

Nomenclature and the Codes

- * Codes ensure precise system of naming and ranks
- * providing system of names that are unique, stable, and universal
- * Rules of Nomenclature given in International Codes
- * Separate codes for botany, zoology, microbiology, viruses, and domesticated animals
- * Phylocode has been proposed as alternative (not a replacement) to Linnaean nomenclature www.ohiou.edu/phylocode/ based on phylogeny and clades (rankless; emphasis on stability)
- * In the past (up till 1972) codes published after an International Congress
 - now task in zoology taken over by the General Assemblies of the International Union of Biological Sciences
 - Zoological Commissions meet at ICSEB - International Congress of Systematics and Evolutionary Biology

ICZN PREAMBLE

<http://www.iczn.org/iczn/index.jsp>

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.

International Codes of Nomenclature

Botany: <http://ibot.sav.sk/icbn/main.htm>

Zoology: <http://iczn.org/>

- * **Articles** with hundreds of provisions

- * **Rules:** (strict) adherence is obligatory
 - name or decision will be declared invalid if not followed
 - invalid or illegitimate publication → name falls as a *nomen nudum* (*nomina nuda*)

- * **Recommendations:** important suggestions, but for which exceptions are allowed

International Codes of Nomenclature

Botany: <http://ibot.sav.sk/icbn/main.htm>

Zoology: <http://iczn.org/>

* **Rules and Recommendations evolve**

- what constitutes valid (legitimate) publication is changing...

Evolving areas

- electronic publication and “cybertaxonomy” is a frontier
- plenary powers
- registration of names
- original orthography

International Code of Zoological Nomenclature

Chapters

- * Criteria of Publication
- * Criteria of Availability (Legitimacy)
- * Date of Publication
- * Validity of Names and Nomenclatorial Acts
- * Formation and Treatment of Names
- * Taxa and Their Names
- * Authorship
- * Homonymy
- * Types and Typification

Purview of the codes (What we will review)

- 1) Priority
- 2) Stability
- 3) Typification
- 4) Homonymy
- 5) Synonymy

Names...

- * must be latinized
 - can be an arbitrary combinations of letters: *Zzyzx*
 - can be anagrams, e.g., *Rifseria*, *Friseria*, and *Sriferia*
 - *Datana*, *Nadata*, *Natada*
- * uninomials for higher categories (are always plural)
- * binomial for species
- * hyphenation permitted
 - should be grammatical agreement between genus and species
 - discussion about this on AAZN (American Association for Zoological Nomenclature) presently

Appendices B, C, & D in ICZN Code provide useful information about name formation

See Winston (1999). *Describing Species*. Columbia Univ. Press.

Names...

A specific name ending in –i or –ii is a patronym, that is, a name honoring a man; for example, if you want to name a new species of the fish genus *Apogon* after your boyfriend and his name is Alexander, you would say *Apogon alexanderi*.

A specific name ending in –orum is a patronym, that is, a name honoring a group; for example, if you want to name a new species of *Saturnia* after your husband's family and his family name is Goffinet, you might use the name *Saturnia goffinetorum*.

A specific name ending in –ae is a matronym, that is, a name honoring a female; for example, if you want to name a new willow of the genus *Salix* after your favorite aunt and her name is Johana, you might use *Salix johanae*.

A specific name ending in –ensis refers to a place, for example, *Triticaphagus illinoensis* could be used for a species of flour beetle first found in Chicago.

My favorite recommendation from Zoological Code:

D.I.5 “A zoologist should not propose a name that, when spoken, suggests bizarre, comical, or otherwise objectionable meaning.”

...but because this is only a recommendation there are, of course, (wonderful and not so wonderful) exceptions

Funny or Curious Zoological Names

by Arnold S. Menke

USDA-SEL-ARS, U.S. National Museum NHB-168,

Washington, D.C. 20560

(with additions by Neal L. Evenhuis)

Family

Serendipidae Evenhuis, 1994 (fossil flies)

Genera

Aa Baker, 1940 (a mollusk)

Aaadonta Solem, 1976 (an endodontoid snail; see *Zyzyxdonta*)

Abudefduf Forsskal, 1775 (a fish)

Aha Menke, 1977 (a wasp)

Alabama Grote, 1895 (a lepidopteran)

Aloha Kirkaldy, 1904 (a bug)

Arfia Van Valen, 1965 (a dog-like fossil hyaenodont)

Argentina Linnaeus, 1758 (a fish)

Ariaspis Denison, 1963 (a fossil fish)

Asia Pergens, 1887 (a coelenterate; nomen nudum)

Australia Girault, 1928 (a parasitic hymenopteran)

Babylonia Schlüter, 1838 (a mollusk)

Batman Whitley, 1956 (a fish)

Buggeranus Gloger, 1842 (a bird, the wattled crane)

Cannabis Blyth, 1850 (a bird)

Chaos Linnaeus, 1767 (a protozoan)

China Burr, 1899 (an orthopteran)

Cuttysarkus Estes, 1964 (a fossil lizard)

Dasypops Miranda Ribeiro, 1924 (an amphibian)

Dyaria Neumoegen, 1893 (a moth)

Enema Hope, 1837 (a scarab beetle; see also under species!)]

Inyoaster Phleger, 1936 (a starfish)

Iyaiyai Evenhuis, 1994 (a fossil fly)

Ninjameys Gaffney, 1992 (a fossil turtle) (Etymology: "*Ninja*, in allusion to that totally rad, fearsome foursome epitomizing shelled success; *meys*, turtle.")

Notoreas Meyrick, 1886 (a lepidopteran)

Ochisme Kirkaldy, 1904 (a bug) [also *Polychisme*, *Dolichisme*, *Peggichisme* by the same author]

Oops Agassiz, 1846 (an arachnid)

Oops Germar, 1848 (a beetle; described after Agassiz had already proposed *Oops* for an arachnid ... oops!)

Papa Reichenbach, 1850 (a bird)

Paratype Felder, 1874 (a lepidopteran)

Psorthaspis Banks, 1912 (a spider wasp with a painful sting!)

Samba Friese, 1908 (a bee)

Samoa Sörensen, 1886 (an arachnid)

Sayonara Jordan and Steele, 1906 (a fish)

Funny Species Names

Agra sasquatch Erwin, 1982 (a carabid beetle with big feet)

Agra vation Erwin, 1983 (a carabid beetle)

Afropolonia tgifi Goff, 1983 (a chigger)

Aha ha Menke, 1977 (an Australian sphecid wasp; and also Menke's car license plate number!)

Aploparakis turdi Williamson and Rausch, 1965 (a cestode)

Apolysis humbugi (Evenhuis), 1985 (a bombyliid fly from Humbug Creek, California)

Ba humbugi Solem, 1976 (a snail from Mba Island, Fiji)

Bla nini Inglis, 1963 (a marine nematode)

Brachyanax thelestrephones Evenhuis, 1981 (a fly; translated from the Greek it means "little chief nipple twister")

Brachyta interrogationis interrogationis var. *nigrohumeralisscutellohumeroconjuncta* Plavltstshikov, 1936 (a beetle)

Bullisichthys caribbaeus Rivas, 1971 (a fish)

Cancelloidokytodermogammarus (*Loveninsuskytodermogammarus*) *loveni* Dybowski, 1926 (a crustacean)

Castanea inca dincado Miller, 1972 (a moth)

Cavaticovelina aaa (Gagné and Howarth), 1975 (a bug; "aaa" is Hawaiian for lava tube)

Cedusa medusa McAtee, 1924 (a bug)

Chaos chaos (Linnaeus), 1758 (a protozoan)

Chrysops asbestos Philip, 1950 (a horsefly collected from a mule)

Chrysops balzaphire Philip, 1955 (another horsefly)

Colon rectum Hatch, 1933 (a colonid beetle)

Dissup irae (Kovalev), 1989 (a "difficult to see" fossil fly)

Doryctes fartus Provancher, 1880 (a braconid wasp)

Enema pan (Fabricius), 1775 (a rhinoceros beetle)

Geoballus caputalbus Crabill, 1969 (a millipede named after its collectors, George Ball and Donald Whitehead)

Gluteus minimus Davis and Semken, 1975 (a Devonian fossil of uncertain affinities)

Funny Species Names

La cucuracha Blezynski, 1966 (a pyralid moth)

La paloma Blezynski, 1966 (another pyralid moth)

Lalapa lusa Pate, 1946 (a tiphid wasp)

Leonardo davincii Blezynski, 1965 (yet another pyralid moth)

Mastophora dizzydeani Eberhard, 1984 (a spider that uses a sticky ball on the end of a thread to catch its prey)

Montypythonoides riversleighensis Smith and Plane, 1985 (a fossil snake)

Myzocallis kahawaluokalani Kirkaldy, 1907 (an aphid; in Hawaiian, the name supposedly means "you fish on your side of the lagoon and I'll fish on the other, and no one will fish in the middle")

Orgia nova Fitch, 1863 (a beetle)

Parastratiosphecomyia stratiosphecomyoides Brunetti, 1923 (a fly)

Phthiria relativitae Evenhuis, 1985 (a fly)

Pimeliaphilus podapolipophagus Tragardh, 1905 (an acarine)

Pisolina yangwanggouensis Zhang and Wang, 1974 (a fossil foram)

Pison eu Menke, 1988 (a South American wasp)

Pison eyvae Menke, 1988 (a South American wasp)

Polemistus chewbacca Menke, 1983 (a wasp; named after the "Star Wars" character)

Polemistus vaderi Menke, 1983 (a wasp; named after another "Star Wars" character)

Prolasioptera aeschynanthusperottetii Mani, 1943 (a cecidomyiid fly)

Reissa roni Evenhuis, 2002 (a microbombyliid fly)

PRIORITY

- * Governing principal of all codes is **priority**
- * Based on absolute date of publication (actual date of receipt in libraries)
 - establishing date of publication may difficult
 - sometimes difficult to determine
 - e.g., Hübner's genera (took a four-volume work by Francis Walker to straighten out publication dates for Hübner's catalog names)
 - use []'s if you are unsure or date is inferred, [Hübner 1818-1820]
 - be forewarned that date on binding or cover page sometimes does not correspond with actual date of publication
 - * many journals are chronical behind; especially last number in volume
 - * (historically) watch out especially during wartime periods
 - e.g., journals ran up to two years behind during Civil War



- * **Priority** is the cornerstone of nomenclature
- * Priority applies to species, generic, and family group names (zoological code does not regulate names above the family level)
- * priority a recommendation for higher categories
- * zoological literature starts ca.1758 with the 10th ed. of *Systema Naturae* (because earlier editions were not strictly binomial) (actually a 1757 spider work)
- * prior to 1758 names were polynomials (up to a dozen words; many more or less were diagnoses)

Stability: refers to the issue of name usage and changes

Classic example: *Apatosaurus* and *Brontosaurus*

Conservation of names: sometimes exceptions are made for younger (more recent), but widely used names.

- cases referred to International Commission on Zoological Nomenclature or Committee on Nomenclature for botanical name
- a judiciary panel of some 30 people
- Article 81: the **plenary powers** (on behalf of stability)

Article 81. Use of the Plenary Power.

81.1. Purpose and extent. The Commission has the plenary power [Article 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.

In the 1920s, amphipod researcher Benedykt Dybowski crowded so many descriptors together that his names stretched out for several dozen letters. Yanega translates Dybowski's polysyllabic horror *Gammaracanthuskytodermogammarus loricatobaicalensis* as "amphipod with hollow spines on its skin from Lake Baikal." Although the names did follow the rules, the commission decreed all Dybowski's names invalid because they proved so unwieldy.

From:

http://findarticles.com/p/articles/mi_m1200/is_21_159/ai_75563131

To suppress an older name requires formal application to [ICZN](#)

- thoughtful and documented petition
- often with letters of endorsement
- petition published in *Bulletin of Zool. Nomenclature*
- rebuttals follow
- commission is a conservative lot of old _____
(who hold priority as the cornerstone)

- 50 year rule often implemented see page (formal or informal)
- helps show that older name has not been used for 50 years and over past 50 years younger name has been used by
- at least 10 authors and appeared in 25 publications....

The recent furore concerning *Drosophila melanogaster* offers a good example. *Drosophila* includes about 1500 known species, with many more yet to be named. With increasing knowledge of their interrelationships based on biochemistry, morphology, development, physiology, ecology and behaviour, the time has more or less come when it is possible to divide this huge assemblage, currently one of the largest animal genera, into smaller generic units. Unfortunately the type species of *Drosophila* is not THE fruitfly, *D. melanogaster* Meigen, innumerable millions of which have been gainfully sacrificed in the cause of genetics. Far worse is the realisation that the actual type species is remote from *melanogaster* within the omnibus genus.

If and when *Drosophila* is split, the species name *melanogaster* will be recombined with another generic name – most probably the existing subgeneric name *Sophophora*, of which *D. melanogaster* is the type species, to become *Sophophora melanogaster* (Meigen).

Alert to this possibility, in 2007 a group of seven *Drosophila* researchers put forward a case to the Commission requesting that the current type species designation for *Drosophila* be set aside and replaced by *D. melanogaster*. The proposal gave rise to heated debate, for and against, with many good arguments on both sides. Finally, in autumn 2009, the 28 ICZN Commissioners were asked to cast their votes: 4 were in favour, 23 against, with one unavailable (Opinion 2245, 2010).

Types and Typification

- * Types are the "name bearers" for all formally named taxa
- * *The type is the legal device anchoring each name to an unequivocal entity*
 - allows certain understanding of an author's species concept
 - explicit rules about types and their deposition in newest code
- * Types of species are specimens
- * Types of genera and families are names
- * Two ways of describing a type for a species
 - description of an individual or
 - description of a series (and rendering of author's concept of species)
- * Types must always be checked in revisionary studies and other nomenclatorial matters
- * Locating types can be one of the most expensive, time consuming, and frustrating aspects of a revisionary study
 - makes revisionary taxonomy difficult for many students and those with lesser resources



HOLOTIPO
Papilio machides
marthilco
R. de la Maza E.



MCZ Type Database @ Harvard Entomology

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16,716 of 28,588

of Type Specimens Imaged
(updated 6/19/07)

Welcome to the database of insect primary types in the collection of the Museum of Comparative Zoology at Harvard University.

This online database contains records for primary types in the entomology collections of the Museum of Comparative Zoology (MCZ). The MCZ insect type collection, one of the largest in North America, currently preserves the primary types of more than 28,000 species, representing 29 orders, 565 families, and 7,578 genera. In addition to such information as type label data, type stage and status, current species name (if available), the database includes high resolution images of the type specimens.

[Download MANTIS](#): A FileMaker Pro database manager of taxonomic information and specimens

[The E-Type Initiative](#): Protocols for imaging type specimens and creating image databases

[Greatest Hits](#): A selection of some of the best MCZ type specimen images.

For further information please contact [Dr. Philip Perkins](#) (type specimens); [Dr. Piotr Naskrecki](#) (website technical); or [Dr. Brian Farrell](#) (direction and management).

Database solution by Piotr Naskrecki.

<http://insects.oeb.harvard.edu/mcz/>

click on image for larger view



Cicindela cyanella LeConte, 1857
Coleoptera: Carabidae

habitus dorsal view

Close this window to return to your found set

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enlarge

habitus dorsal v
(compare)

habitus lateral v
(compare)

habitus ventral v
(compare)

head dorsal vi

Name-bearing Types

- 1) Holotype: the single specimen designated by the author, at the time of description
- 2) Lectotype: the single specimen designated by a subsequent worker from the type series (syntypes or co-types)
- 3) Neotype: if no type or member of the type genus remains a neotype may be designated
 - Ex., *Gracillaria ribesella*, a moth, described from its larval leaf roll (presently an ichnotaxon, i.e., an animal named from its droppings, tracing, nest, etc.)

→ refer also to your handout

→ other types have no legal standing except if name-bearing type is lost

[Wikipedia](http://en.wikipedia.org/wiki/Type_(biology)) has a helpful treatment of common types

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Neotype Designations

- * Done when type missing or badly damaged
- * Usually must be done in context of a revision

- * Selecting a neotype
 - (1) choose a likely candidate from type series (co-types, syntypes)
 - (2) choose specimen from type locality that fits with original description
 - (3) select otherwise worthy specimen that fits with original description

- * When difficult to prove identity of dubious/inadequately described species
 - (1) simply find a species that is close and designate a neotype to lock down the name
 - (2) leave as *nomen dubium*, *nomen inquirendum*



holotype Homo sapiens

Search

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NNDB
tracking the entire world

This is a beta version of NNDB

Search: All Names for Search

[Edward Drinker Cope](#)

A movement is underway to use Edward Drinker Cope's body as the **holotype**, that is, the archtypical specimen, for the species **Homo Sapiens**. ...

[www.nndb.com/people/869/000092593/](#) - 5k - [Cached](#) - [Similar pages](#)

[Pleistocene Homo sapiens from Middle Awash, Ethiopia](#)

Homo sapiens idaltu is distinguished from **Homo sapiens** (Erdos, 1921) by a larger cranial capacity, a more vertical frontal with ...
[www.nature.com/nature/journal/v423/n6941](#)

[Ilium of Homo heildebergensis \(Bro\)](#)

Its cranial capacity is close to modern **Homo sapiens** but its brow ridge is ...
classified as the **Holotype** of **Homo rhodesiensis**.
[piclib.nhm.ac.uk/piclib/www/image.php?se](#)
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[Homo sapiens cranium \(Cro\)](#)

Frontal view of a cast of a skull belonging to **Homo sapiens**.
1899 Lapouge named this specimen **Homo pekinensis**.
[piclib.nhm.ac.uk/piclib/www/image.php?fm=ser&img=61813&search=cro](#)
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[Pygmoid Australomelanesian Homo sapiens skeletal remains from](#)

Pygmoid Australomelanesian **Homo sapiens** described (1) as the **holotype** of a new hominid taxon, **Homo floresiensis**.
[www.pnas.org/cgi/content/full/103/36/1342](#)

[Fish Feet: Arrogant scientist to represent](#)

He named humans **Homo sapiens**, Latin for man and wise. The concept of a **holotype** had not been invented yet but the humble Linnaeus named himself to be ...
[fishfeet2007.blogspot.com/2007/04/arrogant-scientist-wants-to-represent.html](#) - 91k - [Cached](#) - [Similar pages](#)

There is no actual holotype for *H. sapiens*. There are a few people who have recently attempted to designate them (the most notorious case involves [E.D. Cope's](#) skull), but these designations were not validly done. Article 75.3 of the ICZN Code explicitly states there must be "an exceptional need" and the express purpose of "clarifying the taxonomic status". There is ZERO ambiguity about the identity of our own species, so we do not NEED to have a holotype. Since we do not need a type specimen, no one is allowed to designate one. That is how the code is written, and - quite significantly - WHY it is written that way; to avoid unscientific non-issues like "Who is the holotype of *Homo sapiens*?"

Edward Drinker Cope

Born: 28-Jul-1840

Died: 12-Apr-1897

Gender: Male

Occupation: Paleontologist

Nationality: United States

Profession: Paleontologist

Education: University of Pennsylvania

Employer: University of Pennsylvania

Spouse: Ann Cope

Children: Edward Drinker Cope Jr.

Parents: George Drinker Cope

Relatives: George Drinker Cope

Other names: E. D. Cope



Secondary Types

Other Types: individuals in type series other than the name-bearing types

- 1) Paratypes: all other individuals in type series other than the Holotype
- 2) Paralectotypes: all other individuals in co-type or syntype series other than the Lectotype
- 3) Allotype: specimen selected (ideally from the type series) to represent the complementary sex to the Holotype
- 4) Isotype: duplicate of holotype collected at same time and place (common in plants) (sometimes material collected from the same individual in plants)

Zoological Types

<http://www.iczn.org/iczn/index.jsp> (from glossary)

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].

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.

Fixing the Type of a Genus

1. monotypy (at the time of the generic description)
2. original designation (by the describer)
3. subsequent designation (by revisor)
 - in this case species name will pre-date generic name

Ex. *Hepialus* Fabricius, 1775

Type Species: *humuli* L., 1758
4. using *typus* as the specific epithet
5. tautonymy (by definition must be type) (only allowed in zoology)
6. In botany the first species following the generic description is to be considered the type

For a name to be **available** (zoological names) or **legitimate** (botanical names) it must be published according to specific criteria: e.g.,

Articles 8-20 in Zool. Code

Articles 29-50 in Bot. Code

Some Important Requirements (and Recommendations)

- 1) proposed name must be correctly formed (Article 11)
- 2) description or diagnosis after 1930 in Zoology must be *differential* (Article 3) (but this can be a low bar)
- 3) in botany a brief Latin description is required
- 4) new name must be explicitly indicated as well as the fact that it is a new name (e.g., **n. sp.**) (Article 16)
- 5) explicit fixation of a type (Article 16.4.1)
recommendations:
 - deposition in research or public institution
 - specimens should bear distinguishing labels, numbers, etc.
 - some new endangered species do not have type specimens
- 6) statement of type's whereabouts must be included (Article 16.4.2)

Start 20 November, 2013

ICZN International Commission on Zoological Nomenclature INTERNATIONAL CODE OF ZOOLOGICAL NOMENCLATURE *online*

Chapter 3: Criteria of publication

Article 7. Application

Article 8. What constitutes published work

- 8.1. Criteria to be met
- 8.2. Publication may be disclaimed
- 8.3. Names and acts may be disclaimed
- 8.4. Works produced before 1986
- 8.5. Works produced after 1985 and before 2000
- 8.6. Works produced after 1999 by a method that does not employ printing on paper
- 8.7. Status of suppressed works.

Article 9. What does not constitute published work

- Chapter 4: Criteria of availability
- Chapter 5: Date of publication
- Chapter 6: Validity of names and nomenclatural acts
- Chapter 7: Formation and treatment of names →
- Chapter 8: Family-group nominal taxa and their names →

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.

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Attachments

Comments

- * author, editor, and publisher at same address: Ron Gatrell
- * only needs to be sent to five libraries for valid publication

Volume 1 1 January 1999 Number 4


The Taxonomic Report
OF THE INTERNATIONAL LEPIDOPTERA SURVEY

SUBSPECIFIC STATUS OF SOUTHEASTERN U.S. *MEGATHYMUS COFAQUI* AND *M. YUCCAE*: RENAMING OF THE FLORIDA SUBSPECIES OF *M. COFAQUI*.

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 126 Wells Road, Goose Creek, South Carolina 29445

ABSTRACT. *Megathymus cofaqui* and *M. yuccae* are both represented in the southeastern U.S. by two subspecies. The type locality of both *M. y. yuccae* and *M. c. cofaqui* is the area of Burke/Screven counties Georgia. Each of their subspecies are primarily Floridian, with *M. y. buchholzi* extending along the immediate coast of Georgia into southern South Carolina. Topotypes of *M. cofaqui* from Burke County, Georgia, and Aiken County, South Carolina are phenotypically indistinguishable from both the holotype of *M. cofaqui* and topotypes of *M. c. harrisi*. Thus, *M. c. harrisi* is synonymous with *M. c. cofaqui*. This leaves the Florida subspecies of *M. cofaqui* without a valid name. *Megathymus cofaqui slotteni* is proposed as a new name for the Florida subspecies. The holotype of *M. c. slotteni* is deposited in the Florida State Collection of Arthropods, Gainesville, Florida.

Additional key words: type localities.

OVERVIEW AND DELINEATION OF TAXONOMIC PROBLEMS

At least 33 species of butterflies were originally described from east coastal Georgia or south coastal South Carolina. A broad taxonomic problem exists because most of these 33 taxa are not

Amendment of Articles 8, 9, 10, 21 and 78 of the *International Code of Zoological Nomenclature* to expand and refine methods of publication

International Commission on Zoological Nomenclature ¹

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Received 2 September 2012 | Accepted 2 September 2012 | Published 4 September 2012

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For reference, use of the paginated PDF or printed version of this article is recommended.

Abstract

The International Commission on Zoological Nomenclature has voted in favour of a revised version of the amendment to the *International Code of Zoological Nomenclature* that was proposed in 2008. The purpose of the amendment is to expand and refine the methods of publication allowed by the Code, particularly in relation to electronic publication. The amendment establishes an *Official Register of Zoological Nomenclature* (with ZooBank as its online version), allows electronic publication after 2011 under certain conditions, and disallows publication on optical discs after 2012. The requirements for electronic publications are that the work be registered in ZooBank before it is published, that the work itself state the date of publication and contain evidence that registration has occurred, and that the ZooBank registration state both the name of an electronic archive intended to preserve the work and the ISSN or ISBN associated with the work. Registration of new scientific names and nomenclatural acts is not required. The Commission has confirmed that ZooBank is ready to handle the requirements of the amendment.

Full amendment text: http://www.pensoft.net/J_FILES/1/articles/3944/3944-G-3-layout.pdf

Press release: <http://media.nhm.ac.uk/Press-releases/Born-Digital-Born-Free-Taxonomic-publishing-comes-of-the-digital-age-9b.aspx>

Contra: *invalid* (zoological names) or *illegimate* (botanical names)

e.g., manuscript names sometimes used and cited

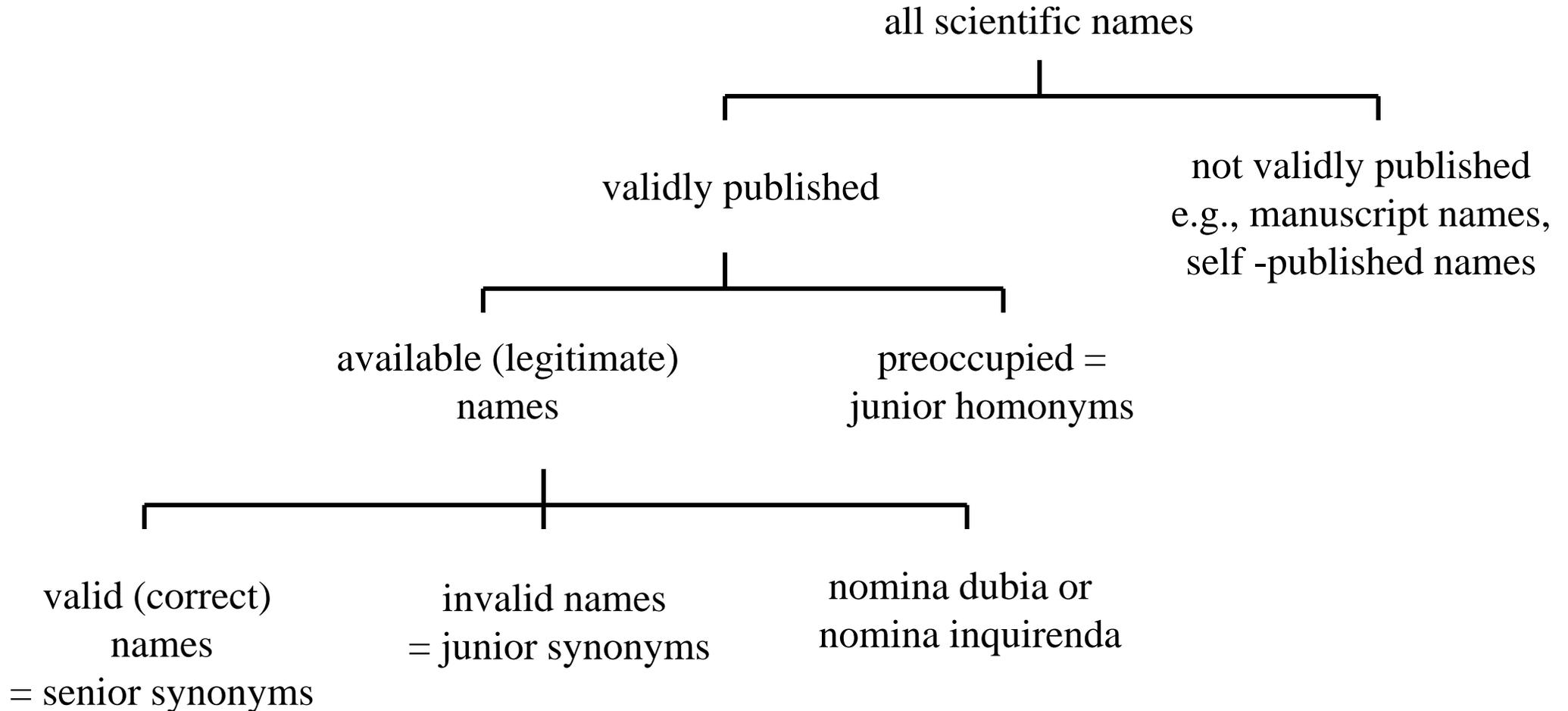
- old names that were never effectively/validly published
- manuscript names abound in dissertations (considered unpublished)
- regard such a name(s) as a *nomen nudum* (*nomina nuda*)

You will also see a name(s) treated as *a nomen dubium* or *inquirendum*

- when type is missing or badly damaged
- application of name is ambiguous

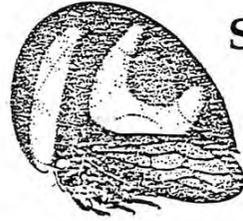
Valid or Correct Name - the single accepted name for a taxon

- many names may be available (zoology) or legitimate (botany) but only one is *valid* (zoology) or *correct* (botany)



Adapted from Schuh 2000

WHEN MUST NAMES BE CHANGED ?



Synonymy:



Membracis foliata (L.) *Membracis lunata* Fab.



Homonymy:



M. foliata (Linnaeus) *M. foliata* (Germar)



I. C. Z. N. S.

Senior Synonym: the correct or valid name (usually oldest)

Junior Synonyms: available (or legitimate) names, but not accepted

A. Objective (or in botany = nomenclatural) synonyms: same type specimen

B. Subjective (or in botany = taxonomic) synonym: taxa made equivalent by taxonomic decision

- one or more names must "fall into synonymy"

e.g., *Apatosaurus* and *Brontosaurus*

From Wikipedia (<http://en.wikipedia.org/wiki/Apatosaurus>): "In 1877, [Othniel Charles Marsh](#) published the name of the [type species](#) *Apatosaurus ajax*. He followed this in 1879 with a description of another, more complete specimen, which he thought represented a new [genus](#) and [species](#), which he named *Brontosaurus excelsus*. In 1903, [Elmer Riggs](#) re-examined the fossils. While he agreed with Marsh that *Brontosaurus excelsus* was likely a distinct species, he also noted many similarities between *B. excelsus* and *A. ajax*, and decided that both should be placed in the same genus. Riggs reclassified the species as *Apatosaurus excelsus*.^[15] Almost all paleontologists since Riggs published his opinions have agreed that the two species should be classified together in a single genus. According to the rules of the [ICZN](#) (which governs the scientific names of animals), the name *Apatosaurus*, having been published first, had priority as the official name; *Brontosaurus* is considered a [junior synonym](#) and has therefore been discarded from formal use."

Objective (or in botany = nomenclatural) synonyms

- * Have same type specimen
- * occasionally happens with vertebrates; bone fragments. Cope and Marsh (the dinosaur hunters—are thought to have described more than one species from a single skeleton)
- * Francis Walker at BMNH described whole drawer twice
- * Occurs with replacement names
 - Meyrick didn't care for Kearfott's names for micro moths (Tortricidae)



Eucosma bana Kearfott



Eucosma bobana Kearfott

GODITHA Heinr., 1926
3400 *bumeliana* Heinr., 1926
rumeliana Heinr., 1926, missp.

DICHRORAMPHA Gn., 1845

DICHRORAMPHA Westwood, 1854,
missp.

LIPOPTYCHA Led., 1859

LIPOPTYCHODES Obr., 1953

DICHRORAMPHODES Obr., 1953

PARALIPOPTYCHA Obr., 1958

3401 *kana* (Bsk., 1906)
planiloqua (Meyr., 1912), repl. name

3402 *capitana* (Bsk., 1906)

3403 *britana* (Bsk., 1906)
alpinana; Fern., 1903, not Tr., 1830

3404 *simulana* (Clem., 1860)
aurisignana (Zell., 1875)

3405 *immaculata* McD., 1946

3406 *bittana* (Bsk., 1906)

3407 *incanana* (Clem., 1860)
nigromaculana (Kft., 1907)

3408 *vancouverana* McD., 1935

3409 *radicicolana* Wlsm., 1879

→ 3410 *banana* (Bsk., 1906)
sordescens (Meyr., 1912), repl. name

3411 *piperana* (Bsk., 1900)

3412 *sedatana* (Bsk., 1906)

→ 3413 *dana* (Kft., 1907)
aequorea (Meyr., 1912), repl. name

a. *bradorensis* McD., 1930

3414 *leopardana* (Bsk., 1906)

SATRONIA Heinr., 1926

3415 *tantilla* Heinr., 1926

RICULA Heinr., 1926

3416 *maculana* (Fern., 1901)

TALPONIA Heinr., 1926

3417 *plummeriana* (Bsk., 1906)

PAMMENE Hbn., 1825

HEMIMENE Hbn., 1825

SEREDA Heinr., 1923

3425 *tautana* (Clem., 1865)
perfluana (Zell., 1875)
lautana (Fern., 1882), emend.

GRAPHOLITA Tr., 1829

GRAPHOLITHA Tr., 1830, emend.

EUSPILA Steph., 1834

ASPILA Steph., 1834

EPHIPPIPHORA Dup., 1834

OPADIA Gn., 1845

ENDOPISA Gn., 1845

STIGMONOTA Gn., 1845

EUDOPISA Desmarest, 1857,
missp.

COPTOLOMA Led., 1859

ENDOPSIA auth., missp.

3426 *molesta* (Bsk., 1916)

3427 *libertina* Heinr., 1926

3428 *packardi* Zell., 1875

pyricolana (Murt., 1891)

3429 *prunivora* (Walsh, 1868)

3430 *angeleseana* (Kft., 1907)

3431 *caeruleana* Wlsm., 1879

zana (Kft., 1907)

vana (Kft., 1907)

xanthospora (Meyr., 1912), repl.

name

eoleuca (Meyr., 1912), repl. name

3432 *boulderana* McD., 1942

3433 *vitranana* Wlsm., 1879

→ 3434 *fana* (Kft., 1907)

oenochroa (Meyr., 1912), repl. name

3435 *conversana* Wlsm., 1879

wana (Kft., 1907)

→ *cupida* (Meyr., 1912), repl. name

3436 *imitativa* Heinr., 1926

3437 *lunatana* Wlsm., 1879

3438 *eclipsana* Zell., 1875

3439 *interstinctana* (Clem., 1860)

scitana (Wlk., 1863)

distema Grt., 1873

3440 *edwardsiana* (Kft., 1907)

→ 3441 *lana* (Kft., 1907)

placarana (Kft., 1907)



Dichrorampha banana
Busck, 1906

Checklist (synonymy) from Heppner, J. and D. Duckworth. 1991. Classification of the Superfamily Sesioidea (Lepidoptera: Ditrysia). Smithsonian Contributions to Zoology 314: 1-144.

Four valid species

irradiata (Meyrick, 1913b:67), *Choreutis* [new combination]

monognoma (Diakonoff, 1978a:5), *Choreutis* [new combination]

montelli (Hackman, 1947:73), *Choreuthis* [sic] [new combination]

myllerana (Fabricius, 1794:377), *Pyralis* [new combination]

mylleri (Haworth, [1811]:472), *Anthophila* [emendation]

← Objective synonym

angustana (Hübner, [1811-13]: pl. 32: fig. 204), *Tortrix*

← Subjective synonym

urticana (Hübner, [1819-22]: pl. 44: fig. 273), *Tortrix* [not *Phalaena urticana* Denis and Schiffermüller, 1775]

scintilulana (Hübner, [1825]:373), *Choreutis*

scintilulalis (Treitschke, 1835:33), *Choreutes* [sic] [emendation]

scintillulalis [sic] (Zeller, 1839:325), *Choreutis* [misspelling]

albipunctalis (Zetterstedt, [1839]:974), *Choreutes* [sic]

angustana [sic] (Guenée, 1845:191), *Simaethis* [misspelling]

scintilimana [sic] (Stephens, 1856:223), *Choreutes* [sic] [misspelling]

Nine junior synonyms

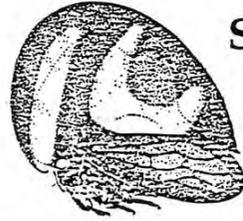
A complete synonymy as seen in some monographs: Powell, J. A. 1964. Biological and taxonomic studies on tortricine moths, with reference to the species in California. UC Publ. in Entomol. Vol. 32: 317 pp.

Choristoneura fumiferana (Clemens)

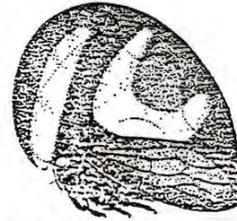
(Pl. 3:9)

- original combination** → *Tortrix fumiferana* Clemens, 1865, Proc. Ent. Soc. Phil., 5:129; Fernald, 1881, Amer. Nat., 15:63–66 (biol.); Riley, 1883, Rept. Ent. U. S. Dept. Agr., p. 146; Johannsen, 1913, Maine Agr. Exp. Sta. Bull. 210:13 (biol.).
Harmologa fumiferana, Meyrick, 1912, Lep. Cat., 10:42; Forbes, 1923, Cornell Univ. Agr. Exp. Sta. Mem. 68:489; Braun, 1925, Trans. Amer. Ent. Soc., 51:201 (biol.); Essig, 1926, Insects of Western North America, p. 739.
Cacoecia fumiferana, Swaine, Craighead, and Bailey, 1924, Can. Dept. Agr. Bull. 37 (n.s.):1 (lit., biol.); Buck, 1933, Forest Insect Handb., N. Pacif. Region, p. 37, fig. (biol.); Mathers, 1934, Proc. Ent. Soc. B. C., 31:22 (biol.); Llewellyn-Jones, 1934, *ibid.*, p. 32 (biol.); Bedard, 1938, Can. Ent., 70:189 (biol.); Atwood, 1944, Can. Ent., 76:64 (biol.).
Archips fumiferana, McDunnough, 1939, Mem. So. Calif. Acad. Sci., 2:57; Jaynes and Speers, 1949, Jour. Econ. Ent., 42:221 (biol.); Dowden and Carolin, 1950, *ibid.*, 43:774 (biol.).
- valid name** → *Choristoneura fumiferana*, Freeman, 1947, Can. Ent., 79:21 (morph.); Wellington and Henson, 1947, *ibid.*, 79:168, 195 (biol.); Wilkes, 1948, *ibid.*, 80:138 (biol., lit.); Henson, 1951, *ibid.*, 83:240 (biol.); Metcalfe, Flint, and Metcalfe, 1951, Destructive and Useful Insects, p. 770; Blais, 1952, Can. Jour. Zool., 30:1 (biol.); Keen, 1952, U. S. Dept. Agr. Misc. Publ. 273:102 (biol.); Raizenne, 1952, Forest Lep. So. Ont., p. 217 (biol.); Freeman, 1953, Can. Ent., 85:121, figs. 2, 5–16 (morph.); Mackay, 1953, *ibid.*, p. 128, figs. 1, 7 (larva); Campbell, 1953, *ibid.*, p. 134, figs. 1a, 1c, 2b (biol.); Blais, 1953, *ibid.*, p. 446 (biol.); Jaynes, 1954, Jour. Econ. Ent., 47:355 (biol.); McGugan, 1954, Can. Ent., 86:439 (biol.); Smith, 1954, Evolution, 8:206 (genet.); Blais, 1954, Ecology, 35:62 (biol.); Stehr, 1955, Jour. Hered., 46:263 (genet.); McGugan, 1955, Can. Ent., 87:178 (biol.); Peterson, 1956, Larvae of Insects, 1:172 (larva); Greenbank, 1956, Can. Jour. Zool., 34:453; 1957, *ibid.*, 35:385 (biol.); Miller, 1957, *ibid.*, 35:1 (biol.); Blais, 1958, Can. Ent., 90:354 (biol.); Freeman, 1958, *ibid.*, 90, Suppl. 7:53, figs. 145–147 (taxon.); McGugan and Blais, 1959, *ibid.*, 91:758 (biol., lit.); Stairs, 1960, *ibid.*, 92:147 (embryol.).
- first junior synonym** → *Tortrix nigridia* Robinson, 1869, Trans. Amer. Ent. Soc., 2:268, fig. 20; Fernald, 1881, Amer. Nat., 15:63 (synon.); Klots, 1942, Bull. Amer. Mus. Nat. Hist., 79:414.
- second junior synonym** → *Lozotaenia retiniana* Walsingham, 1879, Ill. Lep. Het. Brit. Mus., 4:12, pl. 63, fig. 3. *New Synonymy*.
Archips retiniana, Fernald, 1903, in: Dyar, U. S. Nat. Mus. Bull. 52:481; McDunnough, 1939, Mem. So. Calif. Acad. Sci., 2:56.
- fourth junior synonym, etc.** → *Cacoecia retiniana*, Meyrick, 1912, Lep. Cat., 10:21.
Choristoneura retiniana, Freeman, 1958, Can. Ent., 90, Suppl. 7:36. Obratzsov, 1962, Amer. Mus. Nov., 2101:2.

WHEN MUST NAMES BE CHANGED ?



Synonymy:



Membracis foliata (L.) *Membracis lunata* Fab.



Homonymy:



M. foliata (Linnaeus) *M. foliata* (Germar)



I. C. Z. N. S.

Homonyms: Single name applied to two or more taxa of the same taxonomic rank

Senior Homonym: the correct or valid name

Junior Homonym: younger name, must be replaced

1° homonym: identical names as published

Careospina Peters, 1971 for snail genus

Careospina Davis, 1972 for moth genus

replacement name must be proposed

Davis (1984) proposed a replacement name of *Vespina* Davis, 1984

In zoology, names must orthographically identical to be considered homonyms
botanical homonymy: *Gracillaria* and *Gracilaria* are orthographic variants and therefore homonyms

2° homonym: by taxonomic decision

common with species epithets

X-us alba Miller, 1935

Y-us alba Thomas, 1945

Wilber synonymizes *X-us* with *Y-us*

- replacement name needed for *alba* Thomas, 1945

- The nomenclatorial instability resulting from subjective homonymies and synonymies are the primary motivators for phylogenetic taxonomy and the Phylocode...to fix a name and prevent endless instability from lumping and splitting (reapportionment of species among genera)

Owlet Caterpillars

of Eastern North America

Wagner, Schweitzer, Sullivan, and Reardon



Over course of writing this book the Noctuidae became paraphyletic,
* then was divided into two families
* then was lumped into one family
* then was divided into four
* and now, a moth has been discovered that does not fit into any of the four families well but could have been easily accommodated by the single family concept
* key author on four-family revision wants to go back to a single family...

The Linnean System is Pre-evolutionary

Some objections:

- perpetual name changes may be unavoidable
- monotypic and therefore meaningless or redundant higher taxa
- name changes in spelling any time there is a change in rank
e.g., if subfamily elevated to family or dropped to tribe:

Arctiidae <--- **Arctiinae** --> Arctiini (tribe)

zero change in content*

Phylocode (promises to) bring greater stability to biological classifications

* Phylocode: “A clade whose hypothesized composition and diagnostic characters have not changed may be given a different name under the rank-based codes based purely on considerations of rank. Such instability is particularly objectionable given the wide recognition that rank assignment is subjective and of dubious biological significance.”



<http://www.ohio.edu/phylocode/>

- * **Naming system based on clades**
- * **Rankless**
- * **Convention for naming species in abeyance, but want uninomial or means of disassociating species name from genus (as this is the single greatest source of nomenclatorial instability)**

Clade Definition

Specifiers: specimens, species, or synapomorphies

- 1) Node based (ancestor plus all descendents from node)
- 2) Apomorphy (first appearance of unique feature – to include all descendents of a species or lineage with identified synapomorphy (subsequent reversals and losses irrelevant))
- 3) Clade specifiers (common ancestor of two taxa plus all descendents)

Example: Class Aves becomes Clade Aves

- modern, phylogeny-based system;
- names anchored to nodes

Registration Database

When implemented, the PhyloCode will be associated with a registration database, called RegNum, which will store clade names and definitions. It is hoped that this will provide a publicly-useable tool for associating clade names with definitions, which could then be associated with sets of subtaxa or specimens through phylogenetic tree databases (such as TreeBASE).

Some Questions/Issues

- * Is stability (fixation of name) a liability or a solution or both?
- * Suffixes convey meaning of inclusivity and exclusivity. Important?
- * Are higher taxa potentially misleading or helpful?
- * Do hierarchical ranks serve as knowledge centers for organizing learning and communication, that we could liken to a ganglion in a nervous system?
- * Does naming clades lose some appeal in poorly sampled/studied taxa?

Changing the biological nomenclature system, now, is like putting a massive effort into rewriting the operations manual for the Titanic...we should be looking elsewhere.

E. O. Wilson

