INTERNATIONAL CODE OF ZOOLOGICAL NOMENCLATURE(ICZN) OPERATIVE PRINCIPLES AND IMPORTANT RULES. ZOOLOGICAL NOMENCLATURE AND SCIENTIFIC NAME OF VARIOUS TEXA (PART II)

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Binominal Nomenclature

Nomenclature (Nomen – name; Calore – to call) means allocation of names to the taxa. Naming of animal is the first and foremost task of every taxonomist. The scientific name of animal should be unambiguous, unique, universal and stable and it is the key to its literature. Proper naming of an animal is thus the fundamental principle of nomenclature. The vernacular names exist in all languages. So, the same kind of organism is called by different names in different places. On the otherhand same name is used to different organisms in the single language. So, to avoid such defects, the taxonomists universally accept some sets o0f rules called "Code of Nomenclature", which is fixed by "International Congress of Zoology".

Carolus Linnaeus is called father of the "Taxonomists" was the first to introduce binominal nomenclature, in which every animal and plant is given two names, a specific name, which particularizes the species from others and ageneric name which is placed before the specific name. Binominal nomenclature of Linnaeus has become widely accepted in the modern system of classification. Linnaeus (1758) in his 10^{th} edition of the book "Systemma Naturae" listed 4,236 different scientific names for animals.

Rules of binominal nomenclature: In biology, binominal nomenclature is the formal system of naming specific species. In the "International Code of Zoological Nomenclature" there are some rules for binominal nomenclature. Some of the important rules are mentioned below.

1. The specific name of an organism has two parts, - ie. the first part is the name of the genus and the second part is the name of species.

Eg – *Labeo rohita*

Here the *Labeo* is the generic name and the *rohita* is the specific name.

2. No names are recognized prior to those included by Linnaeus in his "Systemma Naturae", 10^{th} edition, 1^{st} January, 1758.

3. Genus name should be single name and started with a capital letter.

4. The species name begins with a small letter.

5. The scientific names are always written in Latin or in Latinized form and printed in Italics form. In hand writing the names are underlined separately.

6. The name or the initial of the name of the author of a valid scientific name should be mentioned in the ending of the scientific name.

Eg, *Canis familiaris* L

Here, L is used for Linnaeus and he is the author of the above mentioned scientific name. The author name or the initial is not apart of scientific name, so its mention is also not compulsory.

7. Comma is always used in between the author's name and the year of publishing, for example,

Labeo rohita Hamilton, 1822

8. When a scientific name is changed than the generic name is changed but thespecific name remain constant or same. So, the specific name frequently shifted from one genus to another. For example, the 'bee' species *jenseni* was earlier published under the genus *Nomia*, but presently belongs to the genus *Leiproctus*.

9. The author's name is put in parenthesis when the species is transferred from one genus to the other retaining its original author and date. It is called new combination, for example, *Hemilea bipars* (Walker, 1862) Hardy, 1959. This means Walker described the *bipars* originally in some other genus but Hardy in 1959 treansferred itto the correct genus *Hemilea*.

10. When different names are proposed by different authors than according to the "Law of Priority" the first name get validity.

11. The numerical of the scientific name are to mbe written in word as numerical adjective.

Eg, *decimlineata* – correct

liniata – incorrect

12. In case of scientific names the second or even the third part (Sub species) can repeat the first name

Recommendations for binominal nomenclature:

1. A name should be in Latin or easily converted into Latinized form.
2. A name should not contain less than three or more than twelve letters.
3. A name should be easy to pronounce.
4. The name given should preferably have some characteristics of the organism.
5. A name should not be derived from two languages.
6. A name should not be frivolous.

Advantage binominal nomenclature:

Although at present many scientists suspect about the utility of binominal nomenclature, yet this system is used widely in modern classification. The validity of classification and identification is depending upon the basis of binominal nomenclature. The main advantages of binominal nomenclature are –

1. It provides stability, uniqueness, and universality to the scientific names.

2. All hitherto known organisms irrespective of their utility have been provided with scientific names. It helps in classification.

3. A newly discovered organism can be described and named.

4. The scientific names indicate relationship of a species with the others present in the same genus.

5. The scientific names are derived from Latin or Greek words and both of these are dead language, hence there is less possibility of change of the meaning of their words.

6. They are comprehensive and easier to recollect.

7. The scientific names are often descriptive, indicating some important characteristics of the organism.

8. A wrong name can easily be corrected.

Disadvantage binominal nomenclature:

1. There were only 312 genus at the Linnaean time and the task of remembrance is not a difficult problem for these limited genus. Now a days the number of genus increases up to more than 50,000. These extreme generic splitting and shifting of species groups leads to the instability of nomenclature system.

2. The word species has no meaning independently. As for example the generic name of horse is *Equus*. The genus *Equus* has two species ie, *E. caballus* and *E. asinus*. Individually specific word *caballus* and *asinus* are meaningless.

3. Linnaeus taxonomy does not formally incorporate phylogeny. Linnaean hierarchical system based largely based on similarities in their forms and other traits but not always reflect evolutionary relationship.

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Trinomial nomenclature:

The trinomial nomenclature system is employed to name the sub species. In zoological classification the subspecies is a category below the species. A trinomen is a name consisting of three names: generic name, specific name and sub specific name.

All three names are typeset in italics, and only the generic name is capitalized.

The sub species name is also a Latin or Latinized word.

If the generic and specific name is mentioned in the same paragraph, they are often abbreviated to initial letters, for example the trinomial name of *Phalacrocorax carbo novaehollandiae* (Great cormorant of Australasia) might be writen as *P.c. novaehollandiae*.

The shortest trinomial tautonym is the *Bufo bufo bufo* (European toad) and *Naja naja naja* (Shri Lankan cobra). The longest trinomial tautonym is *Coccothr*.