

# Taxonomy--process of naming, categorizing, and differentiating

- Binomial nomenclature after Linneaus
- International Code of Zoological Nomenclature
  - Available online from the ICZN at <http://www.iczn.org/iczn/index.jsp>
- All names must be printable in the Latin alphabet (26 letters), be of latin or greek derivation, or vernacular names should be appropriately “latinized”, or “greekized” with appropriate endings, etc.
  - Foreign words are either italicized or underscored
  - Genus = noun, capitalized;
  - species = adjective, epithet, lowercase, describes or modifies noun
- Abbreviations allowed in paragraph, if full name is first used, and if it is unambiguous that the abbreviation does not refer to a species of a different genus mentioned in the report.
  - Genus abbreviated to first letter, uppercase, e.g. *Escherichia coli* to *E. coli*
- Author of species concept should be cited somewhere in report to identify which species concept they are referring to (a reference citation).
  - Example = *Homo sapiens* Linne, 1758
  - Publication should also be cited in reference list.
  
- Publication
  - Rules of priority and junior subjective synonyms
  - Listing of synonyms in a synonymy
  
- Type specimens and curation
  - Permanent physical representation of species concept
  - Types of type specimens:
 

holo-	lecto-	neo-
co-	plesio-	topo-
syn-	para-	hypo-
  
- Reassignment of species to another genus
  - e.g. discovery of skull of “nutcracker man”, popular name for *Zinjanthropus boisei* Leakey, 1959 was given because of prominent cranial sagittal crest; changed to *Australopithecus boisei* (Leakey, 1959) by PV Tobias in 1968; and later reassigned to *Paranthropus boisei* (Leakey, 1959) by Wood, Wood, and Konigsberg, in 1994 because of robust nature of skeleton, separating it from the rather gracile bones of *Australopithecus*.
  - Species is real entity, genus is always interpretive
  - Species concept author placed in parentheses if reassigned.

## Open Nomenclature

- Used to modify binomen, typically neither italicized nor underlined
- n. sp. = new species first diagnosed in this publication
- n. g. = new genus first diagnosed in this publication
- Other open nomenclatural modifications usually express tentative nature of classification
- sp. = used to indicate the presence of a single species definitely belonging to a named genus, but not assigned to a specific species.
  - e.g. *Oulodus* sp. (only one species of *Oulodus* is present)
- spp. = used to indicate the presence of multiple species belonging to a named genus, but are not specifically identified for a variety of reasons. Specimens may be specifically unidentifiable, missing specific diagnostic features, taphonomically mangled, or the reporter neither wants nor needs to identify the species present.
  - e.g. *Oulodus* spp. (more than one species of *Oulodus* is present).
- sp. aff. = a species with affinity to, but different than the named species. could be new, but is apparently related to the named species
  - e.g. *Paranthropus boisei* sp. aff. *P. boisei* (Leakey, 1959) (a mandible that definitely looks like boisei, but differs in some respect).
- sp. cf. = a species that compares with a named species, which could be new or simply differs in some respect with the morphological boundaries of the species.
  - e.g. *Paranthropus boisei* sp. cf. *P. boisei* (Leakey, 1959) (a mandible that definitely looks like boisei, but differs in some respect).
- *sensu stricto* = in the strictest sense of the taxon concept. Used to restrict broad species concepts.
  - e.g. *Homo neanderthalensis* Fuhlrott & Schaafhausen, 1857 *sensu stricto* (restricting the concept to the original 1857 description)
- *sensu lato* = in the broadest sense of the concept. Used to express the breadth of variation with a taxon
  - e.g. *Homo* Linne, 1758 *sensu lato* (documenting the breadth of the original concept)
- Query marks = used indicate uncertainty.
  - *Homo neanderthalensis?* = uncertain if specimen is *neanderthalensis*, but definitively *Homo*.
  - *Australopithecus? boisei* = specimens are definitively *boisei* but the species *boisei* may not be representative of the genus *Australopithecus*.

# **The Legend of Brontosaurus...**

- *Apatosaurus* n. g. Marsh, 1877
  - “Deceptive lizard”
    - Type species *Apatosaurus ajax* n. sp. Marsh, 1877
    - *A. louisae* n. sp. Holland, 1915.
  - *Brontosaurus* n. g. Marsh, 1879
    - “Thunder lizard”
      - Type species *Brontosaurus. excelsus* n. sp. Marsh, 1879
      - *B. amplus* n. sp. Marsh, 1881

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Riggs, Elmer. 1903. Structure and relationships of opisthocoelian dinosaurs. Part 1: *Apatosaurus*. Geological Series of the Field Columbian Museum, Publication 82, Vol. 2, No. 4, pp. 165-196.

- Worked for the field museum of Chicago.
- suggested Marsh’s *Brontosaurus* is actually an adult *Apatosaurus*

Marsh, O.C. 1877. Notice of new dinosaurian reptiles from the Jurassic Formation. *American Journal of Science* 14:514-516.

Marsh, O.C. 1879. Notice of new Jurassic reptiles. *American Journal of Science*, Series 3, vol. 26:81-85.