2.1. The expressions "gen. n., sp. n.", "new genus and species", or an equivalent, applied before 1931 to only one of two or more new nominal species originally included in a new nominal genus or subgenus, are deemed to be an original designation if no other type species was explicitly designated.

68.2.2. If, when a nominal genus-group taxon is established without explicit designation of a type species, one originally included new nominal species [Art. 67.2] is given the species-group name *typicus*, *-a*, *-um* or *typus*, that nominal species is deemed to be the type species by original designation.

68.3. Type species by monotypy. When an author establishes a new nominal genus-group taxon for a single taxonomic species and denotes that species by an available name, the nominal species so named is the type species. Fixation by this means is deemed to be fixation by monotypy, regardless of any cited synonyms, subspecies, or unavailable names, and regardless of whether the author considered the nominal genus-group taxon to contain other species which he or she did not cite by name, and regardless of nominal species-group taxa doubtfully included or identified.

68.3.1. If a new genus is divided into subgenera at the time its name is established, and if the nominotypical subgenus contains only a single species, that nominal species is deemed to be the type by monotypy of the new nominal genus.

68.4. Type species by absolute tautonymy. If a valid species-group name, or its cited synonym, originally included [Art. 67.2] in a nominal genus-group taxon is identical with the name of that taxon, the nominal species denoted by that specific name (if available) is the type species (type species by absolute tautonymy).

Example. The new nominal genus *Aus* Smith contains among its nominal species *Aus xus* (Brown); among the cited synonyms of the latter is the available name *Bus xus aus* Robinson. The type species of *Aus* is *Bus aus* Robinson, not *Bus xus* Brown.

68.5. Type species by "Linnaean tautonymy". If, in the synonymy of only one of the originally included nominal species [Art. 67.2] in a nominal genus-group taxon established before 1931, there is cited a pre-1758 name of one word identical with the new genus-group name, that nominal species is the type species (type species by "Linnaean tautonymy").

Example. The genus *Castor* Linnaeus, 1758 (the beaver) was established with two included species. In the synonymy of one of these species (*Castor fiber*) is cited the one-word name "*Castor* Gesner pisc. 185." *Castor fiber* Linnaeus, 1758 is therefore the type species of *Castor* by Linnaean tautonymy.

68.6. Fixation of type species with names cited as deliberately used misapplications or misidentifications by previous authors. See Articles 11.10 and 67.13.

Article 69. Type species not fixed in the original publication. If a nominal genus-group taxon was established before 1931 (in the case of an ichnotaxon, before 2000) and no type species was fixed in the original publication [Art. 68], the provisions of this Article apply subject, when appropriate, to the provisions of Article 70.2 and 70.3.

69.1. Type species by subsequent designation. If an author established a nominal genus or subgenus but did not fix its type species, the first author who subsequently designates one of the originally included nominal species [Art. 67.2] validly designates the type species of that nominal genus or subgenus (type by subsequent designation), and no later designation is valid.

69.1.1. In the absence of a prior type fixation for a nominal genus or subgenus, an author is deemed to have designated one of the originally included nominal species as type species, if he or she states (for whatever reason, right or wrong) that it is the type or type species, or uses an equivalent term, and if it is clear that that author accepts it as the type species.

69.1.2. A subsequent designation first made in a literature-recording publication is to be accepted, if valid in all other respects.

69.2. Eligibility of species for type fixation. An originally included nominal species is eligible for subsequent fixation as type species even if it is the type species of another genus-group taxon [Art. 67.11] or had been included in another such taxon.

69.2.1. If an author subsequently designates a type species by using an unjustified emendation or an incorrect spelling of the name of one of the originally included nominal species, he or she is deemed to have designated the type species under its correctly spelled name [Art. 67.6].

69.2.2. If an author designates as type species a nominal species that was not originally included (or accepts another's such designation) and if, but only if, at the same time he or she places that nominal species in synonymy with one and only one of the originally included species (as defined in Article 67.2), that act constitutes fixation of the latter species as type species of the nominal genus or subgenus.

69.2.3. If an author designates a type species denoted by a new replacement name (nomen novum) for the name of an originally included species, that act constitutes fixation of that originally included nominal species as the type species of the nominal genus or subgenus.

69.2.4. If an author subsequently designates as type species a species originally included [Art. 67.2.1] as an expressly stated misidentification or misapplication of a previously established nominal species, the species so designated is the nominal species denoted by the name of the taxonomic species actually involved (and not the nominal species cited).

69.3. Type species by subsequent monotypy. If only one nominal species was first subsequently included in a nominal genus or subgenus established without included species, that nominal species is automatically fixed as the type species, by subsequent monotypy.

69.4. "Fixation by elimination" excluded. Elimination of all but one of the originally included nominal species from a nominal genus or subgenus does not in itself constitute type fixation.

Recommendation 69A. Criteria of preference. In designating a type species for a nominal genus or subgenus, an author should give preference to a species that is adequately described or illustrated, or of which type material still exists, or of which material is easily obtained. When these properties are shared by more than one species, an author should be guided by the following criteria, in order of preference:

69A.1. The most common species, or one of medical or economic importance, or one with the specific name *communis*, *vulgaris*, *medicinalis*, or *officinalis*, should be designated.

69A.2. If the valid name or a synonym of one of the originally included nominal species includes a species-group name virtually the same as the name of the genus-group taxon, or that is of the same derivation or meaning, that species should be designated as the type species (choice resulting from "virtual tautonymy"), unless such designation is strongly contra-indicated by other factors.

Examples. *Bos taurus*, *Equus caballus*, *Ovis aries*, *Scomber scombrus*, *Sphaerostoma globiporum*, *Spinicapitichthys spiniceps*.

69A.3. If some of the originally included nominal species have been removed to other nominal genus-group taxa, preference should be given to a remaining species, if any such is suitable ("choice following elimination").

69A.4. A nominal species having a sexually mature specimen as its type is generally preferable to one based on a larval or otherwise immature specimen.

69A.5. If more than one group of species is recognized in a nominal genus-group taxon, preference should be given to a nominal species that belongs to as large a group as possible.

69A.6. In genus-group taxa of parasites, preference should be given to a nominal species that parasitizes humans or an animal of economic importance or a common and widespread host species.

69A.7. All other things being equal, preference should be given to a nominal species well known to the author of the nominal genus-group taxon at the time he or she established it.

69A.8. If an author is known to have habitually placed a "typical" (i.e. representative) species first and described others by comparison with it, that fact should be considered in the designation of a type species.

69A.9. If an author is known to have denoted type species by their position ("first species rule"), the first nominal species cited by him or her should be designated as the type species.

69A.10. All other things being equal, preference should be given to the nominal species cited first in the work, page or line ("position precedence").

Article 70. Identification of the type species.

70.1. Correct identification assumed. It is to be assumed, in the absence of clear evidence to the contrary, that an author has identified the species correctly when he or she either

70.1.1. includes a previously established nominal species in a new nominal genus or subgenus, or

70.1.2. fixes such a species as the type species of a new or previously established nominal genus or subgenus.

70.2. Type fixation overlooked. If it is found that an earlier type species fixation has been overlooked, the overlooked fixation is to be accepted and any later fixations are invalid. If this is considered to cause instability or confusion the case is to be referred to the Commission for a ruling.

70.3. Misidentified type species. If an author discovers that a type species was misidentified (but for type species fixed by deliberately cited misidentifications, see Articles 11.10, 67.13 and 69.2.4), the author may select, and thereby fix as type species, the species that will, in his or her judgment, best serve stability and universality, either

70.3.1. the nominal species previously cited as type species [Arts. 68, 69], or

70.3.2. the taxonomic species actually involved in the misidentification. If the latter choice is made, the author must refer to this Article and cite together both the name previously cited as type species and the name of the species selected.

Examples. If the taxonomic species actually involved is selected, the designation could be made in the form "Type species now fixed (under Article 70.3 of the Code) as *Aus bus* Mulsant, 1844, misidentified as *Xus yus* Horn, 1873 in the original designation by Watson (1912)".

Stephens (1829) included "*Staphylinus tristis* Gravenhorst" in his new beetle genus *Quedius*; Curtis (1837) subsequently indicated that species to be the type, and this concept of *Quedius* has been accepted ever since. The description of "*S. tristis*" by Gravenhorst (1802) shows that he was dealing with a new species, but due to misidentification he applied to it the name of *S. tristis* Fabricius, 1792, which is a species now placed in a different staphylinid tribe. Faced with this misidentification, by then long known, Tottenham (1949) designated *Staphylinus levicollis* Brullé, 1832 as the type species, stating that this was the valid synonym of "*Staphylinus tristis* Gravenhorst, 1802, nec Fabricius, 1792". However, "*S. tristis* Gravenhorst" is not an available name or a stated misidentification [Art. 67.2.1], and in Opinion 1851 (1996) the Commission designated *S. levicollis* as the type species in order to maintain usage. Had there been no such ruling, under Article 70.3.2 an author would be able to designate *S. levicollis* as the type species without recourse to the Commission (such an action could not have been taken under previous editions of the Code).

70.4. Identification of type species by deliberate misapplication.

70.4.1. For the fixation, as the type species of a new nominal genus or subgenus, of a species included in the sense of an expressly stated misidentification of a previously established nominal species, see Articles 11.10 and 67.13.

70.4.2. For the subsequent fixation as the type species of a nominal genus or subgenus of a species which had been originally included in the sense of an expressly stated misidentification of a previously established nominal species, see Article 69.2.4.

Article 71. Application. The provisions of this Chapter apply equally to nominal species and subspecies, including taxa deemed to be subspecific [Art. 45.6].

Article 72. General provisions.

72.1. Use of the term "type" relating to specimens. The term "type" forms part of many compound terms used by taxonomists to distinguish between particular kinds of specimens, only some of which are name-bearing types. For the purposes of the Code, three categories of specimens are regulated, namely

72.1.1. type series: all the specimens on which the author established a nominal species-group taxon (with the exception of those excluded [Art. 72.4.1]); in the absence of holotype designation, or the designation of syntypes, or the subsequent designation of a lectotype, all are syntypes and collectively they constitute the name-bearing type;

72.1.2. name-bearing types: specimens with a name-bearing function, whether fixed originally (holotype [Art. 73.1] or syntypes [Art. 73.2]) or fixed subsequently (lectotype [Art. 74] or neotype [Art. 75]);

72.1.3. other specimens: those without a name-bearing function (paratypes [Art. 72.4.5], paralectotypes [Arts. 73.2.2, 74.1.3]; see Glossary for definitions).

Recommendation 72A. Use of the term "allotype". The term "allotype" may be used to indicate a specimen of opposite sex to the holotype; an "allotype" has no name-bearing function.

72.2. Fixation of name-bearing types from type series of nominal species-group taxa established before 2000. A nominal species-group taxon established before 2000 may have its name-bearing type fixed from the type series [Art. 72.4] originally [Art. 73], or subsequently [Art. 74]. (If no name-bearing type is believed to be extant a neotype may be fixed; see Article 75 for conditions).

72.3. Name-bearing types must be fixed originally for nominal species-group taxa established after 1999. A proposal of a new nominal species-group taxon after 1999 (unless denoted by a new replacement name (nomen novum) [Arts. 16.4, 72.7]), must include the fixation of a holotype [Art. 16.4] (see Article 73.1) or syntypes [Art. 73.2]. In the case of syntypes, only those specimens expressly indicated by the author to be those upon which the new taxon was based are fixed as syntypes.

72.4. Type series.

72.4.1. The type series of a nominal species-group taxon consists of all the specimens included by the author in the new nominal taxon (whether directly or by bibliographic reference), except any that the author expressly excludes from the type series [Art. 72.4.6], or refers to as distinct variants (e.g. by name, letter or number), or doubtfully attributes to the taxon.

72.4.1.1. For a nominal species or subspecies established before 2000, any evidence, published or unpublished, may be taken into account to determine what specimens constitute the type series.

Example. Linnaeus (1758) described the gastropod *Conus imperialis*, and cited specimens described or illustrated by previous authors. The type series included not only those cited specimens, but also two other specimens currently in collections in Uppsala and London of which there is evidence

that they were known to Linnaeus and recognized by him as *C. imperialis* when the nominal species was established.

72.4.2. If a new nominal species-group taxon is based, in whole or in part, on a published misidentification by an earlier author, the type series consists of or includes the specimen or specimens which had been misidentified, whether the later author refers to them directly or through an illustration or a description (but see Recommendation 73B).

72.4.3. The type series of a nominal species-group taxon of which the name was first published as a junior synonym, but was made available before 1961 under the provisions of Article 11.6, consists of the specimen (or specimens) cited with that name in the published synonymy, or, if none was cited there, denoted by that name when it was adopted as the name of a taxon.

72.4.4. The type series of a nominal species-group taxon of which the name is made available by a bibliographic reference to a description or definition associated with an unavailable name [Arts. 12.2.1, 13.1.2] consists of or includes the specimen or specimens denoted by that unavailable name.

72.4.5. When an author designates a holotype [Art. 73.1], then the other specimens of the type series are paratypes. The latter do not become syntypes and cannot be used for lectotype selection [Art. 74] if the holotype is lost or destroyed; however, they are eligible for neotype selection (see Recommendation 75A).

72.4.6. If an author when establishing a nominal species-group taxon nominates either "syntypes" (by that term, or by use of one of the terms "cotypes" or "types" alone), or "holotype and paratypes" used together (or by use of the term "type" together with "allotype" or "cotypes"), and also lists other specimens, the separate mention of the latter expressly excludes them from the type series.

72.4.7. The mere citation of "Type" or equivalent expression, in a published work other than that in which the nominal species-group taxon is established, or in an unpublished catalogue of a museum, or on a label, is not necessarily evidence that a specimen is or is fixed as any of the kinds of types referred to in this Chapter.

Recommendation 72B. Express exclusion from the type series or syntypes. Authors excluding specimens from the type series (or from the syntypes) of new nominal species-group taxa should be explicit. For example, illustrating some, but not all, or indicating specimen numbers of one or some specimens, but not others, would not in itself exclude those specimens not illustrated or not numbered.

72.5. Eligibility as name-bearing types. Only the following are eligible to be a name-bearing type, or part of a name-bearing type, of a nominal species-group taxon:

72.5.1. an animal, or any part of an animal, or an example of the fossilized work of an animal, or of the work of an extant animal if the name based on it was established before 1931;

72.5.2. a colony of animals that exists in nature as a single entity, derived by asexual or vegetative multiplication from a single individual (e.g. a colony of cnidarians, such as corals), or part of such a colony;

72.5.3. in the case of fossils, a natural replacement, natural impression, natural mould, or natural cast of an animal or colony, or part of either;

72.5.4. in extant species of protistans, one or more preparations of directly related individuals representing differing stages in the life cycle (a hapantotype) [Art. 73.3];

72.5.5. a preparation for microscope examination (e.g. a "type slide") containing one or more individual organisms, in which the name-bearing types are clearly indicated and identifiable.

Recommendation 72C. Marking of important individuals. Whenever possible, authors establishing new nominal species-group taxa based upon microscope preparations containing more than one specimen (a "type slide") should mark distinctly the locations of specimens which are considered to be of crucial importance in demonstrating the taxonomic characters.

72.5.6. In the case of a nominal species-group taxon based on an illustration or description, or on a bibliographic reference to an illustration or description, the name-bearing type is the specimen or specimens illustrated or described (and not the illustration or description itself).

72.6. Specimens that are already name-bearing types. The fact that a specimen is already the name-bearing type, or part of the name-bearing type, of one nominal species-group taxon does not prevent its being the name-bearing type, or part of the name-bearing type, of another.

72.7. Name-bearing types of nominal species-group taxa denoted by new replacement names (nomina nova). If an author proposes a new species-group name expressly as a replacement (a nomen novum) for an earlier available one, then the two names are objective synonyms; both the nominal taxa they denote have the same name-bearing type despite any simultaneous restriction or application of the new replacement name (nomen novum) to particular specimens or any contrary designation of type, or any different taxonomic usage of the new replacement name.

Examples. *Mus terraereginae* Alston, 1879 was a new replacement name (nom. nov.) for *Mus leucopus* (Gray, 1867), a secondary homonym of *Mus leucopus* Rafinesque, 1818; accordingly, both have the same name-bearing type. *Betpakodiscus aliminimus* Brenckle, 1993 was established as a "nom. nov." for *Archaediscus minimus* Reitlinger, 1950 sensu Grozdilova & Lebedeva (1953). *B. aliminimus* and *A. minimus* do not have the same name-bearing type because "*Archaediscus minimus* Grozdilova & Lebedeva, 1953, non Reitlinger 1950" is not an available name (the name-bearing type of *B. aliminimus* Brenckle, 1993 is fixed through the provisions of Article 72.4.4).

72.8. Name-bearing types of nominotypical subspecies. A nominal species and its nominotypical subspecies have the same name-bearing type [Arts. 47.1, 61.2].

72.9. Union of nominal species-group taxa. If two or more nominal species-group taxa are included within a single taxonomic taxon at the same rank in the species-group, their respective name-bearing types remain unchanged (subject to Article 23, the valid name of the taxonomic taxon so formed is that of the nominal species-group taxon with the oldest potentially valid name).

72.10. Value of name-bearing types. Holotypes, syntypes, lectotypes and neotypes are the bearers of the scientific names of all nominal species-group taxa (and indirectly of all animal taxa). They are the international standards of reference that provide objectivity in zoological nomenclature and must be cared for as such (see Recommendations 72D to 72F). They are to be held in trust for science by the persons responsible for their safe keeping.

Recommendation 72D. Labelling of name-bearing types. Holotypes, syntypes, lectotypes and neotypes should be labelled in a way that will unmistakably denote their status.

Recommendation 72E. Publication of information on labels. An author who designates a holotype, lectotype, neotype or syntypes should publish all information that appears on the labels accompanying the specimens so as to facilitate the future recognition of the specimens.

Recommendation 72F. Institutional responsibility. Every institution in which name-bearing types are deposited should

72F.1 ensure that all are clearly marked so that they will be unmistakably recognized as name-bearing types;

72F.2 take all necessary steps for their safe preservation;

72F.3 make them accessible for study;

72F.4 publish lists of name-bearing types in its possession or custody; and

72F.5 so far as possible, communicate information concerning name-bearing types when requested.

Article 73. Name-bearing types fixed in the original publication (holotypes and syntypes).

73.1. Holotypes. A holotype is the single specimen upon which a new nominal species-group taxon is based in the original publication (for specimens eligible to be holotypes in colonial animals and protistans, see Articles 72.5.2, 72.5.4 and 73.3).

73.1.1. If an author when establishing a new nominal species-group taxon states in the original publication that one specimen, and only one, is the holotype, or "the type", or uses some equivalent expression, that specimen is the holotype fixed by original designation.

73.1.2. If the nominal species-group taxon is based on a single specimen, either so stated or implied in the original publication, that specimen is the holotype fixed by monotypy (see Recommendation 73F). If the taxon was established before 2000 evidence derived from outside the work itself may be taken into account [Art. 72.4.1.1] to help identify the specimen.

73.1.3. The holotype of a new nominal species-group taxon can only be fixed in the original publication and by the original author (for consequences following a misuse of the term "holotype" see Article 74.6).

73.1.4. Designation of an illustration of a single specimen as a holotype is to be treated as designation of the specimen illustrated; the fact that the specimen no longer exists or cannot be traced does not of itself invalidate the designation.

73.1.5. If a subsequent author finds that a holotype which consists of a set of components (e.g. disarticulated body parts) is not derived from an individual animal, the extraneous components may, by appropriate citation, be excluded from the holotype (material may be excluded from a hapantotype if it is found to contain components representing more than one taxon [Art. 73.3.2]).

Recommendation 73A. Designation of holotype. An author who establishes a new nominal species-group taxon should designate its holotype in a way that will facilitate its subsequent recognition.

Recommendation 73B. Preference for specimens studied by author. An author should designate as holotype a specimen actually studied by him or her, not a specimen known to the author only from descriptions or illustrations in the literature.

Recommendation 73C. Data on the holotype. An author who establishes a new nominal species-group taxon should publish at least the following data concerning the holotype, if they are relevant and known to the author:

73C.1. its size or the size of one or more relevant organs or parts;

73C.2. the full locality (including geographic coordinates), date, and other data on the labels accompanying it;

73C.3. its sex, if applicable;

73C.4. its developmental stage, and its caste, if the taxon includes more than one caste;

73C.5. the name of the collector;

73C.6. the collection in which it is situated and any collection number or register number assigned to it;

73C.7. in the case of a parasite, the name of the host species;

73C.8. in the case of an extant terrestrial taxon, the elevation in metres above sea level at which the holotype was taken;

73C.9. in the case of an extant aquatic taxon, the depth in metres below water level at which the holotype was taken;

73C.10. in the case of a fossil taxon, the geological age and stratigraphical position of the holotype, stated, if possible, in metres above or below a well-established plane.

Recommendation 73D. Labelling of paratypes. After the holotype has been labelled, any remaining specimens of the type series [Art. 72.4.5] should be labelled "paratype" to identify the components of the original type series.

Recommendation 73E. Avoidance of the term "cotype". An author should not use the term "cotype", e.g. in the sense of syntype or paratype.

Recommendation 73F. Avoidance of assumption of holotype. Where no holotype or syntype was fixed for a nominal species-group taxon established before 2000, and when it is possible that the nominal species-group taxon was based on more than one specimen, an author should proceed as though syntypes may exist and, where appropriate, should designate a lectotype rather than assume a holotype (see also Article 74.6).

73.2. Syntypes. Syntypes are specimens of a type series that collectively constitute the name-bearing type. They may have been expressly designated as syntypes (see Article 73.2.1 for acceptable terms); for a nominal species-group taxon established before 2000 [Art. 72.3] all the specimens of the type series are automatically syntypes if neither a holotype [Art. 72.1] nor a lectotype [Art. 74] has been fixed. When a nominal species-group taxon has syntypes, all have equal status in nomenclature as components of the name-bearing type.

73.2.1. Syntypes may include specimens labelled "cotype" or "type" (both used in the meaning of syntype), specimens with no identifying label, and specimens not seen by the author but which form the bases of previously published descriptions or illustrations upon which the author founded the new nominal species-group taxon in whole or in part [Art. 72.5.5].

73.2.1.1. When a nominal taxon is established after 1999, only those specimens expressly indicated by the author as those upon which the new taxon is based (see Article 72.3) are syntypes.

73.2.2. Specimens that were syntypes prior to the valid designation of a lectotype [Art. 74] are no longer syntypes after such designation; by that action they become lectotype and paralectotypes (see Recommendation 74F); the latter have no name-bearing function and do not regain status as syntypes if the lectotype is lost or destroyed.

73.2.3. If all syntypes of a nominal species-group taxon have the same place of origin [Art. 76.1] that is the type locality; but if the syntypes originated from two or more localities (including different strata), the type locality encompasses all of the places of origin. If a lectotype is subsequently designated, the type locality is the place of origin of the lectotype [Art. 76.2].

73.3. Hapantotypes. A hapantotype (see Glossary) consisting of one or more preparations or cultures may be designated when a nominal species-group taxon of extant protistans is established. This hapantotype is the holotype of the nominal taxon.

73.3.1. A hapantotype, although consisting of a number of separate organisms, is deemed to be indivisible and cannot be restricted by lectotype selection; but

73.3.1. if a hapanotype is found to contain individuals of more than one species-group taxon, components may, by appropriate citation, be excluded from it until it contains individuals of only one species-group taxon (for the treatment of holotypes found to consist of components derived from more than one individual, see Article 73.1.5.).

Article 74. Name-bearing types fixed subsequently from the type series (lectotypes from syntypes).

74.1. Designation of a lectotype. A lectotype may be designated from syntypes to become the unique bearer of the name of a nominal species-group taxon and the standard for its application (except in the case of hapantotypes [Art. 73.3]).

74.1.1. The valid designation of a lectotype fixes the status of the specimen as the sole name-bearing type of that nominal taxon; no later designation of a lectotype has any validity.

74.1.2. The valid designation of a lectotype supersedes any previous restriction of the application of the name of the taxon.

74.1.3. The valid designation of a lectotype permanently deprives all other specimens that were formerly syntypes of that nominal taxon of the status of syntype [Art. 73.2.2]; those specimens then become paralectotypes.

74.2. Lectotype found not to have been a syntype. If it is demonstrated that a specimen designated as a lectotype was not a syntype, it loses its status of lectotype.

74.3. Designation to be individual. Lectotypes must not be designated collectively by a general statement; each designation must be made specifically for one nominal taxon and must have as its object the definition of that taxon.

Example. Smith, revising collections described in publications by Dupont, made the statement that in the case of each new species described by Dupont "the specimen bearing the author's determination label is the type" or "the specimen listed first in the publication is designated as the lectotype". Such an act by Smith does not constitute valid lectotype designation.

74.4. Designation by means of an illustration or description. Designation of an illustration or description of a syntype as a lectotype is to be treated as designation of the specimen illustrated or described; the fact that the specimen no longer exists or cannot be traced does not of itself invalidate the designation.

74.5. Lectotype designations before 2000. In a lectotype designation made before 2000, either the term "lectotype", or an exact translation or equivalent expression (e.g. "the type"), must have been used or the author must have unambiguously selected a particular syntype to act as the unique name-bearing type of the taxon. When the original work reveals that the taxon had been based on more than one specimen, a subsequent use of the term "holotype" does not constitute a valid lectotype designation unless the author, when wrongly using that term, explicitly indicated that he or she was selecting from the type series that particular specimen to serve as the name-bearing type.

74.6. Fixation of lectotype by inference of "holotype" or "the type" before 2000. When it has been accepted that a nominal species-group taxon was based on a single specimen and the original description neither implies nor requires that there were syntypes, and if it is considered subsequently that the original description was based on more than one specimen, the first author to have published before 2000 the assumption that the species-group taxon was based upon a single type specimen is deemed to have designated that specimen as the lectotype.

74.6.1. The inference that the specimen is a "holotype" or "the type"

74.6.1.1. may be by reference to an illustration or description of a specimen [Art. 74.4];

74.6.1.2. must be individual in accordance with Article 74.3.

Example. The fossil marsupial "lion" *Thylacoleo carnifex* Owen, 1858 was described briefly in the *Encyclopaedia Britannica*. The description included a figure of a cranium. Although the lower dentition was mentioned, there was no information that it did not form part of the same specimen. McCoy (1876) described a new nominal species *Thylacoleo oweni*, stating at the same time that the cranium described by Owen was "the first described type of the species" *T. carnifex*. The cranium has been accepted universally as the holotype. It is now known that the original description contained information partly based upon a portion of a mandible from a different locality. McCoy's (1876) inference that the cranium is "the type" is deemed to constitute lectotype fixation.

74.7. Lectotype designations after 1999. To be valid, a lectotype designation made after 1999 must

74.7.1. employ the term "lectotype" or an exact translation (e.g. "lectotypus", but not "the type"),

74.7.2. contain information sufficient to ensure recognition of the specimen designated, and

74.7.3. contain an express statement of the taxonomic purpose of the designation.

Recommendation 74A. Agreement with previous restriction. In designating a lectotype, in order to preserve stability of nomenclature an author should act consistently with, and in any event should give great weight to, previously accepted taxonomic restrictions of the application of the name.

Recommendation 74B. Preference for illustrated specimen. Other things being equal, an author who designates a lectotype should give preference to a syntype of which an illustration has been published.

Recommendation 74C. Data on the lectotype. An author who designates a lectotype should publish for it the data listed in Recommendation 73C, besides describing any individual characteristics by which it can be recognized.

Recommendation 74D. Choice between syntypes in several collections. When possible, a lectotype should be chosen from syntypes in the collection of a public institution, preferably of the institution containing the largest number of syntypes of the nominal species-group taxon, or containing the collection upon which the author of the nominal species-group taxon worked, or containing the majority of that author's types.

Recommendation 74E. Verification of locality. When selecting a lectotype, the author should, if possible, verify the accuracy of the locality ascribed to it. A syntype of known locality should be preferred to one of unknown origin.

Recommendation 74F. Paralectotypes. An author who designates a lectotype should clearly label other former syntypes as "paralectotypes". Like paratypes, paralectotypes have no name-bearing status, but they are eligible for designation of neotypes.

Article 75. Neotypes.

75.1. Definition. A neotype is the name-bearing type of a nominal species-group taxon designated under conditions specified in this Article when no name-bearing type specimen (i.e. holotype, lectotype, syntype or prior neotype) is believed to be extant and an author considers that a name-bearing type is necessary to define the nominal taxon objectively. The continued existence of paratypes or paralectotypes does not in itself preclude the designation of a neotype.

75.2. Circumstances excluded. A neotype is not to be designated as an end in itself, or as a matter of curatorial routine, and any such neotype designation is invalid.

Example. If an author designates a neotype for *Xus albus* Smith, a species about whose identity there is no doubt and which is not involved in any complex zoological problem at the time at which it was designated, the purported "neotype" has no name-bearing status.

75.3. Qualifying conditions. A neotype is validly designated when there is an exceptional need and only when that need is stated expressly and when the designation is published with the following particulars:

75.3.1. a statement that it is designated with the express purpose of clarifying the taxonomic status or the type locality of a nominal taxon;

75.3.2. a statement of the characters that the author regards as differentiating from other taxa the nominal species-group taxon for which the neotype is designated, or a bibliographic reference to such a statement;

75.3.3. data and description sufficient to ensure recognition of the specimen designated;

75.3.4. the author's reasons for believing the name-bearing type specimen(s) (i.e. holotype, or lectotype, or all syntypes, or prior neotype) to be lost or destroyed, and the steps that had been taken to trace it or them;

75.3.5. evidence that the neotype is consistent with what is known of the former name-bearing type from the original description and from other sources; however, a neotype may be based on a different sex or life stage, if necessary or desirable to secure stability of nomenclature;

75.3.6. evidence that the neotype came as nearly as practicable from the original type locality [Art. 76.1] and, where relevant, from the same geological horizon or host species as the original name-bearing type (see also Article 76.3 and Recommendation 76A.1);

75.3.7. a statement that the neotype is, or immediately upon publication has become, the property of a recognized scientific or educational institution, cited by name, that maintains a research collection, with proper facilities for preserving name-bearing types, and that makes them accessible for study.

75.4. Priority. The first neotype designation published for a nominal species-group taxon in accordance with the provisions of this Article is valid and no subsequent designation, except one made by the Commission under the plenary power [Art. 78.1], has any validity (also see Article 75.8 for the status of a neotype if a former name-bearing type is rediscovered).

75.4.1. If a validly designated neotype is lost or destroyed, a new neotype, if one is designated to replace it, must satisfy the provisions of this Article.

Recommendation 75A. Choice of neotypes. Authors are advised to choose neotypes from any surviving paratypes or paralectotypes unless there are compelling reasons to the contrary, such as data inadequate to meet taxonomic requirements, the poor condition of the specimens, or probable mixture of taxa. All things being equal, topotypic specimens (see Glossary) from the type series should be given preference.

Recommendation 75B. Consultation with specialists. Before designating a neotype, an author should be satisfied that the proposed designation does not arouse serious objection from other specialists in the group in question.

75.5. Replacement of unidentifiable name-bearing type by a neotype. When an author considers that the taxonomic identity of a nominal species-group taxon cannot be determined from its existing name-bearing type (i.e. its name is a *nomen dubium*), and stability or universality are threatened thereby, the author may request the Commission to set aside under its plenary power [Art. 81] the existing name-bearing type and designate a neotype.

Example. The holotype of the ammonite species *Cycloceras laevigatum* M'Coy, 1844 lacked important diagnostic features. Upon request the Commission under its plenary power set aside the type status of this specimen and designated a neotype (Opinion 1720 (1993)).

75.6. Conservation of prevailing usage by a neotype. When an author discovers that the existing name-bearing type of a nominal species-group taxon is not in taxonomic accord with the prevailing usage of names and stability or universality is threatened thereby, he or she should maintain prevailing usage [Art. 82] and request the Commission to set aside under its plenary power [Art. 81] the existing name-bearing type and designate a neotype.

Example. On discovering that the only existing type specimen of *Aradus caucasicus* Kolenati, 1857 (Heteroptera) was a specimen of another species, Kerzhner & Heiss (1993) proposed that the prevailing usage of the names of both species should be conserved by the designation of a neotype for *A. caucasicus* under the Commission's plenary power, and this was accepted in Opinion 1783 (1994).

75.7. Status of neotypes designated before 1961. A neotype designation published before 1961 takes effect from its date of publication if it then fulfilled all the provisions of this Article; it is invalid if it did not fulfil them.

Recommendation 75C. Invalid designations. An author who published an invalid neotype designation before 1961 should if possible be given an opportunity to make it valid before another author designates a neotype for the same nominal species-group taxon.

Recommendation 75D. Preference for earlier invalid "neotypes". If an invalid neotype designation was published before 1961, the specimen then designated should be given preference when a neotype for the same nominal species-group taxon is validly designated.

75.8. Status of rediscovered former name-bearing types. If, after the designation of a neotype, the name-bearing type (holotype, syntypes, lectotype or previous neotype) of the nominal species-group taxon that was (were) presumed lost is (are) found still to exist, on publication of that discovery the rediscovered material again becomes the name-bearing type and the neotype is set aside (unless, following an application, the Commission rules that the neotype is to be retained as the name-bearing type).

Article 76. Type locality.

76.1. Definition. The type locality of a nominal species-group taxon is the geographical (and, where relevant, stratigraphical) place of capture, collection or observation of the name-bearing type; if there are syntypes and no lectotype has been designated, the type locality encompasses the localities of all of them [Art. 73.2.3].

76.1.1. If capture or collection occurred after transport by artificial means, the type locality is the place from which the name-bearing type, or its wild progenitor, began its unnatural journey.

Recommendation 76A. Type localities.

76A.1. In ascertaining or clarifying a type locality (and type horizon, type host, and similar terms), an author should take into account:

76A.1.1. data accompanying the original material;

76A.1.2. collector's notes, itineraries, or personal communications;

76A.1.3. the original description of the taxon; and

76A.1.4. as a last resort, and without prejudice to other clarification, localities within the known range of the taxon or from which specimens referred to the taxon had been taken.

76A.2. A statement of a type locality that is found to be erroneous should be corrected.

76.2. Type locality determined by the lectotype. The place of origin of the lectotype becomes the type locality of the nominal species-group taxon, despite any previously published statement of the type locality (see Recommendation 74E).

76.3. Type locality determined by the neotype. The place of origin of the neotype becomes the type locality of the nominal species-group taxon, despite any previously published statement of the type locality.

Article 77. Relation of Commission to international bodies from which it derives functions and powers.

77.1. Source of authority. The International Commission on Zoological Nomenclature is a permanent body which derives all its powers and its Constitution from resolutions of the International Congresses of Zoology, and their delegated successors.

77.2. Subsequent delegation. The XVII International Congress of Zoology (1972) delegated its powers and functions referred to in the Code and the Constitution of the Commission to the International Union of Biological Sciences (IUBS). That delegation includes the power to delegate powers and functions to another international body of zoologists under conditions specified in this Article.

77.3. Conditions for delegation.

77.3.1. In the event of a delegation from one international body to another, the Commission shall by agreement with the new body make provisions for a Section of Zoological Nomenclature, electing members of the Commission, reviewing proposals by the Commission to amend the Code (see Article 90) and the Constitution (see Article 84.1), and reporting to the international body on activities of the Commission, as specified in this Code and in the Constitution of the Commission.

77.3.2. This international body of zoologists must adopt and put into effect the agreed provisions for the exercise of its functions.

77.3.3. No delegation shall be made under this Article by the international body without the prior concurrence of the Commission.

77.3.4. In the event of the body exercising delegation under this Article failing, in the opinion of the Commission, to carry out its functions, the Commission may terminate the delegation and transfer it to another international body of zoologists.

77.3.5. Any proposal before the Commission under this Article shall require approval by two-thirds of the votes of the members of the Commission validly cast by mail in a secret ballot.

77.4. The Constitution of the Commission. The Commission is governed by a Constitution [Art. 77.1] (See also Article 84).

77.5. Transitional periods. In any period following the termination of a delegation (made and terminated under Articles 77.3.1 and 77.3.4 respectively), the Commission shall continue its functions under the Code and Constitution, and shall report to the body succeeding to the delegation as though it had been in authority during the period subsequent to its most recent report to the previous body. During that period elections to the Commission must be made by procedures for filling casual vacancies (see Constitution: Article 4.6).

Article 78. Powers and duties of the Commission.

78.1. Plenary Power. The Commission is empowered, by a resolution of the IX International Congress of Zoology (1913) and ratified in subsequent Codes by its successors, under conditions specified in Article 81 to suspend the application in a particular case of any provision of the Code except those in the present and next succeeding Chapter. The course to be followed is decided by the Commission under this plenary power and its ruling is published in an Opinion [Art. 80.2].

78.2. Specific powers.

78.2.1. The Commission may, under procedures specified in Article 79, establish a *List of Available Names in Zoology* and may adopt Parts of the List (for the status of names in the *List of Available Names in Zoology*, and the name-bearing types of the nominal taxa the names denote, see Article 79.4).

78.2.2. When an Article of the Code requires an author to refer a nomenclatural matter to the Commission for a decision, the Commission shall determine the matter as is required by the relevant Articles and publish its ruling in an Opinion [Art. 80.2].

78.2.3. The Commission, on its own initiative [Art. 83] or when a case is referred to it, may interpret or apply the provisions of the Code to any question of zoological nomenclature, and give a ruling in an Opinion [Art. 80.2].

78.3. Amendments to the Code.

78.3.1. The Commission shall consider under procedures prescribed in its Constitution any proposals made to it for the amendment of the Code.

78.3.2. When the Commission determines by two-thirds of the votes validly cast that a proposed amendment to the Code is not a major change but merely clarifies a provision of the Code, it may issue a Declaration (a provisional amendment to the Code) subject to the provisions of Article 80.1.

78.3.3. The Commission may not issue a Declaration on any proposal that would be a major change of the Code.

78.4. Other duties. The Commission shall

78.4.1. consider any application for the review of a decision by the Commission;

78.4.2. enter in the relevant *Official Lists* and *Indexes* the names and works that have been the subject of rulings by the Commission in its Opinions (including Official Corrections);

78.4.3. report through publication in the *Bulletin of Zoological Nomenclature* on matters concerning zoological nomenclature and of general concern to zoologists;

78.4.4. submit reports on its work to the international body having authority over it [Art. 77]; and

78.4.5. discharge such other duties as that international body in consultation with the Commission may determine.

Article 79. *List of Available Names in Zoology*. An international body of zoologists (such as an International Congress, an international society, or a consortium of national or regional societies, or a Scientific Member of the International Union of Biological Sciences) in consultation with the Commission may propose that the Commission adopt for a major taxonomic field (or related fields) a Part of the *List of Available Names in Zoology*. The Commission will consider the proposal and may adopt the Part subject to the proposing body and the Commission meeting the requirements of this Article.

79.1. Form of the proposal. The proposal to the Commission shall be made in the form of the Part proposed for adoption and shall

179.1.1. specify the scope of the proposal, such as the taxonomic field, ranks, and time period covered, (e.g. Amphibia, Names of the Species Group established before 31 December 1995 [full date, i.e. day, month, year]);

79.1.2. for each name to be listed, give the bibliographic reference to the work in which it is established, its authorship, its date of publication and its status (including its precedence if this is different from its priority);

79.1.3. for each name to be listed, give details of the name-bearing type of the nominal taxon it denotes; in the case of a species-group name, if the details of how the type specimen(s) may be recognized are not known, state whether the name is based on a holotype, syntypes, lectotype or neotype and the place(s) of deposition (if any) recorded in the type fixation (but no lectotype or neotype designation can be made for the purposes of listing alone [Arts. 74.7, 75.3]);

79.1.4. for any name to be listed which has been the subject of a Commission ruling [Arts. 80, 81], give the relevant Opinion and the status of the name as ruled therein; and

79.1.5. if applicable, specify how homonymy with names beyond the scope of the proposal has been resolved.

79.2. Requirements concerning notification, consultation and voting by the Commission.

79.2.1. Upon being advised by an international body of zoologists that it intends to propose a Part of the *List*, the Commission shall appoint by its Council an *ad hoc* committee [Constitution Art. 10] to consult with the proposers.

79.2.2. Upon receipt of a proposal the Commission shall

79.2.2.1. publish a notice of the proposal in the *Bulletin of Zoological Nomenclature* giving details of the proposing body, proposed scope of the Part and a source from which copies (on paper or otherwise) of the proposed Part may be obtained by zoologists, and inviting comments from zoologists during the following twelve months;

79.2.2.2. submit the notice for publication in journals publishing taxonomic work in the taxonomic field covered by the proposal;

79.2.2.3. refer the proposal to its *ad hoc* committee for it to receive comments, consult with the proposers and others and, not less than two years from the date of publication of the notice referred to in Article 79.2.2.1, consider either a revised proposal or a recommendation that the proposal be abandoned;

79.2.2.4. ensure that the revised proposal does not contain any name established less than five years before the submission of the initial proposal;

79.2.2.5. following receipt of the revised proposal from its *ad hoc* committee, publish notice of it and invite comments on the revised proposal in the same manner as for the initial proposal [Arts. 79.2.2.1, 79.2.2.2];

79.2.2.6. take into account comments received (if any) and comments of the proposers thereon, and vote to adopt the Part proposed or to abandon the proposal, under procedures prescribed in the Constitution [Art. 12] and the Bylaws of the Commission for voting under its plenary power.

79.3. Effective date of Parts and their accessibility. The Commission shall publish a notice in the *Bulletin of Zoological Nomenclature* of a decision to adopt any Part of the *List of Available Names in Zoology* as soon as possible after the decision is taken.

79.3.1. Before publishing the notice of adoption, the Commission shall satisfy itself that the Part newly adopted is accessible either by purchase or gratis and shall include that information in the notice.

79.3.2. Any Part of the *List of Available Names in Zoology* adopted by the Commission becomes effective from the date of publication in the *Bulletin of Zoological Nomenclature* of a notice of the decision of the Commission to adopt it.

79.3.3. The notice shall specify the title under which the Part of the *List* adopted by the Commission shall be known and its scope (including the taxonomic field and dates covered).

79.4. Status of names, spellings, dates of availability, and types specified in the List of Available Names in Zoology.

79.4.1. A name occurring in an adopted Part of the *List of Available Names in Zoology* is deemed be an available name and to have the spelling, date, and authorship recorded in the List (despite any evidence to the contrary).

79.4.2. A nominal taxon denoted by a name occurring in an adopted Part of the *List of Available Names in Zoology* is deemed to have the name-bearing type recorded therein (despite any evidence to the contrary).

79.4.3. No unlisted name within the scope (taxonomic field, ranks, and time period covered) of an adopted Part of the *List of Available Names in Zoology* has any status in zoological nomenclature despite any previous availability.

Recommendation 79A. Citation of previously available names. If for taxonomic and historical purposes an author desires to cite a name that is no longer available because it is not included in the relevant Part of the *List of Available Names in Zoology* adopted by the Commission, it should be made clear that it no longer has a status in zoological nomenclature.

79.5. Power of the Commission to amend the status of a name occurring in the List of Available Names in Zoology. If there are exceptional circumstances and only when an entry in the *List of Available Names in Zoology* is a cause of confusion, the Commission may amend the entry by use of its plenary power [Art. 81] and publish its ruling in an Opinion [Art. 80.2].

79.5.1. From the date of the publication in the *Bulletin of Zoological Nomenclature* of the amended entry the relevant name has the status, spelling, date of availability, and authorship, and the nominal taxon it denotes has the name-bearing type, as shown in the amended entry.

79.5.2. The requirement that amendments to the status of names occurring in the *List* may be made only by the Commission using its plenary power does not prevent an author from designating a type species for a nominal genus-group taxon published before 1931, if one has not already been fixed, or from designating a lectotype [Art. 74] from syntypes recorded in the *List of Available Names in Zoology*, or a neotype when circumstances exist that require neotype designation [Art. 75]. Such subsequent fixations may be inserted by the Commission in the *List*.

Recommendation 79B. Request to authors designating lectotypes or neotypes for names in the *List of Available Names in Zoology*. Authors are requested to inform the Commission of lectotype or neotype designations made by them for the nominal taxa of names in the *List of Available Names in Zoology* as soon as possible after publication.

79.6. Power of the Commission to add omitted names to the *List of Available Names in Zoology*. If the Commission determines that there is a previously available name within the scope of an adopted Part of the *List of Available Names in Zoology* that has been omitted from the *List*, in exceptional circumstances the Commission may by use of the plenary power add an appropriate entry to that Part of the *List* and record this in an Opinion. The availability of the name thereby becomes restored.

Article 80. Status of actions of the Commission. As a consequence of actions required of it by the Code, the Commission may publish Declarations, Opinions, the *Official Lists* and *Official Indexes*, and may adopt and publish Parts of the *List of Available Names in Zoology*. The status of these published acts, and of names and works in the *Official Lists* and *Official Indexes*, is specified in this Article.

80.1. Declarations. A Declaration published by the Commission shall have the force of a provisional amendment to the Code and shall remain in force until the international body having authority [Art. 77] ratifies or rejects it. If the Declaration is ratified, the Code shall be deemed to have been amended from the date of the Declaration.

80.2. Opinions. If a case involves the application of the Code to an individual work, name, or nomenclatural act, the Commission is to give a ruling in an Opinion, and either

80.2.1. state how the Code is to be applied or interpreted; or

80.2.2. acting in the interests of stability and universality, exempt by use of its plenary power [Art. 81] the particular case from the application of the Code, and state the course to be followed.

80.3. Effective date of Opinions. Rulings in Opinions have force immediately upon publication by the Commission in the *Bulletin of Zoological Nomenclature*.

80.4. Corrections of errors or omissions in Opinions. Official Corrections to errors and omissions (such as a bibliographic error, lapsus calami, or an omission in placing a conserved or suppressed name on an *Official List* or *Index*) may be published by the Commission without further vote unless the error or omission negates the ruling or its consequences. If the ruling is negated by the error or omission, the Commission shall reconsider the matter and publish a further Opinion.

80.5. Interpretation of Opinions. An Opinion applies only to the particular case before the Commission and is to be rigidly construed; no conclusions other than those expressly specified are to be drawn from it.

80.6. Status of works, names and nomenclatural acts in *Official Lists*. The Commission publishes the effects of its Opinions on individual names and works in the *Official Lists* and *Official Indexes*. In the case of names and works in the *Official Lists*:

80.6.1. A name entered in an *Official List* is an available name.

80.6.2. The status of a name entered in an *Official List* is subject to the ruling(s) in any relevant Opinion(s), including any Official Correction of an Opinion [Art. 80.4]; all other aspects of its status derive from the normal application of the Code. However, if such a name is given a different status in the *List of Available Names in Zoology* the latter status is deemed to be correct [Art. 80.8].

80.6.3. A name may be placed in an *Official List* without any additional qualification.

80.6.4. If a name entered in an *Official List* is thought to be a synonym of another available name (whether in an *Official List* or not), their relative precedence is determined by the normal application of the Code unless the Commission rules or has ruled otherwise.

80.6.5. A name or nomenclatural act occurring in a work entered in the *Official List of Works Approved as Available for Zoological Nomenclature* is subject to the provisions of the Code and to any limitation imposed by the Commission on the use of that work in zoological nomenclature.

80.7. Status of works, names and nomenclatural acts in *Official Indexes*. The Commission publishes the effects of its Opinions on individual names and works in the *Official Lists* and *Official Indexes*. In the case of names and works in the *Official Indexes*:

80.7.1. A work, name or nomenclatural act entered in an *Official Index* has the status attributed to it in the relevant ruling(s).

80.7.2. A name or nomenclatural act occurring in a work entered in the *Official Index* has no availability or validity in zoological nomenclature, unless the Commission by use of its plenary power rules otherwise. However, such a work may be used as a source of information relevant to zoological nomenclature unless the Com-mission has ruled that the work is to be treated as unpublished.

80.8. Contradictory status accorded by the Commission to names in the *List of Available Names in Zoology* and in the *Official Lists*. In the event of contradictory status being accorded by the Commission to a name included in the *List of Available Names in Zoology*, in an *Official List*, or in an Opinion, the status accorded in the *List of Available Names in Zoology* is deemed to be correct unless the Commission has ruled otherwise [Art. 79.5].

80.9. Previous decisions of the Commission. No ruling given by the Commission in relation to a particular work, name, or nomenclatural act is to be set aside without the consent of the Commission.

Article 81. Use of the Plenary Power.

81.1. Purpose and extent. The Commission has the plenary power [Art. 78.1], on due notice as prescribed by its Constitution, to modify the application of provisions of the Code to a particular case, if such application would in its judgment disturb stability or universality or cause confusion. For the purpose of preventing such disturbance and of promoting a stable and universally accepted nomenclature, it may, by use of its plenary power, conserve, totally, partially or conditionally suppress, or give a specified precedence to, or make available any name, type fixation or other nomenclatural act, or any publication, and establish replacements.

81.2. Guiding principles. In using the plenary power, the Commission is guided by the following principles although these do not limit its use of that power.

81.2.1. If two names are homonyms the older homonym may be "totally suppressed", i.e. suppressed for the purposes of both the Principle of Priority and the Principle of Homonymy so that the later homonym may continue in use as a valid name. A species-group name which has been "totally suppressed" remains an available name [Art. 10.6] and may still denote the type species of a genus or subgenus [Art. 67.1.2].

81.2.2. If two names are objective synonyms the older synonym may be "partially suppressed", i.e. suppressed for the purposes of the Principle of Priority alone, without being suppressed also for the purposes of the Principle of Homonymy.

81.2.3. If two names are considered to be subjective synonyms the older synonym may be suppressed for the purposes of the Principle of Priority alone, as in Article 81.2.2, or it may be "conditionally suppressed" to provide that the older name may be used only when

81.2.3.1. the taxa denoted by the names are regarded as distinct, or

81.2.3.2. it is the valid name of a taxon subordinate in rank to, and included in, the taxon denoted by the later name (e.g. a subfamily within a family or a subgenus within a genus).

Example. The butterfly generic name *Argynnis* Fabricius, 1807 was given precedence over *Argyreus* Scopoli, 1777 when the latter was conditionally suppressed by the Commission under the plenary power (Opinion 161 (1945)). Argyreus is available for use for a genus distinct from *Argynnis*. It is also available for use as the valid name of a subgenus within *Argynnis* and distinct from the nominotypical subgenus.

81.2.4. If the Commission refuses to use its plenary power in a particular case, the ruling in the Opinion is to specify the name(s) to be used, and the action (if any) to be taken.

Article 82. Status of case under consideration.

82.1. Maintenance of prevailing usage. When a case is under consideration by the Commission, prevailing usage (see Glossary) of names is to be maintained until the ruling of the Commission is published.

82.2. Date when consideration is deemed to begin. A case is deemed to be under consideration by the Commission from the date of publication in the *Bulletin of Zoological Nomenclature* of the notice of receipt of the case.

Article 83. Obligations and discretion of the Commission. The Commission is under no obligation to search out violations of the Code, or to supplement or verify information contained in applications submitted to it, or to initiate any action within its field of competence, although it may, at its discretion, do any of these things.

Article 84. Constitution and Bylaws. Regulations dealing with the membership of the Commission, its Officers and Council, elections, voting procedures, meetings, and related matters are incorporated in the Constitution and Bylaws of the Commission.

84.1. Amendments to the Constitution. The Constitution can be amended only in the same manner as the Code [Art. 90].

84.2. Amendments to the Bylaws. Bylaws can be made, amended and suspended by the Commission under procedures set forth in the Constitution.

Article 85. Title and authorship. The title of these rules and recommendations is INTERNATIONAL CODE OF ZOOLOGICAL NOMENCLATURE. The author is the International Commission on Zoological Nomenclature.

Recommendation 85A. Citation of the Code. Authors citing the Code should specify the edition (the present being the fourth), its authorship (the International Commission on Zoological Nomenclature), the date of publication and the publisher of the official text in the language concerned (see Articles 86.2 and 87).

Article 86. Effective date and force of the Code.

86.1. Effective date. This (the fourth) edition of the Code comes into force on 1 January 2000.

86.1.1. If an author takes action under Articles 23.9, 65.2.3 or 70.3 to preserve usage of a name, but the action is published before 1 January 2000, a subsequent author must not set that action aside on the grounds that it was published before 1 January 2000; if it is considered necessary, the Commission should be asked to confirm the action (and is empowered to do so without giving advance notice).

86.1.2. If an author submits for publication before 1 January 2000 a work containing names or nomenclatural acts proposed under the provisions of the third (1985) edition of the Code which was then in force, but the work is not published until after 31 December 1999, the names or acts are not to be set aside on the grounds that they do not comply with the changed provisions of the fourth edition. The Commission should be asked to validate the names or acts (and is empowered to do so without giving advance notice).

86.2. Force of texts. The English and French texts of the Code are official texts and are equivalent in force, meaning and authority (see also Article 87).

86.3. Force of previous Rules and Codes. The rules governing zoological nomenclature contained in former editions of the *International Rules of Zoological Nomenclature* and of the *International Code of Zoological Nomenclature*, and any amendments affecting the Code, have no force unless reaffirmed in this edition, and then only as herein expressed.

Recommendation 86A. New names and type fixations submitted for publication during 1999. To avoid proposals of new names or fixations of name-bearing types being invalid as a consequence of not being published before 1 January 2000 (when this edition of the Code comes into force), authors and editors of works submitted during 1999 are advised to ensure that the works will meet the requirements of this edition.

Article 87. Official Texts. The Commission may authorize the publication of the Code in any language and under such conditions as it may decide. All such authorized texts are official and are equivalent in force, meaning and authority to the English and French texts [Art. 86.2]. If it appears that there is a difference in meaning between official texts, the problem is to be referred to the Commission, whose interpretation shall be final.

Article 88. Application of the Code. No name or nomenclatural act published before 1758 enters zoological nomenclature [Art. 3]. Zoological names, works and nomenclatural acts published after 1757 (which may make use of information in works published earlier) are governed by the provisions of this Code.

Article 89. Interpretation of the Code.

89.1. Meanings of words and expressions. In interpreting the Code, the meaning attributed in the Glossary to a word or expression is to be taken as its meaning for the purposes of the Code.

89.1.1. Any question of doubt or difficulty in deciding the meaning of a word or expression used in the Code and the Glossary is to be presented to the Commission, whose ruling shall be final.

89.2. Status of Recommendations, Examples, Titles and Appendices. Recommendations, examples, and all titles and appendices do not form part of the legislative text of the Code.

Article 90. Amendments of the Code. This Code can be amended [Arts. 78.3, 80.1] only by the international body of zoologists having the delegated power of the International Congresses of Zoology over the Commission [Art. 77] and then only acting on a recommendation from the Commission presented through and approved by the Section of Zoological Nomenclature of that international body.

Glossary

Abbreviations used in the Glossary

abbreviation, *n*.
A shortened form of a word or title. In zoological works genus-group names are often abbreviated to one or two letters; such abbreviations should always be followed by a full stop (period), and they should not be used on the first mention of the name. The same applies to abbreviations of specific names cited in trinominal names of subspecies.

aberration, **ab.**, *n*.
A term used to denote a class of individuals within a species. A name which explicitly refers to an aberration is unavailable.

act, nomenclatural, *n*.
A published act which affects the nomenclatural status (*q.v.*) of a scientific name or the typification of a nominal taxon.

available nomenclatural act
One that is published in an available work.

invalid nomenclatural act
Any available nomenclatural act that is not valid under the provisions of the Code.

unavailable nomenclatural act
One published in an unavailable work.

valid nomenclatural act
One that is to be accepted under the provisions of the Code (i.e. the earliest available nomenclatural act, relevant to a particular name or nominal taxon, which does not contravene any provision of the Code).

adopt, *v*.
To use an unavailable name as the valid name of a taxon in a way which establishes it as a new name with its own authorship and date [Arts. 11.6, 45.5.1., 45.6.4.1].

adoption, *n*.
Of a Part of the *List of Available Names in Zoology*: the acceptance of the Part by the Commission as specified in Article 79.

agreement, gender, *n*.
Agreement in grammatical gender between a generic name and Latin or latinized adjectival or participial species-group names combined with it originally or subsequently.

aggregate, *n*.
A group of species, other than a subgenus, within a genus; or a group of species within a subgenus; or a group of subspecies within a species. An aggregate may be denoted by a species-group name interpolated in parentheses [Art. 6.2].

allotype, *n*.
See under type.

anagram, *n*.
A name formed by the rearrangement of the letters of a word or words.

animal, *n*.
For the purposes of the Code the term "animal" includes the Metazoa and protistan taxa whenever they are or have been treated as animals for nomenclatural purposes.

animals, domesticated, *n*.
Animals distinguished from wild progenitors by characters resulting from the selective actions (deliberate or not) of humans (e.g. *Canis familiaris*, *Felis catus*, *Bos taurus*).

anonymous, *a*.
(1) Of a work: one that does not state the name(s) of the author(s). (2) Of a name or nomenclatural act: one of which the authorship cannot be determined from the work itself [Art. 50.1]; see Article 14 for the availability of anonymous names or nomenclatural acts. (3) Of an author: one whose identity cannot be determined from the work itself.

arbitrary combination of letters
See combination of letters, arbitrary.

Articles, *n*.
The mandatory provisions of the Code.

as such

Being strictly what has been cited (e.g. "a photograph as such" is an illustration on light-sensitive paper, not one printed in a work).

auctorum (***auct.*** or ***auctt.***)

A Latin term meaning "of authors", often given to indicate that a name is used in the sense of a number of subsequent authors and not in its (different) sense as established by the original author.

author (*pl.* **authors**), *n*.

The person(s) to whom a work, a scientific name, or a nomenclatural act is attributed [Arts. 50, 51] (see also anonymous). For the purposes of the Code, if a work is attributed to an editor, or an official (e.g. Secretary), or a body (e.g. a committee or a commission), only that person(s) actually responsible for the work, name, or act, is deemed to be the author [Art. 50].

availability, *n*. (**available**, *a*.)

(1) Of a work: see under work. (2) Of a name: see under name. (3) Of a nomenclatural act: see under act.

bibliographic reference, *n*.

See reference, bibliographic.

binomen (*pl.* **binomina**), *n*., or **binominal name**.

The combination of two names, the first being a generic name and the second a specific name, that together constitute the scientific name of a species [Art. 5.1]. Any interpolated names [Art. 6] are not counted as components of a binomen.

binominal nomenclature

See under nomenclature.

Binominal Nomenclature, Principle of

See Principle of Binominal Nomenclature.

Bulletin of Zoological Nomenclature, *n*.

The official periodical of the International Commission on Zoological Nomenclature.

case, *n*.

(1) A nomenclatural problem presented to the Commission for a ruling (see Declaration, Direction, Opinion). (2) An inflectional form of nouns and adjectives in grammar, of which the nominative and genitive are used in zoological nomenclature.

caste, *n*.

In social insects, a group of individuals, belonging to a particular species or subspecies, differing in form and often in function from other groups of individuals within the same species or subspecies (e.g. in bees: the workers, drones, and queens).

change, mandatory

(1) A change in the spelling of the suffix of a family-group name required by Article 34.1. (2) A change in the ending of a specific or subspecific name required by Article 34.2.

Chapter, *n*.

A primary division of the Code.

character, *n*.

Any attribute of organisms used for recognizing, differentiating, or classifying taxa.

Code, *n*.

(1) An abbreviation of the title *International Code of Zoological Nomenclature*; (2) a reference to that and other International Codes of taxonomic nomenclature (i.e. those regulating the scientific names used in bacteriology and botany).

collection, *n*.

An assemblage of specimens compiled and maintained for purposes of study and/or display.

collective group, *n*.

See under group.

combination, *n*.

The association of a generic name and a specific name to form the name of a species; or of a generic name with a specific name and a subspecific name to form the name of a subspecies.

new combination

The first combination of a generic name and a previously established species-group name.

combination of letters, arbitrary, *n*.

A scientific name that was not based by its author on an existing word of a language.

Commission, *n*.

An abbreviation meaning "The International Commission on Zoological Nomenclature" [Art. 77.1].

compound, *a*.

Of a word, or a scientific name: one that is formed by the union of two or more basic components (i.e. excluding prefixes and suffixes) [Art. 32.5.2.4], written as one word except as provided in Article 32.5.2.4.3.

concept, hypothetical, *n*.

A taxonomic concept that when published contained no animal then known to exist in nature, past or present, but only in the mind of the author whether a prediction or not [Art. 1.3.1].

conditional, *a*.

(1) Of the proposal of a name or a type fixation: one made with stated reservations [Art. 15.1]. (2) Of the inclusion of a taxon in another taxon at a higher rank: made with stated reservations [Art. 51.3.3].

connecting vowel

See vowel, connecting.

conserve, *v*.

To set aside or modify any provision of the Code so as, e.g. (1) to preserve or permit the use of a name as a valid name by removing the obstacles to such use, or (2) to preserve the use of a name in a taxonomic sense that would otherwise be incorrect, or (3) to deem a work to be published or available despite its not satisfying the normal criteria. In each case conservation is by a ruling of the Commission using its plenary power.

conserved name

See under name.

conserved work

See under work.

Constitution, *n*.

An abbreviation of the title "The Constitution of the International Commission on Zoological Nomenclature".

Coordination, Principle of

See Principle of Coordination.

corrigendum (*pl.* **corrigenda**), *n*.

A note published by an author, editor, or publisher of a work, expressly to cite one or more errors or omissions in that work together with their correction.

cotype, *n*.

See under type.

date of publication, *n*.

Of a work (and of a contained name and nomenclatural act): the date on which copies of the work become available by purchase or free distribution. If the actual date is not known, the date to be adopted is regulated by the provisions of Article 21.2-7.

Declaration, *n*.

A provisional amendment to the Code, published by the Commission [Arts. 78.3.2, 80.1].

deem, *v*.

To consider or rule something to be what it may or may not be.

definition, *n*.

A statement in words that purports to give those characters which, in combination, uniquely distinguish a taxon [Arts. 12, 13].

description, *n*.

A statement in words of taxonomic characters of a specimen or a taxon [Arts. 12, 13].

original description

The description of a nominal taxon when it is established.

designation, *n*. (**designate**, *v*.)

The nomenclatural act of an author or the Commission in fixing, by an express statement, the name-bearing type of a newly or previously established nominal genus, subgenus, species, or subspecies. See also act, fixation, and indication.

original designation

The designation of the name-bearing type of a nominal taxon when it is established. [Arts. 68.1, 73.1.1].

subsequent designation

The designation of the name-bearing type of a nominal taxon published after the nominal taxon was established [Arts. 69.1, 74, 75].

diacritic mark

See mark, diacritic.

diagnosis, *n*.

A statement in words that purports to give those characters which differentiate the taxon from other taxa with which it is likely to be confused.

differentiate, *v*.

To distinguish something (e.g. a taxon) from others [Art. 13]. See also definition.

Direction, *n*.

A term now abandoned; under previous editions of the Code, a statement published by the Commission, giving the result of a vote completing or correcting a ruling given in an Opinion. Directions have been replaced by Official Corrections (*q.v.*).

Disclaimer, *n*.

A statement in a work, by an author, editor or publisher, that (1) the entire work or (2) all or specified names and nomenclatural acts in it are to be excluded for purposes of zoological nomenclature.

division, *n*.

(1) A rank that if treated as a division of a genus or subgenus is deemed to be of subgeneric rank for the purposes of nomenclature [Art. 10.4]. (2) A taxon at the rank of division.

elide, *v*.

To deliberately omit one or more letters within a word (as in Article 29.3.1.1).

elimination, fixation by

See fixation by elimination.

emendation, *n*.

(1) Any intentional change in the original spelling of an available name [Art. 33.2.]. (2) An available name formed by intentionally changing the original spelling of an available name.

justified emendation

The correction of an incorrect original spelling [Art. 33.2.2].

unjustified emendation

Any emendation other than a justified emendation [Art. 33.2.3].

ending, gender, *n*.

(1) The letters at the end of a genus-group name (which must be, or be treated as, a singular noun in the nominative case - Article 11.8) which indicate the gender of the word; see Article 30.2 for the genders indicated by the endings of words not found in Latin or Greek dictionaries. (2) The letters at the end of a Latin or latinized adjectival species-group name which must agree in gender form with the gender of the generic name with which the species-group name is combined (see Article 31.2).

ending, genitive, *n*.

(1) The letters at the end of a species-group name which, if the name is the genitive case of the name of one or more persons, or a place, host or other entity associated with the taxon, form the genitive case and reflect the gender and number (e.g. *-i* if of a man, *-ae* if of a woman, *-orum* if of men or of men and women together, *-arum* if of women) [Art. 31.1.2]. (2) The letters at the end of the genitive case of a Latin or Greek generic name which are deleted [Article 29.3] to form a stem, before adding a suffix to form a family-group name.

error, *n*.

In a name, or other word: an incorrect spelling.

copyist's error

An incorrect spelling made in copying.

inadvertent error

An incorrect spelling, such as a *lapsus calami*, or a copyist's or a printer's error, not intended by the original author [Art. 32.5.1].

printer's error

An incorrect spelling made in type-setting (often called typographical error).

establish, *v*.

Of a name or nominal taxon: to make the name of a nominal taxon available by satisfying the requirements of the Code.

excluded, *a*.
(1) Denoting a work, name or act which is to be ignored for purposes of zoological nomenclature, either (a) under the provisions of the Code or (b) because of a disclaimer [Arts. 8.2, 8.3]. (2) Denoting a specimen or component which has been explicitly omitted or removed from a type series or a name-bearing type [Arts. 72.4.1, 73.1.5].

extant, *a*.
(1) Of a taxon: having living representatives. (2) Of a specimen: still in existence.

extinct, *a*.
Of a taxon: having no living representatives.

family (*pl.* **families**), *n*.
(1) A rank within the family group between superfamily and subfamily. (2) A taxon at the rank of family.

family group, *n*.
In the hierarchy of classification, the highest-ranking group of taxa whose names are fully regulated by the Code. The family group includes taxa at the ranks of superfamily, family, subfamily, tribe, and any other rank below superfamily and above the genus group that may be required, such as subtribe [Art. 35.1].

family name or **name of a family**
See under name.

field, taxonomic, *n*.
A taxon or a set of taxa (e.g. "Crustacea: Amphipoda and Isopoda"); see taxonomic group, under group.

First Reviser
See Reviser, First.

First Reviser, Principle of the
See Principle of the First Reviser.

fixation, *n*.
A general term for the determination of a name-bearing type, whether by original designation or by any other means. See also designation [Arts. 68.1, 69.1, 73-75], monotypy [Arts. 68.3, 69.3] and tautonymy [Arts. 68.4, 68.5].

fixation by elimination
The supposed fixation of a type species by the subsequent transfer of all but one of the originally included nominal species from a genus. Not in itself an available method of type fixation [Art. 69.4; but see Article 69.1.1].

form, *n*.
(1) A term that if published after 1960 is deemed to denote infrasubspecific rank but that if published before 1961 is to be interpreted according to Article 45.6.3-4. (2) Those individuals of a species or subspecies differing, in a stated way, from other individuals within the taxon (e.g. larval and adult forms, male and female forms, ecological forms, and seasonal forms).

formulae, zoological, *n*.
Modifications of available names throughout a taxonomic group by the addition of a standard prefix or suffix in order to indicate that the taxa named are members of that group [Art. 1.3.7]. Zoological formulae are excluded from the provisions of the Code. The suffixes of family-group names denote ranks, not taxonomic groups, and do not form zoological formulae.

gender, *n*.
Of a genus-group name: a grammatical property (masculine, feminine or neuter) that affects the way in which Latin or latinized adjectival or participial species-group names are to be spelled, since the gender form of such a species-group name must agree with the gender of the generic name with which it is combined. See ending, gender.

generic name, or **genus name**, or **name of a genus**
See under name.

genotype
See under type.

genus (*pl.* **genera**), *n*.
(1) The rank within the genus group next below the family group and above subgenus. (2) A taxon at the rank of genus.

genus group, *n*.

In the hierarchy of classification the group of taxa ranked between the family group and the species group. The genus group includes taxa at the ranks of genus and subgenus [Art. 42.1]. Names for collective groups, and for ichnotaxa established at the genus-group level, are treated as genus-group names [Art. 42.2.1].

Greek, *a*. or *n*.

Ancient Greek.

group, *n*.

An assemblage of taxa. See also family group, genus group, and species group.

collective group

An assemblage of species, or stages of organisms (e.g. eggs or larvae), that cannot be allocated with confidence to nominal genera. Names proposed or used for collective groups are treated as genus-group names but special provisions apply to them (see Article 42.2.1).

taxonomic group

A taxon or assemblage of taxa; e.g. the taxonomic group Insecta consists of all insects and the taxa in which they are classified. See taxonomic field, under field.

hapantotype

See under type.

hectographing, *n*.

The making of copies of text and figures from a prepared gelatine surface to which the original has been transferred.

hierarchy, taxonomic, *n*.

A system of classification based on a sequence of taxonomic categories ranked by their increasing levels of inclusiveness - see taxon.

holotype, *n*.

See under type.

homonym, *n*.

(1) In the family group: each of two or more available names having the same spelling, or differing only in suffix, and denoting different nominal taxa. (2) In the genus group: each of two or more available names having the same spelling, and denoting different nominal taxa. (3) In the species group: each of two or more available specific or subspecific names having the same spelling, or spellings deemed under Article 58 to be the same, and established for different nominal taxa, and either originally (primary homonymy) or subsequently (secondary homonymy) combined with the same generic name [Art. 53.3]. For examples, see Article 53.1 for family-group names, Article 53.2 for genus-group names, and Article 53.3 for species-group names.

junior homonym

Of two homonyms: the later established, or in the case of simultaneous establishment the one not given precedence under Article 24.

primary homonym

Each of two or more identical specific or subspecific names established for different nominal taxa and originally combined with the same generic name [Art. 57.2]. For variant spellings deemed to be identical see Article 58.

secondary homonym

Each of two or more identical specific or subspecific names established for different nominal taxa and originally combined with different generic names but subsequently combined with the same generic name [Art. 57.3]. For variant spellings deemed to be identical see Article 58.

senior homonym

Of two homonyms: the first established, or in the case of simultaneous establishment the one given precedence under Article 24.

homonymy, *n*.

(1) The relationship between homonyms. (2) The state of being homonymous.

Homonymy, Principle of

See Principle of Homonymy.

hybrid, *n*.

The progeny of two individuals belonging to different taxa. For the treatment of names given to hybrids and to taxa of hybrid origin see Articles 1.3.3, 17, 23.8.

hyphen, *n*.

A mark, -, used for punctuation and for joining together
(1) two parts of a compound specific or subspecific name if the first part is a single Latin letter [Art. 32.5.2.4.3], or (2) the first two words of an expression if used to modify a third (e.g. genus-group names, contrasting with names of the genus group).

hypothetical concept
See concept, hypothetical.

ichnotaxon, *n*.
See under taxon.

inappropriate name
See under name.

incertae sedis
A Latin term meaning "of uncertain taxonomic position".

index (*pl.* **indexes**), *n*.
A list arranged in a particular order (usually alphabetical) of the names or subjects in a work, usually with references to the pages on which they are treated.

Index, Official
See Official Index.

indication, *n*.
A reference to previously published information, or a published act, which in the absence of a definition or description allows a name proposed before 1931, and that otherwise satisfies the relevant provisions of Articles 10 and 11, to be available [Art. 12.2]. See also Article 13.6.1.

information, taxonomic, *n*.
Descriptions, illustrations and other material relating to taxa. Unlike names or nomenclatural acts, such information may be taken, for the purposes of making a name available, from published (and not disclaimed) works which are not available, e.g. because they were published before 1758, did not consistently apply binominal nomenclature, or have been suppressed (but not ruled to be treated as unpublished) by the Commission.

infraspecific name
See under name.

infrasubspecific, *a*.
Of a rank, taxon, or name: one at a rank lower than that of a subspecies. Names of infrasubspecific entities (*q.v.*) are not regulated by the Code [Art. 1.3.4].

infrasubspecific entity, *n*.
(1) Taxa below the rank of subspecies. (2) Specimen(s) within a species differing from other specimens in consequence of intrapopulational variability (e.g. opposite sexes, castes, gynandromorphs and intersexes, aberrant individuals, age and seasonal forms, variants of noninterrupted variability or polymorphism, differing generations).

infrasubspecific name
See under name.

interpolated name
See under name.

invalid, *a*.
Of an available name or a nomenclatural act: one that is not valid under the Code.

kingdom, *n*.
The highest ranked category employed in the taxonomic hierarchy. (Previous editions of the Code referred to a single taxon "Animalia", not widely accepted today, at the rank of kingdom).

lapsus calami (*sing.* and *pl.*), *n*.
A Latin term meaning "slip (or slips) of the pen", i.e. an error (or errors) made by an author in writing a text, such as a misspelling of a name; contrasted with copyist's or printer's errors [Art. 32.5.1].

Latin, *a*. or *n*.
Includes both ancient and mediaeval Latin (for wholly modern words latinized to form scientific names, see latinize).

latinize, *v*.
To give Latin form and characteristics (including a Latin ending or a Latin suffix) to any word which is not Latin.

lectotype, *n*.

See under type.

List of Available Names in Zoology, *n*.

The cumulative term for those parts of the *List of Available Names in Zoology* which have been adopted by the Commission under Article 79.

List, Official

See Official List.

mandatory change

See change, mandatory.

mark, diacritic, *n*.

A mark to indicate different pronunciations of a letter or a different letter (such as an accent, cedilla, tilde, umlaut, etc.).

Metazoa, *n*.

Those multicellular organisms which for nomenclatural purposes are treated as animals.

mimeographing, *v*.

A method of producing numerous copies of text (and figures) by means of ink applied through a stencil.

misapply, *v*.

To apply, deliberately or otherwise, a name in a sense which is not correct under the provisions of the Code (e.g. in a manner not in accord with the name-bearing type).

misidentify, *v*.

To mistakenly attribute a specimen to a particular taxon.

monotypy, *n*.

The situation arising (1) when an author establishes a nominal genus or subgenus for what he or she considers to be a single taxonomic species and denotes that species by an available name (the nominal species so named is the type-species by monotypy) [Art. 68.3]; or (2) when an author bases a nominal species-group taxon on a single specimen but does not explicitly designate it as holotype (holotype by monotypy; see Article 73.1.2).

subsequent monotypy

The situation arising when a nominal genus or subgenus was established before 1931 without any included nominal species, and when only a single taxonomic species denoted by an available name was first subsequently referred to it [Art. 69.3].

multiple original spelling

See under spelling.

name, *n*.

(1) (general) A word, or ordered sequence of words, conventionally used to denote and identify a particular entity (e.g. a person, place, object, concept). (2) Equivalent to scientific name (*q.v.*). (3) An element of the name of a species-group taxon: see generic name, subgeneric name, specific name, subspecific name.

available name

A scientific name applied to an animal taxon that is not excluded under Article 1.3 and that conforms to the provisions of Articles 10 to 20.

binominal name

See binomen.

collective-group name

The name of a collective group (see under group).

compound name

See compound.

conserved name

A name otherwise unavailable or invalid that the Commission, by the use of its plenary power, has enabled to be used as a valid name by removal of the known obstacles to such use (see conserve).

excluded name

A name that under Article l.3 cannot be an available name, or one that has been disclaimed (see Articles 8.2, 8.3).

family name or name of a family

A scientific name of a taxon at the rank of family. Such names have the suffix -IDAE.

family-group name

A scientific name of any taxon of the family group.

generic name, or **genus name**, or **name of a genus**

(1) A scientific name of a taxon at the rank of genus. (2) The first name of a binomen or a trinomen [Art. 5].

genus-group name

A scientific name of any genus or subgenus, including names for collective groups and for ichnotaxa at the genus-group level.

inappropriate name

A name that denotes a character, a quality, or an origin not possessed by the taxon bearing that name.

infraspecific name

A general term for any name below the rank of species. The term includes subspecific and infrasubspecific names.

infrasubspecific name

A name applied to an infrasubspecific entity.

interpolated name

A name placed within parentheses (1) after a generic name to denote a subgenus, (2) after a genus-group name to denote an aggregate of species, or (3) after a specific name to denote an aggregate of subspecies [Art. 6]. Names used in this way are not counted as one of the names in a binomen or trinomen.

invalid name

An available name which either (1) is objectively invalid (i.e. it is a junior homonym or a junior objective synonym of a potentially valid name, or must be rejected under the provisions of the Code, or has been suppressed by the Commission), or (2) is subjectively invalid (because it is considered subjectively to be a junior synonym or to be inapplicable to a particular taxonomic taxon).

new replacement name (***nomen novum***)

A name established expressly to replace an already established name. A nominal taxon denoted by a new replacement name (nomen novum) has the same name-bearing type as the nominal taxon denoted by the replaced name [Arts. 67.8, 72.7]. See emendation, substitute name.

new scientific name

A scientific name, available or unavailable, when first proposed for a taxon.

potentially valid name

An available name which is not objectively invalid.

rejected name

(1) A name which, under the provisions of the Code, cannot be used as a valid name and which is set aside in favour of another name. (2) A name which, as a matter of taxonomic judgment, is either treated as a junior subjective synonym (*q.v.*) of a name used as valid or is believed not to be applicable to the taxon under consideration.

replacement name

See new replacement name (nomen novum) and substitute name.

scientific name

Of a taxon: a name that conforms to Article 1, as opposed to a vernacular name. The scientific name of a taxon at any rank above the species group consists of one name; that of a species, two names (a binomen); and that of a subspecies, three names (a trinomen) [Arts. 4 and 5]. A scientific name is not necessarily available.

species name or **name of a species**

A scientific name of a taxon at the rank of species. A binomen, the combination of a generic name and a specific name (an interpolated name, such as a subgeneric name or an interpolated species-group name [Art. 6], when used, is not counted as one of the names in a binomen).

species-group name

A specific name or a subspecific name.

specific name

The second name in a binomen and in a trinomen [Art. 5].

subfamily name or **name of a subfamily**

A scientific name of taxon at the rank of subfamily. Such names have the suffix -INAE.

subgeneric name, or **subgenus name**, or **name of a subgenus**
: A scientific name of a taxon at the rank of subgenus.

subspecies name or **name of a subspecies**
: (1) A scientific name of a taxon at the rank of subspecies. (2) A trinomen, the combination of a generic name, a specific name, and a subspecific name (an interpolated name, such as a subgeneric name or an interpolated species-group name [Art. 6] is not counted as one of the names in a trinomen).

subspecific name
: The third name in a trinomen [Art. 5.2].

substitute name
: Any available name, whether new or not, used to replace an older available name. See emendation, new replacement name (nomen novum), synonym.

subtribe name or **name of a substribe**
: A scientific name of a taxon at the rank of subtribe. Such names have the suffix -INA.

superfamily name or **name of a superfamily**
: A scientific name of a taxon at the rank of superfamily. Such names have the suffix -OIDEA.

suppressed name
: See suppression.

tautonymous name
: See tautonymy.

tribe name or **name of a tribe**
: The scientific name of a taxon at the rank of tribe. Such names have the suffix -INI.

trinominal name
: See trinomen.

unavailable name
: A scientific name that does not conform to Articles 10 to 20, or that is an excluded name under Article 1.3.

uninominal name
: A scientific name consisting of one word and used for a taxon of higher rank than the species group [Art. 4.1].

valid name
: The correct name for a taxonomic taxon, i.e. the oldest potentially valid name of a name-bearing type which falls within an author's concept of the taxon (but see under Principle of Priority).

vernacular name
: A name of an animal or animals in a language used for general purposes as opposed to a name proposed only for zoological nomenclature.

zoological name
: The scientific name of an animal taxon in binominal nomenclature.

name-bearing type
: See under type.

neotype
: See under type.

nomen dubium (*pl.* ***nomina dubia***), *n*.
: A Latin term meaning "a name of unknown or doubtful application".

nomen novum (*pl.* ***nomina nova***), *n*.
: A Latin term equivalent to "new replacement name".

nomen nudum (*pl.* ***nomina nuda***), *n*.
: A Latin term referring to a name that, if published before 1931, fails to conform to Article 12; or, if published after 1930, fails to conform to Article 13. A *nomen nudum* is not an available name, and therefore the same name may be made available later for the same or a different concept; in such a case it would take authorship and date [Arts. 50, 21] from that act of establishment, not from any earlier publication as a *nomen nudum*.

nomen oblitum (*pl.* ***nomina oblita***), *n*.
: A Latin term (meaning "forgotten name") applied after 1 January 2000 to a name, unused since 1899, which as a result of an action taken under Article 23.9.2 does not take precedence over a younger synonym or homonym in prevailing usage; the younger name which takes precedence over the *nomen oblitum* may be called a *nomen protectum* (*q.v.*). The term

nomen oblitum was also applied to a disused senior synonym rejected between 6 November 1961 and 1 January 1973 under Article 23b of the Code editions then in force (see Article 23.12.2). *Nomina oblita* remain available names; see Articles 23.9 and 23.12 for conditions controlling their use as valid names.

nomen protectum, *n*.
A Latin term (meaning "protected name") applied to a name which has been given precedence over its unused senior synonym or senior homonym relegated to the status of *nomen oblitum* (*q.v.*, and see Article 23.9.2).

nomenclatural, *a*.
Relating to nomenclature.

nomenclatural act
See act, nomenclatural.

nomenclatural status, *n*.
Of a name, nomenclatural act or work: its standing in nomenclature (i.e. its availability or otherwise, and in the case of a name its spelling, the typification of the nominal taxon it denotes, and its precedence relative to other names).

nomenclature, *n*.
A system of names, and provisions for their formation and use.

binominal nomenclature
The system of nomenclature in which a species, but no taxon of any other rank, is denoted by a combination of two names (a binomen, *q.v.*).

zoological nomenclature
The system of scientific names for animal taxa and the provisions for the formation, treatment, and use of those names.

nominal taxon (e.g. **nominal family-group taxon**; **nominal genus**)
See under taxon.

nominate, *a*.
A term used in previous editions of the Code for nominotypical.

nominotypical taxon
See under taxon.

noun phrase, *n*.
A compound word consisting of a noun combined with another noun or modifying adjective, the compound being treated as a noun in apposition; if the adjective is the final element in a species-group name, its ending is determined by the gender of the noun it modifies (and not by that of the generic name with which the species-group name is combined). For examples, see Article 31.2.1.

objective, *a*.
Demonstrably true, not a matter of individual opinion; for contrast with subjective.

Official Correction, *n*.
A correction, issued by the Commission, of an error or omission in a previously published Opinion [Art. 80.4]. See also Direction.

Official Index, *n*.
An abbreviated title for any of the four *Indexes*, maintained and published by the Commission, citing works or names that have been rejected by rulings of the Commission. For the status of names cited in the *Indexes*, and of names and nomenclatural acts in works cited in the *Indexes*, see Article 80.7. The full titles of the *Indexes* are:
Official Index of Rejected and Invalid Works in Zoological Nomenclature.
Official Index of Rejected and Invalid Family-Group Names in Zoology.
Official Index of Rejected and Invalid Generic Names in Zoology.
Official Index of Rejected and Invalid Specific Names in Zoology.

Official List, *n*.
An abbreviated title for any of the four *Lists*, maintained and published by the Commission, citing available works or names that have been ruled upon in the Opinions of the Commission. For the status of works, names, and nomenclatural acts in the *Lists* see Article 80.6. The full titles of the Lists are:
Official List of Works Approved as Available for Zoological Nomenclature.
Official List of Family-Group Names in Zoology.
Official List of Generic Names in Zoology.

Official List of Specific Names in Zoology.
(See also *List of Available Names in Zoology*).

offprint, *n*.
See under separate.

Opinion, *n*.
A formal publication by the Commission containing a ruling that applies, interprets, or suspends provisions of the Code in a case affecting one or more stated names, nomenclatural acts or works. An Opinion states how the Code is to be applied or interpreted, or the course to be followed, in the particular case [Art. 80.2-5].

original publication
See under publication.

originally included nominal species, *n*.
Of a nominal genus-group taxon: the nominal species deemed to be originally included under Article 67.2.

paralectotype, *n*.
See under type.

paratype, *n*.
See under type.

Part of the *List of Available Names in Zoology*, *n*. (*q.v.*)
A list, adopted by the Commission under Article 79, of available names in a major taxonomic field.

plenary power, *n*.
The power of the Commission to suspend or modify the application of Articles 1 to 76 of the Code in the way which it considers necessary to serve the interests of stability and universality of nomenclature in a particular case. See Articles 78 and 81.

precedence, *n*.
The order of seniority of available names or nomenclatural acts determined (1) by application of the Principle of Priority as specified in Article 23, or (2), in the case of simultaneously published names or acts, as specified in Article 24, or (3) by a ruling of the Commission using its plenary power.

prefix (*pl.* **prefixes**), *n*.
A letter or group of letters attached before the basic part of a word and usually used only in forming derived words and not as a separate word. See also compound and suffix.

preprint, *n*.
A work published, with its own specified date of publication (imprint date), in advance of its later reissue as part of a collective or cumulative work. Preprints may be published works for the purposes of zoological nomenclature. See separate.

primary homonym
See under homonym.

Principle of Binominal Nomenclature, *n*.
The principle that the scientific name of a species, and not of a taxon at any other rank, is a combination of two names (a binomen, *q.v.*); the use of a trinomen (*q.v.*) for the name of a subspecies and of uninominal names for taxa above the species group is in accord with the Principle. See Articles 5, 11.4.

Principle of Coordination, *n*.
The principle that within the family group, genus group or species group a name established for a taxon at any rank in the group is deemed to be simultaneously established with the same author and date for taxa based on the same name-bearing type at other ranks in the group [Arts. 36, 43, 46].

Principle of the First Reviser, *n*.
The principle that the relative precedence of two or more names or nomenclatural acts published on the same date, or of different original spellings of the same name, is determined by the First Reviser [Art. 24.2].

Principle of Homonymy, *n*.
The principle that the name of each taxon must be unique. Consequently a name that is a junior homonym of another name must not be used as a valid name [Art. 52].

Principle of Priority, *n*.

The principle that the valid name of a taxon is the oldest available name applied to it (taking into consideration the other provisions of Article 23), provided that the name is not invalidated by any provision of the Code or by any ruling by the Commission [Art. 23].

Principle of Typification, *n*.

The principle that each nominal taxon in the family group, genus group or species group has, actually or potentially, a name-bearing type fixed to provide the objective standard of reference by which the application of the name is determined [Art. 61] (see typification).

printing on paper, *n*.

The production of numerous identical copies of text or illustrations on paper. For the purposes of the Code, photography (i.e. the production of images on light-sensitive paper) does not constitute printing [Art. 9.2].

priority, **of a name or nomenclatural act**, *n*.

Seniority fixed by the date of availability.

Priority, Principle of

See Principle of Priority.

proposal, *n*.

(1) An action, whether successful or unsuccessful, to establish a nominal taxon or name or to carry out a nomenclatural act (*q.v.*). (2) An application to the Commission under Article 79 for the adoption of a Part of the *List of Available Names in Zoology*.

conditional proposal

See conditional.

protistan, *n*. (also *a*.)

An organism classified in the Protista. Some such organisms (e.g. those formerly classified as Protozoa) are usually treated as animals for the purposes of nomenclature, and when so treated their names are regulated by the Code [Art. 1.1.1].

provisions (*sing.* **provision**), *n*.

Term equivalent to rules.

publication, *n*.

(1) Any published work. (2) The issuing of a work conforming to Articles 8 and 9.

date

See under date of publication.

original publication

(1) The work in which a name or nomenclatural act was first published. (2) Of a name or nomenclatural act: publication for the first time.

publish, *v*.

(1) To issue any publication. (2) To issue a work that conforms to Article 8 and is not excluded by the provisions of Article 9. (3) To make public in a work, conforming to (2) above, any names or nomenclatural acts or information affecting nomenclature.

rank, *n*.

The level, for nomenclatural purposes, of a taxon in a taxonomic hierarchy (e.g. all families are for nomenclatural purposes at the same rank, which lies between superfamily and subfamily). The ranks of the family group, the genus group, and the species group at which nominal taxa may be established are stated in Articles 10.3, 10.4, 35.1, 42.1 and 45.1.

Recommendation, *n*.

An advisory statement in an Article of the Code. Recommendations are denoted by the number of the Article, are not mandatory and are distinguished from the mandatory provisions by a capital letter following the number of the Article (thus, Recommendation 40A).

reference, bibliographic, *n*.

A published citation referring to a publication.

reinstate, *n*.

With reference to a name previously rejected as being a junior secondary homonym: to treat it as a valid name if the conditions of Article 59.4 are met.

reject, *v*.

To set aside, in accord with the provisions of the Code and, in the case of a name, taxonomic judgement, (1) a work for the purposes of zoological nomenclature, or (2) a name in favour of another name. See rejected name, rejected work, suppression.

rejected work

See under work.

replacement name

See under name.

reprint, *n*.

For the purposes of the Code, the same as a separate (*q.v.*).

Reviser, First, *n*.

The first author to cite names (including different original spellings of the same name) or nomenclatural acts published on the same date and to select one of them to have precedence over the other(s). See Article 24.

rules (*sing.* **rule**), *n*.

The Articles of the Code but not titles, Recommendations, and Examples. The rules are mandatory. A term equivalent to provisions.

ruling by the Commission, *n*.

A decision by the Commission published in an Opinion [Art. 80.2], Declaration [Art. 80.1], or Direction (a term formerly, but not now, used in the Code).

scientific name

See under name.

secondary homonym

See under homonym.

section, *n*.

(1) A rank that if treated as a division of a genus or subgenus is deemed to be of subgeneric rank for the purposes of nomenclature [Art. 10.4]. (2) A taxon at the rank of section.

sensu.

A Latin term meaning "in the sense of". Often used to refer to the usage of a name by a (cited) author in a sense different from that of the original author or some other previous author. See also *auctorum*.

sensu lato (***s. lat.***, or ***s.l.***)

A Latin term meaning "in the wide sense". Contrast with *sensu stricto* (*s. str.*).

sensu stricto (***s. str.***, or ***s.s.***)

A Latin term meaning "in the strict sense". Often used in conjunction with a name when referring to the nominal taxon in the narrow sense of its subordinate nominotypical taxon (contrast with *sensu lato* (*s. lat.*)).

separate, *n*.

A copy (reprint or offprint) of a work contained in a periodical, book or other larger work, intended for distribution (usually privately by the author(s)) detached from the larger work which contains it but without its own specified date of publication (imprint date). The advance distribution of separates after 1999 does not constitute publication for purposes of zoological nomenclature. See preprint.

species (*sing.* and *pl.*), *n*.

(1) The rank next below the genus group; the basic rank of zoological classification. (2) A taxon at the rank of species.

species group, *n*.

In the zoological classification, the lowest-ranking group of taxa the names of which are regulated by the Code. The species group includes all taxa at the ranks of species and subspecies [Art. 45.1].

species inquirenda (*pl.* ***species inquirendae***), *n*.

A Latin term meaning a species of doubtful identity needing further investigation.

species name or **name of a species**

See under name.

specific name

See under name.

specimen, *n*

An example of an animal, or a fossil or work of an animal, or of a part of these. See Article 72.5 for the kinds of specimen eligible to be name-bearing types of nominal species-group nominal taxa.

specimen, teratological

An abnormal specimen or a monstrosity [Art. 1.3.2].

spelling, *n*.

The choice and arrangement of the letters that form a word.

correct original spelling
The spelling of an available name when it is established, unless it is demonstrably incorrect under Article 32.5.

incorrect original spelling
An original spelling that is incorrect [Arts. 32.4 and 32.5].

incorrect subsequent spelling
Any change in the spelling of an available name other than a mandatory change or an emendation [Art. 33.3].

multiple original spellings
Two or more different original spellings for the same name [Art. 32.2.1].

original spelling
The spelling or one of the spellings of a name employed when it is established [Arts. 32.1, 32.2.1].

subsequent spelling
Any spelling of an available name other than an original spelling [Art. 33].

variant spellings
Different spellings of specific or subspecific names that are deemed to be identical for the purposes of the Principle of Homonymy [Art. 58].

stem (of a name), *n*.
For the purposes of the Code, (1) that part (or the whole) of the name of the type genus to which is added a family-group suffix (see Article 29), or (2) that part of a name to which is added a genitive ending (*q.v.*) when forming a species-group name which is a noun in the genitive case [Art. 31.1.2].

subfamily (*pl.* **subfamilies**), *n*.
(1) A family-group rank below family. (2) A taxon at the rank of subfamily.

subfamily name or **name of a subfamily**
See under name.

subgeneric name, or **subgenus name**, or **name of a subgenus**
See under name.

subgenus (*pl.* **subgenera**), *n*.
(1) The genus-group rank below genus. (2) A taxon at the rank of subgenus.

subjective, *a*.
Depending on judgement, a matter of individual opinion; for contrast with objective. See subjective synonym, under synonym.

subordinate taxon
See under taxon.

subspecies (*sing.* and *pl.*), *n*.
(1) The species-group rank below species; the lowest rank at which names are regulated by the Code. (2) A taxon at the rank of subspecies.

subspecies name or **name of a subspecies**
See under name.

subspecific name
See under name.

substitute name
See under name.

subtribe, *n*.
(1) A family-group rank below tribe. (2) A taxon at the rank of subtribe. Names of subtribes have the suffix -INA.

suffix (*pl.* **suffixes**), *n*.
A letter or group of letters (1) added to the stem of a word, such as -IDAE in family names, -INAE in subfamily names [Art. 29.2]; or (2) forming a Latin suffix such as *-ella* or *-istes* [Art. 30] in some generic names [Art. 30.2]. See compound, ending and prefix.

superfamily (*pl.* **superfamilies**), *n*.
(1) A family-group rank above family; the highest rank at which names are fully regulated by the Code. (2) A taxon at the rank of superfamily. Names of superfamilies have the suffix -OIDEA.

suppression, *n*. (**suppress**, *v*.)

A ruling by the Commission, using its plenary power, (1) that a work is to be deemed, for nomenclatural purposes, as unpublished, or that names and acts in it are not available; or (2) that an available name is never to be used as valid because (a) it is available only for the purpose of homonymy ("partial suppression") or (b) it is not available for the purposes of priority and homonymy ("total suppression"; but a totally suppressed species-group name may still denote the type species of a nominal genus or subgenus [Art. 81.2.1]); or (3) that an available name is only to be used as valid under stated conditions (e.g. when not considered a synonym of a particular later name) ("conditional suppression").

suprageneric, *a*.

Of a taxon: one at a rank higher than genus.

synonym, *n*.

Each of two or more names of the same rank used to denote the same taxonomic taxon.

junior synonym

Of two synonyms: the later established, or in the case of simultaneous establishment that not given precedence under Article 24. See also Article 23.9.

objective synonym

Each of two or more synonyms that denote nominal taxa with the same name-bearing type, or (in the cases of family-group and genus-group taxa) that denote nominal taxa with name-bearing types whose own names are themselves objectively synonymous.

senior synonym

Of two synonyms: the earlier established, or in the case of simultaneous establishment that given precedence under Article 24. See also Article 23.9.

subjective synonym

Each of two or more names whose synonymy is only a matter of individual opinion, i.e. it is not objective. See also Article 61.3.1.

synonymy, *n*.

(1) The relationship between synonyms. (2) A list of synonyms.

syntype, *n*.

See under type.

tautonymy, *n*. (**tautonymous**, *a*.)

The use of the same word for the name of a genus-group taxon and for the species-group name of one of its included species and/or subspecies.

absolute tautonymy

The identical spelling of a generic or subgeneric name and the specific or subspecific name of one of its originally included nominal species or subspecies [Arts. 18, 68.4].

Linnaean tautonymy

The identical spelling of a new generic or subgeneric name established before 1931 and a pre-1758 name cited as a synonym of only one of the species or subspecies originally included in that genus [Art. 68.5].

virtual tautonymy

The nearly identical spelling, or the same origin or meaning, of a generic or subgeneric name and the specific or subspecific name in a binomen or trinomen. Not a term regulated by the Code [but see Recommendation 69A.2].

taxon, (*pl.* **taxa**), *n*.

A taxonomic unit, whether named or not: i.e. a population, or group of populations of organisms which are usually inferred to be phylogenetically related and which have characters in common which differentiate (*q.v.*) the unit (e.g. a geographic population, a genus, a family, an order) from other such units. A taxon encompasses all included taxa of lower rank (*q.v.*) and individual organisms. The Code fully regulates the names of taxa only between and including the ranks of superfamily and subspecies.

ichnotaxon, *n*.

A taxon based on the fossilized work of an organism, including fossilized trails, tracks or burrows (trace fossils) made by an animal. See also work of an animal.

infrasubspecific taxon

A taxon at lower rank than that of subspecies. The names of such taxa are not regulated by the Code.

nominal taxon

A concept of a taxon which is denoted by an available name (e.g. Mollusca, Diptera, Bovidae, *Papilio*, *Homo sapiens*). Each nominal taxon in the family, genus or species groups is based on a name-bearing type (although in the latter two groups such a type may not have been actually fixed).

nominotypical taxon

The nominal taxon at a subordinate rank within the family group, the genus group, or the species group that contains the name-bearing type of a divided taxonomic taxon of that group. See Articles 37, 44 and 47.

subordinate taxon

A taxon at a lower rank than the taxon of the same coordinate group with which it is compared.

taxonomic taxon

A taxon (e.g. family, genus, species) including whatever nominal taxa and individuals a zoologist at any time considers it to contain in his or her endeavour to define the boundaries of a zoological taxon (*q.v.*). A taxonomic taxon is denoted by the valid name determined from the available names of its included nominal taxa.

zoological taxon

A natural taxon of animals (which may, or may not, have had a name applied to it).

taxonomy, *n*. (**taxonomic**, *a*.)

The theory and practice of classifying organisms. See taxonomic information, taxonomic taxon.

teratological specimen

See under specimen.

text, official

Of the Code: A text, in any language, which has been authorized by the Commission. All official texts are equivalent in force, meaning and authority [Art. 87].

topotype

See under type.

transliteration, *n*. (**transliterate**, *v*.)

Literal transcription; the replacement of the letters of one alphabet by equivalent letters of another. Scientific names must be written in Latin letters, hence names formed from words that are not Latin may require transliteration.

tribe, *n*.

(1) A family-group rank below subfamily. (2) A taxon at the rank of tribe. Names of tribes have the suffix -INI.

trinomen (*pl.* **trinomina**), *n*., or trinominal name

The combination of a generic name, a specific name, and a subspecific name, that together constitute a scientific name of a subspecies [Art. 5.2].

type, *n*.

A term used alone, or forming part of a compound term, to denote a particular kind of specimen or taxon.

allotype

A term, not regulated by the Code, for a designated specimen of opposite sex to the holotype [Recommendation 72A].

cotype

A term not recognized by the Code, formerly used for either syntype or paratype, but that should not now be used in zoological nomenclature [Recommendation 73E].

genotype

A term not recognized by the Code, formerly used for type species, but that should not now be used in zoological nomenclature [Recommendation 67A].

hapantotype

One or more preparations consisting of directly related individuals representing distinct stages in the life cycle, which together form the name-bearing type in an extant species of protistan [Arts 72.5.4, 73.3]. A hapantotype, while a series of individuals, is a holotype that must not be restricted by lectotype selection; however, if a hapantotype is found to contain individuals of more than one species, components may be excluded until it contains individuals of only one species [Art. 73.3.2].

holotype

The single specimen (except in the case of a hapantotype, *q.v.*) designated or otherwise fixed as the name-bearing type of a nominal species or subspecies when the nominal taxon is established.

lectotype
A syntype designated as the single name-bearing type specimen subsequent to the establishment of a nominal species or subspecies [Art. 74].

name-bearing type
The type genus, type species, holotype, lectotype, series of syntypes (which together constitute the name-bearing type) or neotype that provides the objective standard of reference whereby the application of the name of a nominal taxon can be determined.

neotype
The single specimen designated as the name-bearing type of a nominal species or subspecies when there is a need to define the nominal taxon objectively and no name-bearing type is believed to be extant. If stability and universality are threatened, because an existing name-bearing type is either taxonomically inadequate or not in accord with the prevailing usage of a name, the Commission may use its plenary power to set aside that type and designate a neotype.

paralectotype
Each specimen of a former syntype series remaining after the designation of a lectotype [Art. 72.1.3, Recommendation 74F].

paratype
Each specimen of a type series other than the holotype [Recommendation 73D].

syntype
Each specimen of a type series (*q.v.*) from which neither a holotype nor a lectotype has been designated [Arts. 72.1.2, 73.2, 74]. The syntypes collectively constitute the name-bearing type.

topotype, *n*. (**topotypic**, *a*.)
A term, not regulated by the Code, for a specimen originating from the type locality of the species or subspecies to which it is thought to belong, whether or not the specimen is part of the type series.

type fixation
See fixation.

type genus, *n*.
The nominal genus that is the name-bearing type of a nominal family-group taxon.

type horizon, *n*.
The geological stratum from which the name-bearing type of a nominal species or subspecies was collected.

type host, *n*.
The host species with which the name-bearing type of a nominal species or subspecies was associated [Recommendation 76A.1].

type locality, *n*.
The geographical (and, where relevant, stratigraphical) place of capture, collection, or observation of the name-bearing type of a nominal species or subspecies [Art. 76.1, Recommendation 76A].

type series, *n*.
The series of specimens, defined in Articles 72.4 and 73.2, on which the original author bases a new nominal species-group taxon. In the absence of a holotype designation, any such specimen is eligible for subsequent designation as the name-bearing type (lectotype); pending lectotype designation, all the specimens of the type series are syntypes and collectively they constitute the name-bearing type. Excluded from the type series are any specimens that the original author expressly excludes or refers to as distinct variants, or doubtfully includes in the taxon.

type species, *n*.
The nominal species that is the name-bearing type of a nominal genus or subgenus.

type specimen
A term used in previous editions of the Code for a holotype, lectotype or neotype, or for any syntype; also used generally for any specimen of the type series (*q.v.*).

typification, *n*.

The fixation of a name-bearing type of a nominal taxon so as to provide an objective standard of reference for the application of the name of a taxon (see Principle of Typification).

unavailability, *n*. (**unavailable**, *a*.)

Of a name, nomenclatural act or work: see under those entries.

uninominal, *a*.

Consisting of a single name (e.g. names of the family group and of the genus group) [Art. 4].

usage, prevailing, *n*.

Of a name: that usage of the name which is adopted by at least a substantial majority of the most recent authors concerned with the relevant taxon, irrespective of how long ago their work was published.

valid, *a*. (**validity**, *n*.)

Of an available name or a nomenclatural act: one that is acceptable under the provisions of the Code and, in the case of a name, which is the correct name of a taxon in an author's taxonomic judgment.

validated, *a*.

A term previously used in the sense of conserved.

variant spelling

See under spelling.

variety, *n*.

A term that if published after 1960 is deemed to denote infrasubspecific rank but that if published before 1961 is to be interpreted according to Article 45.6.3-4.

vernacular name

See under name.

vowel, connecting, *n*.

A vowel that joins two words to make a single word (see Article 58.12), but when the second of two combined words begins with a vowel, no connecting vowel is needed.

word, compound

See compound.

work, *n*.

Any text or illustration, whether published, unpublished, or carrying a disclaimer (*q.v.*)

anonymous work

A published work in which the name(s) of its author(s) cannot be determined from the contents of the work.

available work

A published work in which, under the provisions of the Code, or by a ruling of the Commission, names or nomenclatural acts may be established.

conserved work

A work that the Commission has ruled to be an available work.

published work

See publish.

rejected work

Any work included by the Commission in the *Official Index of Rejected and Invalid Works in Zoological Nomenclature*.

suppressed work

A work that the Commission has ruled to be unpublished or unavailable.

unavailable work

A published work (*q.v.*) in which, under the provisions of the Code, or by a ruling of the Commission, names or nomenclatural acts cannot be established. Such works include those which (1) were issued before 1758 [Art. 3], or (2) do not consistently apply the Principle of Binominal Nomenclature (*q.v.*) [Art. 11.4], or (3) are published anonymously after 1950 [Art. 14], or (4) carry a disclaimer (*q.v.*), or (5) the Commission has ruled to be unavailable. For the use of information affecting nomenclature in unavailable works, see Articles 12.2.1, 12.2.7 and 13.1.2.

unpublished work

A work that is not published within the meanings of Articles 8 and 9, or which the Commission has ruled to be treated as unpublished.

work of an animal, *n*.

The result of the activity of an animal (e.g. burrows, borings, galls, nests, worm tubes, cocoons, tracks), but not part of the animal. The term applies to trace fossils (see ichnotaxon, under taxon) but does not apply to such fossil evidence as internal moulds, external impressions, and replacements. For availability of names based upon the work of animals see Articles 1.2.1, 1.3.6, 10.3, 12.2.8.

zoological taxon

See under taxon.

zoologist, *n*.

Anyone, regardless of profession, who studies animals.

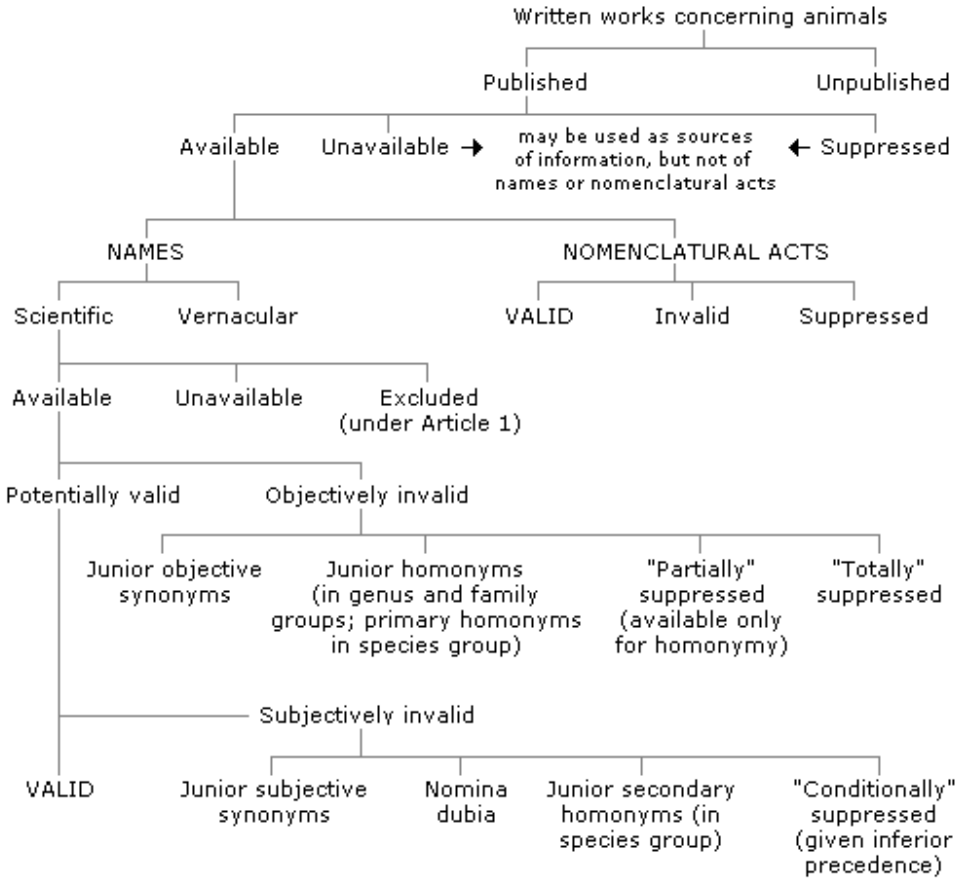
Abbreviations

The following abbreviations have been used in the Glossary:

Table of abbreviations used in the Glossary

a.	adjective
Art., Arts.	Article, Articles of the Code
e.g.	for example (Latin: *exempli gratia*)
f.	feminine
i.e.	that is (Latin: *id est*)
m.	masculine
n.	noun
neut.	neuter
pl.	plural
q.v.	which see (Latin: *quod vide*)
sing.	singular
v.	verb

Summary of the status of works, names and nomenclatural acts



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This summary is purely for guidance, and does not form part of the Code. The provisions and Glossary of the Code must be consulted for details.

Appendix A

Code of Ethics

under construction...

Appendix B

General Recommendations

under construction...

THE CONSTITUTION OF THE INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

under construction...

ENGLISH INDEX

The Index covers the Articles, Recommendations and Glossary. The provisions of the Code are referred to by the number of the Article and section (e.g., "32.5.2"), Recommendations by Article number and the relevant upper-case letter (e.g., "40A"), or in the case of Appendix B (General Recommendations) as "B" followed by the number (e.g., "B6"), and the Glossary as "G".

The Index does not form part of the legislative text of the Code. It gives the most important citations for each entry, but it is not to be taken as exhaustive since the subjects listed may be referred to in Articles additional to those shown below.

under construction...