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STYLE MANUAL  
SCIENTIFIC PUBLICATIONS  
FOURTH EDITION

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MARY KNIGHT

with the approval of the  
Publications Committee of the  
Senate of the Scientific Staff



THE AMERICAN MUSEUM OF NATURAL HISTORY

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PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY  
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## FOREWORD

This manual is intended as a style guide for authors who are preparing manuscripts for publication in the museum's scientific serials. It represents a comprehensive revision of the *Style Manual* prepared in 1988 by Brenda Jones, then Managing Editor of the American Museum of Natural History's scientific publications. The subsequent adoption of electronic text and image processing necessitated many changes in manuscript preparation and formatting, although long-time authors will find that most aspects of our house style remain much the same as in the past. Significantly, however, submission guidelines have been removed from the style manual and are now available only on the website.

In this regard, it is worth noting that, although our AMNH *Bulletin* series began publication nearly 130 years ago, it was not until 1918 that the first style manual, *General Rules for the Preparation of Manuscript*, was issued by entomologist and AMNH curator Frank E. Lutz (who also served as the first editor of *Novitates*). A mere 14 pages in length, this document set the standard for all AMNH style sheets that followed, including two by Ruth Tyler (1943 and 1953) and the last by Brenda Jones. Brenda apparently judged that the two versions prepared by Ruth Tyler constituted a single "edition" when she styled her pamphlet as the "Third Edition." Following Brenda's example, I shall consider her numerous Internet-based updates as an extension of her printed work, making this revision, along with its anticipated electronic updates, parts of an ongoing Fourth Edition.

Mary Knight, October 27, 2009  
revised May 2, 2014

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## Section 1

### Introduction

The American Museum of Natural History (AMNH) publishes three scientific serials: the *Bulletin of the American Museum of Natural History*, *American Museum Novitates*, and *Anthropological Papers of the American Museum of Natural History*. Both the *Bulletin* and the *Novitates* report research results in zoology (primarily systematics), as represented by the AMNH divisions of Invertebrate Zoology, Paleontology, and Vertebrate Zoology (Herpetology, Ichthyology, Mammalogy, Ornithology). Whereas the *Bulletin* is intended for monographic

studies, the *Novitates* comprise shorter works. The *Anthropological Papers* are devoted to topics in anthropology as represented by the museum's Division of Anthropology.

The following sections provide information about acceptable manuscript and illustration format and style for each of these serials. For other information concerning submission procedures, editorial policy, including page charges, copyright and other policies, please consult the museum's Scientific Publications website.

## Section 2

### Formatting the Text

#### GENERAL GUIDELINES: FILES FOR SUBMISSION

Currently, one single-sided, double-spaced *hard copy* of the final accepted manuscript (text and captions) plus any tables and a printout of each figure must be submitted along with the electronic files.

The *electronic version* of the text should be double-spaced, including the references. Use 12 point Times New Roman or Times font throughout, and do not justify right-hand margins. Page numbers should be inserted only in the upper right-hand corner.

In general, format standard text (e.g., all caps; caps and small caps; italics) according to recently published issues of the *Novitates*, *Bulletin*, or *Anthropological Papers*. Format “special” text sections (i.e., those for which there is no previously printed example) in the style intended for the published document.

#### ORDER OF MATERIAL

Manuscript components should be organized in this sequence:

1. Text
2. References
3. Figure captions
4. Footnotes (if not embedded)
5. Appendices
6. Tables

Text, references, figure captions, footnotes, and appendices must be prepared using Word, but tables may either be prepared using Word or Excel (see [Section 5 / TABLES](#), below). Items 1–4 above should be included in a single Word file. Appendices may also be included if none have landscape-formatted pages. Tables may be included if they are few and none is formatted for landscape view. However, if any appendix is formatted for landscape, then all of the appendices should be placed together in a separate document, and the same rule applies to tables if any are landscape formatted.

#### USING WORD

Scrupulous conformity to keyboarding conventions in Word can greatly speed up the production process and result in more timely publication. Follow these dos and don’ts while preparing manuscripts to minimize production delays:

1. Use paragraph spacing (accessible through the “Format” menu of Word or by using the split arrow in the upper left-hand corner of the document) or the tab key to indent the beginning of each paragraph. Do *not* insert extra letter spaces to indent or align text.
2. Use a single hard return at the end of each paragraph, and use Word’s “hanging indent” option to create “hanging paragraphs” (e.g., for references and other lists). Do *not* use hard returns and tabs for this purpose.
3. Format words that need to be italicized as italics. Do *not* use underlining.
4. For dashes, use either Word’s [en-dash](#) (accessible through “Insert>Symbol” and through specific shortcuts for your computer; to indicate intervals in numeric or alphabetic sequences) or the [em-dash](#) (for grammatical punctuation, or to indicate missing entries in tables). Do *not* use two or three hyphens in a row for these purposes.
5. Use ordinary font for ordinal numbers (e.g., 21st century). Do *not* use superscripts (e.g., write 21st century, *not* 21<sup>st</sup> century).
6. Do *not* embed any comments in Word documents.
7. Do *not* use any field codes (e.g., to count entries in a list or to automatically generate a table of contents).
8. Use appropriate Word symbols whenever pos-

sible (e.g., ° for degree, *not* a superscript “o”).

9. For further guidelines, see also [Section 3 / Text Preparation: Style](#), which includes a section on [Punctuation](#).

## ESTIMATING LENGTH OF PRINTED TEXT

For a variety of reasons authors may want to estimate the length of their published work, especially since length may be the deciding factor in whether the work is published as an issue of *Novitates* or *Bulletin*. A long zoological manuscript, for example, may be formatted as a *Bulletin* (normally ≥ 80 printed pages), whereas shorter manuscripts may be formatted as *Novitates* (normally < 80 printed pages). There are two approximate methods to estimate the length of printed text from manuscripts: (1) divide the total number of words in your manuscript text—obtainable using the Word Count tool in Word—by 650, or (2) divide the number of double-spaced (US Letter) text pages by 2.5. Obviously, additional pages will be needed for figures and tables, but no concise estimation rules can be provided here. Inevitably, it will be hard to know whether some manuscripts should be formatted as *Bulletins* or as *Novitates* (the primary difference in the two is in the format of the title page). When in doubt, follow *Bulletin* formatting conventions.

## MAIN ELEMENTS OF THE TEXT

**TITLE.** The title should be centered on the page in upper and lower case for *Novitates*; for *Bulletins*, the title should appear in upper case. The title should clearly indicate the subject matter, but be concise. Titles of taxonomic manuscripts should include the name of the major groups treated using the appropriate scientific name(s) or widely accepted vernacular equivalents.

**AUTHOR'S NAME AND AFFILIATION.** Author(s) may spell out their given name(s) or use initials according to personal preference. In the *Bulletin* and *Anthropological Papers*, institutional affiliations are centered in italics below each author's name. In *Novitates* they are indicated by footnotes that should be embedded using Word's automatic footnote maker or placed with the other footnotes at the end of the manuscript (see below). For the affiliation, authors should provide only the institution's name (the divisional or departmental name may also be included). Because mailing addresses

are anachronistic and email addresses are ephemeral, this information is no longer printed in the AMNH scientific series.

**TABLE OF CONTENTS.** Issues of the *Bulletin* and long *Anthropological Papers* normally have a table of contents. Issues of *Novitates* no longer include tables of contents. Do *not* use field codes to generate tables of contents automatically from electronic files.

Center the main headings (Level 1, see below) and indent subheadings (Levels 2 and 3) with tabs. Headings in the table of contents should correspond exactly to headings used in the text (unless the latter are very long). It is sufficient to list the headings without the page numbers, but if pages must be indicated at the manuscript stage, use automated [dot leaders](#) to manuscript page numbers rather than those manually typed.

On rare occasions, it may also be desirable to supply a list of tables, illustrations, and/or maps (also with automated dot leaders and manuscript page numbers). Such lists should follow the table of contents.

**ABSTRACT.** An abstract is required for all AMNH publications. The abstract, a concise summary of the main points of the manuscript, should be intelligible as stand-alone text (that is, without reference to the body of the paper). Abstracts of taxonomic studies should include the names of all new taxa described in the text (do not refer to “new species 1”, “sp. nov. 2,” etc.). Normally, the abstract should be kept to one page or less (ca. 1900 characters or fewer in the *Novitates*, ca. 5000 characters or fewer in the *Bulletin*). Strive to include in the abstract all relevant words or phrases that might be used for web-based searches.

**INTRODUCTION.** The introduction may be formatted as a single block of text, or sections may be distinguished by subheadings. Typically, “Materials and Methods” is included as a Level 2 subheading near the end of the Introduction, and some authors include an additional subheading (e.g., “Abbreviations”) for lists of institutional acronyms and/or abbreviated scientific terms (optionally, anatomical abbreviations used repeatedly in figures may be listed in an appendix). Recent issues of AMNH publications will provide relevant examples of acceptable formats for these items.

**ACKNOWLEDGMENTS.** An acknowledgment section should be included at the end of the text (immediately preceding the References). Honorific titles (Dr., Mr., Ms.) should not be used in the body

of the text and should be avoided in the Acknowledgments.

## HEADINGS IN THE TEXT

AMNH publications typically employ three levels of text heading. The following list provides format specifications and recommended uses for these standard subdivisions. Note that formatting can also be applied, if necessary, to highlight certain repeated categories of information within paragraphs (see [Headings within paragraphs](#)).

**LEVEL 1 HEADINGS:** These are typically used for main sections of the text, such as the Abstract, Introduction, Results, Discussion, and References. Format these as centered headings, all in capital letters (e.g., INTRODUCTION).

**LEVEL 2 HEADINGS:** These are centered with initial capital letters for nouns and the rest small caps or lower case (e.g., MATERIALS AND METHODS).

**LEVEL 3 HEADINGS:** These are paragraph indented, with large initial capitals and small capitals (e.g., SEQUENCING METHODS), normally followed by a colon and run into the text.

## HEADINGS WITHIN PARAGRAPHS

Within paragraphs, various formatting options allow for highlighting words or phrases that effectively serve as headings. These include (1) all capi-

tals, (2) boldface, (3) small capitals, or (4) italics. Do *not* use underlining for any heading; it must be replaced with another format more suitable for printing. Use within-paragraph headings in a consistent way throughout the manuscript. These are typically employed to distinguish certain elements in the text that are used repetitiously, for example, countries and/or states in lists of specimens examined, or characters in taxon diagnoses.

## FOOTNOTES

Number text footnotes consecutively throughout the manuscript using superscripted Arabic numerals. Although useful for many scholarly purposes, footnotes should be kept to a minimum because they complicate the page composition process. However, *Novitates* authors must use footnotes for institutional identification on the title page. Body-text footnotes may either be gathered together in a separate section following the figure captions (see [Order of Material](#), above), or they may be entered into a Word document using Word's automatic footnote maker.

For tables with footnotes included in the same Word document as the body of the article, do not use Word's automatic footnote maker.

Apart from those for authors' affiliations in *Novitates*, footnotes may not be used in any chapter title or section heading; they are also not permitted in the titles of tables, though they may appear in table captions.

## Section 3

# Text Preparation: Style

For general aspects of style not described in this manual (e.g., preferred English usage, capitalization, and punctuation), authors should consult *The Chicago Manual of Style* and *Words into Type*. For spelling, refer to *Merriam-Webster's 11th Collegiate Dictionary* and *Webster's Third New International Dictionary*. See also [Spelling, Abbreviations, and Special Notation](#) for lists of exceptional words, scholarly and nontechnical abbreviations, units of measure, and technical abbreviations adopted for use in AMNH Scientific Publications.

### ECONOMICAL PRESENTATION

Authors should present all material (text, tables, illustrations, and appendices) as concisely as possible. Irrelevant material detracts from a paper and increases the cost of production. Consider, for example, whether it is necessary to present all data in tabular form—would a few summarizing sentences be sufficient? Is it necessary to detail previously published results or would a brief reference to such material be just as effective? Because the purpose of publication is to communicate, obfuscating jargon should be avoided.

**ENGLISH LANGUAGE.** The AMNH Scientific Publications are in English. Except for quoted material, all parts of the manuscript must be in English. Non-English abstracts are no longer allowed.

**CONDENSED TEXT.** In text that introduces or analyzes data, an abbreviated style is not appropriate. However, sections devoted solely to supplying data are candidates for condensed presentation. For example, lengthy morphological descriptions given taxon by taxon in the *Bulletin* and *Novitates* are often most efficiently communicated in the so-called telegraphic style. In the *Anthropological Papers*, a condensed style should be considered for long sections devoted to physical descriptions of artifacts.

Similar items described in successive sections of condensed text should be mentioned in the same order and punctuated the same way for easy comparison. In taxonomic revisions this means that descriptions of coordinate taxa address the same anatomical characters in the same sequence

(e.g., from anterior to posterior).

Although a concise style shortens the text, thereby helping readers extract information quickly, clarity should never be sacrificed. Information should be presented in the most concise way without causing confusion or changing the meaning.

**TELEGRAPHIC STYLE.** Sentences written in so-called telegraphic style typically consist of a subject (usually a noun) followed by a descriptive modifier that may be adjective(s), simple descriptive phrase(s), or subordinate clause(s).

The following tips may be helpful in the process of condensing:

1. “Tighten” the text (i.e., delete all unnecessary words)
2. Omit certain parts of speech that can be understood in context without ambiguity, e.g., articles and verbs. Thus, remove all instances of “the” except where absolutely necessary to preserve meaning.
3. Delete all forms of the verb *to be*. Wherever practical, change remaining verbs to a participial form (-ing and -ed endings), which allows them to modify nouns.
4. Include only critical verbs. These normally occur in subordinate clause or in parenthetical sentences.

**TENSE.** The following guidelines are suggested for resolving past versus present tense decisions. When exceptional situations arise authors must rely on common sense.

1. Use the past tense for completed events. This applies almost universally if an author is the subject of the verb: use “Segall (1971) observed” not “Segall (1971) observes.”
2. The present tense (known as the universal present) should be used for all published experimental results (which are regarded as established knowledge) and for all discussions and conclusions about both published and unpublished material. For example, “Segall (1971) observed that the ectotympanic in

*Icaronycteris* is annular” (*is* not *was*) However, the past tense should be used if the results are being discussed in a historical context or if results no longer apply (e.g., when describing an extinct group).

3. The past tense is preferred when reporting your own *present* experimental methods and results. The basis for this recommendation is that your current material is not considered established until published. For example, “We measured 18 parameters. Within-habitat variation in *L. irrorata* density was predictably correlated with *Spartina* density.”

## PUNCTUATION

*The Chicago Manual of Style* or *Words into Type* should be consulted for general questions about punctuation not addressed herein.

**COMMA.** Use the serial comma (i.e., place a comma before the final *and* or *or* in a series of items). For example, “Bulwer’s (1846) descriptions were prolix, inconsistent, and inaccurate.”

**PERIOD.** Most abbreviations require a period to indicate that the word is abbreviated, unless it is a capitalized acronym. For example, Mar. (for March), but LDV (for lower discocellular vein).

**TABS.** Tabs may be used to indent paragraphs (or use the Format>Paragraph option from the drop-down menu of Word). Also, use single tabs between columns in tables.

**TABS VERSUS DOT LEADERS.** Tabs may also be used to replace dot leaders in tables of contents, keys, and the like. (To insert dot leaders, use the Format>Paragraph>Tabs or Format>Tabs option in Word’s drop-down menu; in most versions of Word, dot leaders are option no. 2.)

**LINE AND LETTER SPACES.** Do not set off paragraphs a block of text with line spaces, although headings may appropriately be marked with a line space before and after. Do not add an extra letter space after sentences and do not create paragraphs with multiple letter spaces (see Tabs, above).

**CAPITALS.** In accordance with *The Chicago Manual* we have adopted a “down” style—the “parsimonious use of capitals.” Words should not be capitalized without good reason:

“There is considerable variation in the length of the lower discocellular vein” (the author uses the capitalized abbreviation LDV elsewhere, but

when spelled out the words “lower discocellular vein” should *not* be capitalized).

Do not capitalize the category words of multiple proper nouns, e.g., the Nile and Amazon rivers (but use “Nile River” and “Amazon River” separately).

Use a capital *N* to designate sample size (e.g., *N* = 215).

The words “figure,” “table,” and “appendix” should be capitalized only at the beginning of sentences, as the first word in any line of a heading, or the first word of any caption.

**CAPS VS. SMALL CAPS.** Any title that should be in caps and small caps can be set by the authors in caps and small caps in the manuscript Word document (Font>Font, select small caps). Do *not* use capital letters in place of small caps, and do *not* create your own small caps by setting regular capital letters a smaller size.

Time abbreviations: A.M. and P.M. and B.C. and A.D. should be set as small caps; for authors who cannot generate small caps in a document, please leave them lowercased.

**SUBSCRIPTS AND SUPERSCRIPTS.** Necessary subscripting and superscripting should be done by the author, e.g.,  $\text{CCl}_4$ ,  $\text{H}_2\text{O}$ , 16  $\text{m}^2$ . (But do not superscript ordinal numbers, e.g., 21<sup>st</sup> *not* 21<sup>st</sup>.)

## QUOTATION MARKS

Several important conventions must be followed regarding the use of quotation marks. Manuscripts that do not conform with these guidelines will be returned to the authors for correction.

1. Use double quotes for all direct quotations and for “scare quotes” (see below). Single quotation marks are used *only* for quotes within quotes:

Menzies (1990: 132) revised *Pogonomelomys*, excluding *ruemmleri* from it and making it the type species for the new genus *Coccymys* (“from the Greek *coccyx* and *mys*, ‘cuckoo-mouse’ with reference to spending its early taxonomic life in a place not its own”).

2. Final punctuation must be included within the closing quotation mark.
3. If very brief, quoted material may be preceded by a comma or by no punctuation at all if it

- is incorporated into a sentence. However, if the quoted material comprises a sentence or more, it should be preceded by a colon, and if it requires 4 or more lines in manuscript it should be set off from the main text with a line space above and below the extract. Indent the left margin of the extract (use the Format>Paragraph option on the Word menu to reset the margin for the extract) so it is set off from the main text; authors may create a new Word style (Format>Style) if extracts are frequently used in a single manuscript. Use double quotation marks for quotations within quotations that have been set off as extracts. Be sure to use square brackets around any information or qualifying remarks that you insert into a direct quotation. If the quoted material is marked off by double quotation marks, use single quotation marks for quotations within it.
4. Use double quotation marks around terms used in an unusual sense ("scare quotes"). Italics, rather than quotation marks, are preferred for new terms that are introduced or defined in situ. The English translation of a foreign term should be enclosed in double quotation marks. The foreign term being defined should be in italics.

## HYPHENATION

In general, avoid grammatically unnecessary hyphens, which tend to clutter the page with distracting type. However, if a word is defined with a hyphen in the dictionary and it is not on our list of exceptions, follow the dictionary (e.g., "pitch-black"). Likewise words may need to be hyphenated to avoid ambiguity, e.g., *small-winged termite* (insect, perhaps of normal size, but with small wings) vs. a *small winged termite* (insect small, with wings).

**COMPOUND ADJECTIVES.** Perhaps the most misunderstood rule of hyphenation has to do with compound adjectives. Simply stated, if a compound adjective of two or more words precedes a noun, the compound is hyphenated; if it comes after its noun, it is not hyphenated:

a three-year interval (before the noun)  
an interval of three years (after the noun)

a *well-developed* molar (before the noun)

a molar that is *well developed* (after the noun)

It may not be evident that two words modifying a noun represent a single compound adjective, and there is indeed a difference in meaning. Note the following:

*long-furred* porcupines: porcupines with long fur, vs.

*long furred* porcupines: a porcupine lineage whose furred character dates back a long time.

Note that some adjectival phrases that include "well" are defined in the dictionary with a hyphen (e.g., well-defined), so the hyphen remains even when the modifying phrase follows the noun.

There are several exceptions, the most significant of which is when an adverb ending in *-ly* is the first word of the compound modifier. Because the adverb actually modifies the adjective (not the noun), and because words ending in *-ly* can function only as adverbs, the hyphen is clutter:

*variously colored* moths (*not* variously-colored moths)

Many adverbs not ending in *-ly*, however, often take a hyphen:

*little-understood* system  
*best-known* coleopterist of the 18th century

To avoid confusion, use the hyphen when letters are used in compound adjectives, even when they follow the noun they modify:

a V-shaped notch  
a notch that is V-shaped

**COMPASS POINTS.** Close up compass points like northeast, southwest, etc., except when three compass points are compounded thus: north-northeast, south-southwest.

**SPELLED-OUT FRACTIONS.** Do not hyphenate noun forms of fractional units (e.g., a half hour, a quarter mile). In text passages dense with data, authors have the option of using decimal fractions (e.g., 0.5 hour, 0.25 mile; see also [Spelled or glyphed?](#)).

**PREFIXES.** So-called combining prefixes and standard biological prefixes do not take a hyphen

except to avoid confusion (e.g., between *re-cover* and *recover*). A hyphen may be used when the same vowel is doubled in a technical term (e.g., *spino-occipital*), or the author(s) may prefer to apply the rule uniformly (*spinooccipital*). Each manuscript, however, must be internally consistent and not vary from page to page (except for quoted text). If an author submits a work with variations (e.g., “*spino-occipital*” on p.1, but “*spinooccipital*” on p. 2), the editor will normalize all relevant examples to the unhyphenated form (*spinooccipital*).

Examples of prefixes that should normally be closed up rather than hyphenated:

antero-, anti-, bi-, bio-, co-, dorso-, extra-, infra-, intra-, inter-, latero-, macro-, micro-, mid- mini- non- post-, postero-, pre- pseudo- re- semi- super-, supra-, trans-, ultra-, under-, ventro-

down-, up- and the like are also often closed up: upturned, downcurved.

**-LIKE WORDS.** The suffix *-like* is closed up to all words except technical terms, proper nouns, or words with more than three syllables (e.g., *leglike*, but *epiphysis-like*).

**EN-DASH.** The en-dash (slightly longer than a hyphen) is used in two major circumstances to indicate:

1. ranges (e.g., 17–36)
2. compounds with two (or more) word elements on a side (e.g., Minneapolis–St. Paul, but not Cretaceous–Tertiary boundary, where the hyphen is correct)

The en-dash dash can be inserted in Word documents in several ways, including shortcuts; the “long” way is to go to “Insert” on Word’s drop-down menu and from there select “Symbol.” In most versions of Word, there are “Special Characters” listed from which one can choose the “En Dash” (the shortcut is also given there and can be redefined).

**EM-DASH.** The em-dash (slightly longer than the en-dash) is used to indicate a break in syntax, and should thus be used sparingly. When inserted within a larger, framing syntactical structure, the em-dash should be used in pairs.

Examples:

Such detailed research for a species sample of the size employed here

would be a huge undertaking—a study unto itself.

Prout (1918) and Hering (1925) relied on a small set of superficial adult traits for taxonomic assessments—notably wing venation, wing pattern, antennal structure, and labial palpus shape—most of which can be evaluated without the aid of a microscope.

The em-dash is also used to indicate missing table entries (see [Section 5 / TABLES](#), below). Like the en-dash (above), the em-dash can be inserted in Word documents in several ways.

## TREATMENT OF NUMBERS

**SPELLED OR GLYPHED?** In general, spell out cardinal and ordinal numbers up to 10 (e.g., eight, eighth), fractions used as adjectives (e.g., one-half wing length), and any number that begins a sentence.

Exceptions:

1. series of numbers in condensed text such as keys, descriptions, or diagnoses written in telegraphic style
2. series of numbers within parentheses
3. enumerated parts (e.g., tergite 2, section 3, segment 2, etc.)
4. dates (e.g., 19th century)
5. stand-alone fractions, e.g., 11/4, etc. (see also [Spelled-out fractions](#))
6. all units of measure
7. ordinal numbers used in references (e.g., 2nd ed.)

**Special cases:** follow the style of the largest number for all numbers in a series or related numbers in the same sentence.

**COMMAS AND DECIMALS.** Do not use commas in four-digit numbers (e.g., 5470). Always place a zero preceding decimal fractions (e.g., 0.03).

**SPACES.** Use a letter space between numbers and units of measurement, i.e., 79.8 km, *not* 79.8km.

Use a single letter space before and after mathematical symbols (+, -, =, <, >, ≤, ≥) in running text. Exception: close up to an open parenthesis when the symbol is the first (or the last) element within the parenthetical phrase, e.g., (= total males).

**MAGNIFICATION.** Type the multiplication sign (Insert>Symbol) preceding and flush to the magnification number (e.g., ×10).

**DATES.** Do not use a comma after the month unless a day is given (e.g., July 3, 1959, but July 1959). No apostrophe is to be inserted between the date and the terminal s when referring to a decade (e.g., 1940s, 1980s). Use standard abbreviations for months (Jan., Feb., Mar., Apr., May, June, July, Aug., Sept., Oct., Nov., Dec.) where dates are given repetitiously. See also [Caps vs. small caps](#).

### TEXT CITATIONS

**FIGURES.** Spell out “figure” when the word is used in running text, but use the abbreviation “fig.” within parentheses. “Figure” should be capitalized only at the beginning of sentences, as the first word in any line of a heading, or at the beginning of a caption.

Figures (as well as tables and appendices) should normally be cited in consecutive order within the main body of the text. If they are not, authors must indicate where they should appear in the text; otherwise the page compositor will insert them where first cited.

**CITATION FORMAT.** In-text citations to works listed in the references or to unpublished items should be cited according to the conventions and illustrative examples below (see also [Reference Style](#)).

Put author and date in parentheses at the end of a sentence or other logical unit if the citation does not apply to the entire sentence:

(Rufus, 2006)  
(Jones and Smith, 1984).

Use “et al.” for works with three or more authors:

(Osborne et al., 1920).

Add a, b, c, etc., to the date for more than one work with the same author(s) and year; match with full citation in references:

(Beck, 1980a, 1980b, 1980c).

Cite references in chronological (not alphabetical) order:

(Anderson, 1916; Simpson, 1932; Patel, 1968; Rakesh, 2004).

Authors of *Anthropological Papers* may have some justification for another arrangement, such as the order of importance or alphabetical order, but if an alternate arrangement is adopted, it must be applied consistently throughout the entire work.

Cite another author’s pages, figures, or plates using a colon (followed by a letter space):

(Auweyida, 2006: 45–234)  
(Blair, 1902: figs. 3, 4)  
(Pascal, 1954: 22, pl. V, figs. 2–9)

Unpublished work may be cited in the text without any listing in the references:

(Koulianatos and Palmer, personal commun.)  
(Röschmann, unpubl.)  
(Akida, unpubl. data)  
(López, in prep.)  
(Wong, personal obs.)

Cite chapters in books or other smaller contributions to larger works by referring to the author(s) of the chapter or smaller work, since this is the actual work that is cited: (Williams, 1934). Sometimes, however, it may be necessary to list in the References only the author, editor, or compiler of the larger work, in which case the smaller work may be cited in the text as follows: (Williams in Jones, 1934); see [Reference Style](#).

Avoid citations that immediately follow Latin binomials, as these can be confused with attributions of author and date for the name. For example, the phrase “has been reported from *Peromyscus maniculatus* (Hooper, 1958)” could be interpreted as (1) attributing authorship of the species *maniculatus* to Hooper, or (2) attributing credit for the reported observation to the same source. If such constructions cannot be avoided, then the word “see” should be inserted (see Hooper, 1958) to eliminate ambiguity.

Always provide a page number for a quotation, using a colon followed by a letter space before the page number:

According to Kluge (1964: 13), *Homonota uruguayensis* has an “almost uniform grayish black coloration . . . unique within the genus.”

**WEBSITE CITATIONS.** Authors who wish to

cite a website in the text without listing it in the references should include the complete URL plus the date accessed. Websites should be enclosed in parentheses so there is no confusion about the exact URL. (See also [Websites](#) under Reference Style.)

## TAXONOMIC ACCOUNTS

Taxonomic accounts should be structured consistently (in format and style) throughout the manuscript. AMNH Scientific Publications currently permit considerable flexibility (e.g., for presenting synonymies; see below), but authors *must* adhere to a consistent format once one is adopted. Likewise, the style of taxon description must be consistent from account to account.

## HIERARCHIES

Taxonomic hierarchies (more frequently used in paleontology than in other fields) may be presented in either of two ways: as a traditional, ranked sequence; or without any explicit indication of taxonomic rank. Note that taxon names (each with author and date) are typed as centered lines (each ending with a hard return) in both examples,

Example of a ranked hierarchy:

CLASS MAMMALIA LINNEAUS, 1785  
ORDER PERISSODACTyla OWEN, 1848  
FAMILY BRONTOTHERIIDAE MARSH, 1873  
SUBFAMILY BRONTOTHERIINAE MARSH, 1873  
*Bunobrontops savagei* Holroyd  
and Ciochon, 2000

Example of an unranked hierarchy:

**Squamata** Oppel, 1811  
**Anguimorpha** Fürbringer, 1900  
    *Platynota* Camp, 1923  
    *Varanoidea* Camp, 1923  
    *Ovoo gurvel*, new taxon

Note in the second example that the names of new taxa are set in boldface.

## SYNONYMIES

**FORMAT.** As with hierarchies, there is more than one way to present synonymies, but certain features are constant. A complete bibliographic

reference for each synonymy citation *must* be listed in the References. Only the author, year (and occasionally month and day), and page number(s) are required in the synonymy. Supply additional information (such as location, abbreviated descriptions, etc.), if needed, in parentheses at the end of each citation.

If the synonymy is new, the phrase “new synonymy” may be inserted at the end of the name newly synonymized.

### Example 1:

*Oreophrynella quelchii* Boulenger: Gines, 1959: 135, 138 (mention of a specimen from Auyantepui, with drawings of whole body, lateral head, hand, and foot).

*Oreophrynella cryptica* Señaris, “1993” [1995]: 178, fig. 1 (hand and foot). Holotype EBRG 2956 from sector este, cima del Auyan-tepui, Estado Bolívar, Venezuela (5E53'36"N, 62E29'12"W), 1750 m, collected February 10, 1994, by “J. C. Señaris and Petia Alcócerez [sic].”

### Example 2:

*Ocypus* Montrouzier, 1861: 67, junior homonym of *Ocypus* Leach, *in* Samouelle, 1819: 172 (Coleoptera). Type species: *Ocypus variegatus* Montrouzier, 1861, by monotypy.

*Coridromius* Signoret, 1862: 5 (nom. nov. for *Ocypus* Montrouzier, 1861).

*Neocypus* Distant, 1914: 378 (unnecessary nom. nov. for *Ocypus* Montrouzier, 1861). Carvalho, 1987: 61; Linnauori, 1994: 15; Schuh, 1995: 46; Cassis and Gross, 1995: 185; Liu and Zhao, 1999: 55; Miyamoto and Yasunaga, 1999: 33; Chérot et al., 2004: 57.

*Coridromoides* Carvalho, 1956: 54 (new genus).

Type species: *Coridromoides carinatus* Carvalho, 1956, by original designation.

### Example 3:

*Hadesina anomala* Prout, 1918: 418.

*Trochiodes coniades* Druce, 1893: 309, pl. 21, fig. 21.

*Xenomigia* Warren, 1906: 413.

*Pareuchontha* Miller, 1989: 30.

*Lignyoptera monticolata* Maassen, 1890: 42, n. 29, p. 163, pl. 8, fig. 27.

### Example 4:

*Devara frigida* Walker, 1864: 185.

TYPE LOCALITY: Ecuador, Cuenca.

TYPE: Syntype ♂, ex Fraser Collection (BMNH).

*Macroneurodes albimacula* Warren, 1900: 127.

TYPE LOCALITY: Colombia, “Bogotá”.

TYPE: Holotype ♂ (BMNH).

*Gnatholophia longinervis* C. and R. Felder, 1874: pl. 105, fig. 8.

TYPE LOCALITY: Not known.

TYPE: Syntype ♂ (BMNH).

*Euchontha sublactigera* Walker, 1865: 383.

TYPE LOCALITY: Colombia, “Bogotá”.

TYPE: Syntype ♂, ex Stevens Collection (BMNH).

TAXONOMIC NAMES. Note that each name in a synonymy should be typed flush to the left margin and any lines that run over should be hang-indented a standard number of spaces below the first line (Format>Paragraph: look for “Indentation” then “Special”).

NAME(S) OF AUTHOR(S). The scientific name and the author’s name must not be separated by any intervening punctuation if the author originated the name in the cited work. For example:

*Hystrix insidiosa* Olfers, 1818: 211. [original description]

However, the scientific name and the author’s name must be separated by a colon if the author did not originate the name in the cited work. For example:

*Coendou insidiosus*: Trouessart, 1897: 623. [name combination]

Because works cited in synonymies must appear in the References section, it is not necessary to list all the authors of a taxon. For names with three or more authors, use only the first author’s name followed by “et al.” For example:

*Oryzomys tatei* Musser et al., 1998: 100.

DATES, PAGES, ILLUSTRATIONS. A comma should be placed after the author and before the date. There should be a colon after the date, followed by a single letter space, and then the page number. Normally the page number is only the first page that establishes the synonymized usage.

In citing figures, plates, parts, note numbers,

and the like, convert Roman numerals to normal Arabic ones, unless this would result in confusion. Abbreviate the words for figure, plate, and part (i.e., fig., pl., pt., n.).

ABBREVIATION OF GENERIC NAMES. A generic name (e.g., *Peromyscus*) must be spelled out (1) the first time the genus is mentioned in a paragraph or caption, and (2) at the beginning of any sentence. Elsewhere, a generic abbreviation is acceptable as part of a binomial combination (e.g., *P. maniculatus*).

## KEYS

The following examples show three of several acceptable formats. Others can be found in recently published issues of *Novitates* and the *Bulletin*.

### Example 1:

1. Forewing with a full compliment of radials present (R1, Rs1–Rs4) ..... 3
- FW with only four radials present (figs. 221F, 232C) ..... 2
2. Forewing vein Rs1 arising from radial sector (fig. 221F); FW uniformly gray to gray-brown (pl. 21), or FW gray-brown with a large white triangle along anal margin (pl. 22); FW length = 9.0–12.0 mm ..... *Dolophrosyne* Prout
- FW vein Rs1 arising from anterolateral angle of DC (fig. 232C); FW light brown with a faint, cream-colored dash along anal margin (pl. 22); FW length = 11.0–12.9 mm ..... *Xenormicola extensa* (Hering)
3. Forewing vein Rs1 stalked with Rs2–Rs4; FW pattern variable, sometimes cryptically colored ..... 5
- FW vein Rs1 arising from anterolateral angle of DC (figs. 38A–C, 70F), widely separate from Rs2–Rs4; FW brightly colored ..... 4

### Example 2:

1. Proepisternum bilobed (figs. 3C, 18A); metanotum prominent and flared (fig. 16C–D) ..... 2
- Proepisternum unilobed (fig. 3C); metanotum not prominent and flared (fig. 13D) ..... 17
2. Metepimeron punctate (figs. 13A, 19A–B); right paramere club-shaped with short, rounded process, appearing U-shaped from above (figs. 10B–D) ..... 3
- Metepimeron impunctate (fig. 8E); right paramere not club-shaped, not appearing U-shaped

when viewed from above .....	6
...	
4. Male left paramere tightly corkscrewed (figs. 17H, 19E–F); female possibly with cork-screwed paragenital opening on right side of abdomen (fig. 19B–C) .....	5
– Known only from females, female without any visible paragenitalia; male suspected to not have corkscrewed left paramere (South China, Laos, Nepal, Sumatra, Vietnam) .....	
..... <i>testaceus</i>	

**Example 3:**

1a. Anal-fin spines number seven or greater (fig. 19C); pelvic axillary scale present (fig. 23); scale ridges (“sheathing”) present on dorsal and anal fins near base and free from fin membrane on spiny portions of both fins (fig. 22); scales cycloid.....	2
1b. Anal-fin spines number three (or rarely four) (fig. 19A–B); absence of pelvic axillary scale (fig. 21A–B); absence of scale ridges (“sheathing”) along dorsal- and anal-fin bases (fig. 21A–B); scales mostly ctenoid (except <i>Paratilapia</i> , which is variable for this feature) variable for this feature).....	3
2a. Oral dentition unicuspид, spatulate in shape; a single row of teeth in both upper and lower jaws; teeth few in number ( $\leq$ 18 in upper jaw, $\leq$ 14 in lower); upper-jaw teeth on either side of premaxillary symphysis greatly enlarged (figs. 3B, 4D, and 5A) .....	
..... <i>Paretroplus</i>	
2b. Oral dentition tricuspid (both inner and outer rows); teeth present in multiple rows in both upper and lower jaws; teeth numerous (in much greater numbers than <i>Paretroplus</i> ) on both upper and lower jaws (fig. 4C) .....	
..... <i>Etroplus</i>	

#### SUBHEADINGS

After each centered taxonomic heading and synonymy (if included), a series of subheadings normally follow, usually in Level 3 format (large and small caps followed by a colon and run into the text; see above). These subheadings often include such items as:

TYPE MATERIAL

TYPE LOCALITY

DISTRIBUTION  
CONTENTS  
DIAGNOSIS  
DESCRIPTION  
ETYMOLOGY  
SPECIMENS EXAMINED.

Although there is considerable flexibility concerning which of these subheadings is used, and in what sequence (recent issues of the *Novitates* and *Bulletin* contain numerous examples), certain categories of information must be provided for new names to be available under the International Code of Zoological Nomenclature (ICZN, 1999), and manuscripts containing taxonomic accounts that lack essential information or that do not conform with widely accepted standards may be returned to authors for revision.

#### SPELLING, ABBREVIATIONS, AND SPECIAL NOTATION

When in doubt, authors should consult *Merriam-Webster’s 11th Collegiate Dictionary* or (for technical terms not found in that reference) *Webster’s Third New International Dictionary of the English Language, Unabridged*. AMNH usage, however, sometimes differs from these sources, and the following lists provide a guide to such cases, as well as commonly used abbreviations.

#### PREFERRED SPELLINGS (SEE ALSO HYPHENATION)

artifact (not artefact)
archaeology
braincase
catalog (not catalogue)
cheektooth (adj. and noun)
database
dataset
Eastern Hemisphere
fieldnotes
fieldwork
fin ray (noun) fin-ray origin (“fin ray” functions as adj.)
fin spine (noun)
focused
forelimb, forewing ( <i>fore-</i> is a combining form)
freshwater (adjective)
fresh water (noun)
gray (not grey)
groundwater

hemal (not haemal)		case
hind limb, hind wing ( <i>hind</i> is not a combining form)	aff.	affinis
homolog (not homologue)	AMNH	American Museum of Natural History (and abbreviate other institutions if repeated more than a few times)
labeled		anonymous
leaf-litter (adjective preceding noun)		article
leaf litter (noun)		before Christ
nomenclatural		before the present
online		circa
rainforest (adjective preceding a noun)		cubic centimeter
rain forest (noun)		( <i>Lt. confer</i> ) compare
saltwater (adjective preceding a noun)		chapter
salt water (noun)		centimeter
sister group (noun)		column
sister-group (adjective)		cycles per second
toothrow (adj. and noun)		cubic
toward (not towards)		coefficient of variation
website		spell out
Western Hemisphere		decibel
<b>ABBREVIATIONS</b>		
Do <i>not</i> italicize familiar Latin and other foreign words and phrases. Use italics only if the foreign term is likely to be unfamiliar to the reader; if the word appears in a standard English dictionary, do not italicize. Do <i>not</i> use unnecessary Latin abbreviations when the English is common, e.g., use “above” rather than “supra” and “below” rather than “infra.”		degrees of freedom
°	degrees: use symbol; do not spell out	dissertation
°C	degrees Celsius (“centigrade”)	dozen
°F	degrees Fahrenheit	( <i>Lt. exempli gratia</i> ) for example
' "	minutes, seconds (of latitude and longitude; use prime and double prime symbols from Word’s “Symbol” menu)	elevation (do not use a.s.l.)
♀	“female” is preferred to ♀ in running text unless repetitious. Use one symbol for enumeration, e.g., 4♀. (Word: Insert>Symbol)	equation
♂	“male” preferred to ♂ in running text unless repetitious. Use one symbol for enumeration, e.g., 3♂. (Word: Insert>Symbol)	( <i>Lt. et alii</i> ) and other (people) ( <i>Lt. et sequentes</i> ) and the following
Å	angstrom	electron volt
A.D	anno domini (years after Christ, lit. “in the year of [our] Lord”)	example
ad hoc	Lt. “for this”; for this particular	fascicle
		figure; use “figure” outside parentheses, “fig.” inside
		footnote
		foot
		gram
		gallon
		Greek
		hectare
		spell out unless repetitious
		Hertz
		( <i>Lt. id est</i> ) that is
		( <i>Lt. ibidem</i> ) in the same place (used exclusively in citations and footnotes)
		in a written communication (e.g., in a letter).
		Lt. “in the glass” (i.e., outside the living animal)
		Lt. “in the living”
		in litt.
		in vitro
		in vivo
		aff.
		art.
		B.C.
		B.P.
		ca.
		cc
		cf.
		chap.
		cm
		col.
		cps
		cu
		CV
		day
		db
		df
		diss.
		doz.
		e.g.
		elev.
		eq.
		et al.
		et seq.
		eV
		ex.
		fasc.
		fig.
		fn.
		ft
		g
		gal
		Gr.
		ha
		hr (hour)
		Hz
		i.e.
		ibid.

in.	inch	publ.	published
incertae sedis	Lt. “of uncertain place” (i.e., in a taxonomic grouping)	r or R	correlation coefficient
kg	kilogram	rpm	revolutions per minute
kH	kilohertz	s.l.	sensu lato (abbreviate if repetitious)
latitude	spell out unless repetitious (0°10'N latitude)	s.s.	sensu stricto (abbreviate if repetitious)
liter	(spell out)	SD	standard deviation
loc. cit.	(Lt. <i>loco citato</i> ) in the place cited	SE	standard error
longitude	spell out unless repetitious (20°11'W longitude)	sec (second)	spell out unless repetitious
Lt.	Latin	SEM	standard error of mean; scanning electron microscope
m	meter	sensu	Lt. “in the sense of”
m.y.	million years	sensu lato	Lt. “in the broad sense” (or s.l.; be consistent)
Ma, Mya	megaannum, million years ago (or mybp; be consistent)	sensu stricto	Lt. “in the narrow sense” (or s.s.; be consistent)
mg	milligram	ser.	series
mi	mile	suppl.	supplement
min (minute)	spell out unless repetitious	unpubl.	unpublished
ml	milliliter	vol.	volume
mm	millimeter	vs.	spell out versus unless
mo (month)	spell out unless repetitious	year	repetitious
mp	melting point	μm	spell out
ms (plural mss)	manuscript(s)		micrometer
mybp	million years before the present (also Ma; be consistent)		
N	number (database)		
n. ser.	new series		
n.d.	no date		
n.p.	no place; no publisher		
nomen dubium	Lt. “doubtful name” (plural <i>nomina dubia</i> )		
nomen nudum	Lt. “naked name” (plural <i>nomina nuda</i> )		
nomen oblitum	Lt. “forgotten name” (plural <i>nomina oblita</i> )		
o. ser.	old series		
op. cit.	(Lt. <i>opera citato</i> ) in the work cited above		
p or P	probability		
p.	page (plural pp.)		
percent	use sign (%)		
personal commun.	personal communication		
personal obs.	personal observation		
pH	measure of acidity or alkalinity		
Ph.D.	(Lt. <i>philosophiae doctor</i> )		
pl.	plate		
pt.	part (but spell out “in part”)		

Authors citing themselves within the body of their papers should use their initials separated by periods to distinguish personal names from acronyms of organizations; for example:

Histological examination was carried out by two of us (F.D.A. and G.P.S.).

#### MAMMALIAN DENTAL NOTATION

Although several alternative notational systems are current in the literature, AMNH style uses upper and lower case letters followed by Arabic numbers (without super- or subscripting) to indicate mammalian dental loci. For example, use M3 (*not* m<sup>3</sup> or M<sup>3</sup>) for the third upper molar and m3 (*not* m<sub>3</sub> or M<sub>3</sub>) for the third lower molar, with plurals M3s and m3s. To avoid ambiguity, always spell out dental loci at the beginning of sentences (where capitalization is required by convention). Use an en-dash to indicate a range of teeth, e.g., M1–M3.

## Section 4

### References and Index

#### REFERENCE STYLE

The obvious goal of listing references is to provide documentary support for statements made elsewhere in the manuscript. In the AMNH system, publications are listed alphabetically by author(s), with exceptions as noted below to facilitate information retrieval.

#### SEQUENCE FOR REFERENCE ENTRIES

The following rules determine the sequence in which publications should appear in the References section:

1. List publications alphabetically by author, with exceptions as noted below.

For example:

Ackery, P.R. 1988. Hostplants and classification: a review of nymphalid butterflies. *Biological Journal of the Linnean Society* 33: 95–203.

Bänziger, H. 1988. The heaviest tear drinkers: ecology and systematics of new and unusual notodontid moths. *Natural History Bulletin of the Siam Society* 36: 17–53.

2. Multiple publications by the same author, or by the same two authors, should be ordered chronologically.

For example:

MacIndoo, N.E. 1917. The olfactory organs of Lepidoptera. *Journal of Morphology* 29: 33–54.

MacIndoo, N.E. 1929. Tropisms and sense organs of Lepidoptera. *Smithsonian Miscellaneous Collections* 81: 1–59.

3. If there are multiple entries with the same author and date (or with the same two coauthors and date), distinguish these with lowercase alphabetic suffixes *in the order in which they are cited in the text*. For example, if Bänziger's (1988) paper on blood-sucking moths was cited in the text before his coeval paper on tear-drinking moths, the reference entries should appear as:

Bänziger, H. 1988a. Skin-piercing blood-sucking moths. V. Attacks on man by 5 *Calyptro* spp. (Lepidoptera, Noctuidae) in S and SE Asia. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft* 62: 215–233.

Bänziger, H. 1988b. The heaviest tear drinkers: ecology and systematics of new and unusual notodontid moths. *Natural History Bulletin of the Siam Society* 36: 17–53.

4. List two-authored publications immediately after any single-authored publications by the first author, and list publications with three or more authors after any two-authored works with the same first author.

For example:

Brower, A.V.Z. 2000. Parallel race formation and the evolution of mimicry in *Heliconius* butterflies: a phylogenetic hypothesis from mitochondrial DNA sequences. *Evolution* 50: 195–221.

Brower, A.V.Z., and M.K. Auweyida. 2000. Phylogenetic relationships among the Nymphalidae (Lepidoptera) inferred from partial sequences of the wingless gene. *Proceedings of the Royal Society of London Series B Biological Sciences* 267: 1201–1211.

Brower, A.V.Z., M.K. Auweyida, and M.G. Egan. 2000. Cladistic analysis of *Heliconius* butterflies and relatives (Nymphalidae: Heliconiiti): a revised phylogenetic position for *Eueides* based on sequences from mtDNA and a nuclear gene. *Proceedings of the Royal Society of London Series B Biological Sciences* 264: 969–977.

5. Publications with three or more authors and the same first author (indistinguishably cited in the text by the first author's family name followed by "et al.") should be ordered by date, *regardless of alphabetic sequence and numbers of authors*. Use alphabetic suffixes in the order of citation to distinguish any with the same date.

For example:

Wible, J.R., G.W. Rougier, M.J. Novacek, M.C. McKenna, and D. Dashveg. 1995. A mammalian

- petrosal from the Early Cretaceous of Mongolia: implications for the evolution of the mammalian ear. *American Museum Novitates* 3149: 1–19.
- Wible, J.R., M.J. Novacek, and G.W. Rougier. 2004. New data on the skull and dentition of the Mongolian Cretaceous eutherian mammal *Zalambdalestes*. *Bulletin of the American Museum of Natural History* 281: 1–144.
- Wible, J.R., G.W. Rougier, M.J. Novacek, and R.J. Asher. 2007. Cretaceous eutherians and Laurasian origin for placental mammals. *Nature* 447: 1003–1006.

**MULTIPLE AUTHORS.** If a work has five or fewer authors, all authors should be named. If there are six or more coauthors, only the first author should be cited, followed by “et al.” For example, the following paper has seven authors, but should be cited as:

- Dingus, L., et al. 2008. The Geology of Ukhaa Tolgod (Djadokhta Formation, Upper Cretaceous, Nemegt Basin, Mongolia). *American Museum Novitates* 3616: 1–40.

#### DATE

**DATE OF PUBLICATION.** The date (year of publication) should follow the name(s) of the author(s) in each reference entry. Use alphabetic suffixes (a, b, c. . .) to distinguish entries with the same authorship and date as cited in the text (rule 3; above). The date cited in the text should coincide exactly with the date in the bibliography. For example, if a span of years is given for several volumes of a publication, the same must be used in the text citation.

When the actual date of publication is known to differ from the typographic (printed) date, that date should be the first cited in the reference list and the typographic/incorrect date should be placed in quotes in parens after the actual date, e.g.:

- Gardner, A.L. (editor). 2008 (“2007”). *Mammals of South America*. Vol. 1: Marsupials, xenarthrans, shrews, and bats. Chicago: University of Chicago Press.

The in-text citation should include only the actual print date, not the typographic/incorrect one.

Use a question mark in square brackets to indicate a questionable date (e.g., Smith, 1926[?]).

**WORKS WITHOUT DATES.** Use “In press” as a date for an upcoming publication only if the material has been accepted for publication. Use “ms.” for unpublished manuscripts on file or “to be published” (such as manuscripts under review, and so on). Use “in prep.” for work that is not yet completed.

Dates should be supplied for Ph.D. dissertations and master’s theses unless it is necessary to emphasize the fact that the work in question is officially unpublished for purposes of taxonomic nomenclature. In the latter case, list “ms.” in place of the date and supply the date at the end of the reference. The abbreviation “mss.” can be used in place of dates for two or more unpublished items. For undated official documents, “n.d.” (no date) should be used. Specify where the unpublished material can be located following the title (e.g., “ms. on file” or “Document on file” or “Paper presented at”).

Undated works should be placed before other reference items with the same authors(s).

#### AUTHOR

**AUTHORS’ NAMES.** Reverse only the first author’s name (family name first, initials last). Use initials for all given names unless different authors have the same family name and initials, in which case the first given name can be spelled out. Do not use a letter space between initials (e.g., J.A. Allen, not J. A. Allen). Separate authors names by commas. Use a comma before the “and” for two or more authors (see preceding examples).

**ALPHABETIZATION.** Sometimes rules of alphabetization are complicated because authors’ names are unusual; here is a sample of alphabetized names:

- Auweyida, M.K.
- Beethoven, L. von (family name commonly known without prefix)
- d’Aubiac, B.
- Delmore, E.
- de Gaulle, C.
- DiMaggio, G.
- Ortega y Gasset, J.
- Perle, A.
- Rousseau, J.-J.
- Rozen, J.R., Jr.
- von Hindenberg, X.
- Yamaha, M.
- Zhou, M.

Prefixed names normally retain the prefix in front of the family name unless the name is commonly known without the prefix or the bearer's preference is known to be otherwise. Text citations should agree with the listing in the References (e.g., if de Gaulle is cited in the text, the author should be listed under de Gaulle, not Gaulle).

**FAMILY NAME PRECEDING GIVEN NAME.** In Chinese, Japanese, and Korean the family name traditionally precedes the given name, and in Mongolian the patronymic (or matronymic) is used as a surname before the personal name. Authors should be sure that they have properly placed the family name in front of the given name in alphabetical lists that include Asian authors (e.g., publications by the Chinese paleomammalogist Meng Jin, commonly known among his American colleagues as Jin Meng, should be listed as authored by Meng, J.).

**NAMES OF SPANISH ORIGIN.** Names of Spanish origin often include the maternal family name (or a maternal-family initial) after the paternal family name, with or without an intervening hyphen. The paternal name should precede the maternal name (or initial) in an alphabetical listing, where hyphenating the compound helps avoid confusion:

- Albuja-V., L., M. Ibarra, J. Urgilés, and R. Barriga. 1980. Estudio preliminar de los vertebrados ecuatorianos. Quito: Escuela Politécnica Nacional.
- Hernández-Camacho, J. 1956. Una subespecie nueva de *Heteromys anomalus* (Mammalia: Rodentia). Loziana 10: 1–15.

**ACRONYMS IN PLACE OF AUTHOR/ANONYMOUS AUTHOR:** Publications issued by government agencies, corporations, or other sponsor organizations may carry the name of the organization or its acronym in place of the author, or an acronym may be used for a familiar work authored by committee:

- ICZN. 1999. International code of zoological nomenclature, 4th ed. London: International Trust for Zoological Nomenclature.
- IGM. 1978. Papallacta, NIII-B4c [1:25,000 topographic map]. Quito: Instituto Geográfico Militar.

Occasionally, if no author can be determined, the publication may be listed under "Anon." (= anonymous).

## TITLE

Follow these rules for the titles of cited references:

1. Capitalize only the first word and proper nouns for English-language works. For Western European languages using the Latin alphabet, follow the accepted style adopted for that language (see *Chicago Manual* (16th ed.), 534–558, for recommendations); when in doubt use the "down" style. For trans-literated languages, it is preferable to adopt a down style—the first word *only* is capitalized (that is, even proper names are lowercased).

2. In general, do not abbreviate. However, it is permissible to shorten excessively long titles by omitting words and substituting ellipsis points (...) or other indications of abridgement for each deleted part:

Eden, R. 1555. The Decades of the newe worlde or west India, conteyning the navigations and conquests of the Spanyardes, with the particular description of the moste ryche and large landes and Ilandes lately founde in the west Ocean [etc.]. Londini: In aedibus Guilhelmi Powell.

3. End each title with a period.

4. Carefully check all diacritical marks against original citations.

5. For books, identifying information such as volume, edition, translator, etc., should follow the title separated by a comma.

## SERIAL PUBLICATIONS

**IDENTIFYING INFORMATION.** Do not use any punctuation between the serial title and volume number. If necessary (see below), information subordinate to the volume number (number, part, article, etc.) should follow the volume number in parentheses. In general, identifying information should always be given in the proper order: most inclusive (normally the volume number) to less inclusive units proceeding from left to right.

**IDENTIFYING THE ISSUE.** Journals that are paginated anew in each issue must identify the issue. However, if a journal is paginated consecutively

throughout the volume, identifying the issue is not required because the material can be located via the page numbers, but if an author chooses to supply issue identification consistently throughout the bibliography it will not be deleted.

The identifying information for a particular serial publication *must* be identical throughout the bibliography.

**SERIES INFORMATION.** Some periodicals are (or were; the practice is now less common) published in series that included independently numbered sets of volumes. Information about series must follow the serial title parenthetically and precede the volume number as in these examples:

- Hershkovitz, P. 1999. *Domociops gliroides* Thomas, 1894, last of the Microbiotheria (Marsupialia), with a review of the family Microbiotheriidae. *Fieldiana Zoology* (new ser.) 93: 1–60.
- Thomas, O. 1923. The geographical races of *Lutreolina crassicaudata*. *Annals and Magazine of Natural History* (ser. 9) 11: 583–585.

**PAGE NUMBERS.** Page numbers are separated from the previous information by a colon. Use inclusive page numbers separated by an en-dash, e.g., 189–243. If pagination is complete in the work cited, supply the total page range (e.g., “1–423”).

**LISTING ILLUSTRATIVE MATERIAL.** It is not necessary to list figures, plates, maps, tables, or other illustrative material unless they cannot be found within the stated range of pages. However, on occasion, authors may have valid reasons for listing such information. If illustrative material is consistently included throughout the bibliography, this information will not be deleted without consulting the author.

## BOOKS

**LOCATION, PUBLISHER.** This information is separated from the preceding information by a period. Supply the city where published (plus state abbreviation or the name of the country, if the city is not well known) followed by a colon and then the publisher’s name. If more than one city is listed by the publisher, use only the first one. Shorten familiar publisher’s names (e.g., Wiley, not John Wiley & Sons, Inc.).

**PAGINATION, ILLUSTRATIVE MATERIAL.** It is not necessary to supply the number of pages, illustra-

tions, etc., of a book (except for page ranges in a component reference; see below). However, if this material is included throughout, it will not be removed without consulting the author.

## COMPONENT, OR CONTRIBUTED, REFERENCES

Component references are contributions to a larger work that are listed under the name of the contributing author. Use the following examples as guides:

- Gardner, A.L. 2005. Order Didelphimorphia. In D.E. Wilson and D.M. Reeder (editors), *Mammal species of the world, a taxonomic and geographic reference*, 3rd ed.: 3–18. Baltimore: Johns Hopkins University Press.
- Solari, S. 2003. Diversity and distribution of *Thylamys* (Didelphidae) in South America, with emphasis on species from the western side of the Andes. In M.E. Jones, C.R. Dickman, and M. Archer (editors), *Predators with pouches: the biology of carnivorous marsupials*: 82–101. Melbourne: CSIRO Press.
- Stein, B.R., and J.L. Patton. 2008a (“2007”). Genus *Chironectes* Illiger, 1811. In A.L. Gardner (editor), *Mammals of South America*. Vol. 1: 14–17. Chicago: Chicago University Press.

Note that the name(s) of the author(s) or editor(s) of the larger work are not reversed.

There are times when component references are complicated. Use common sense in presenting necessary bibliographic in a form that is most helpful to the reader.

**PROCEEDINGS, MEETINGS, CONFERENCES, ETC.** A conference paper may be listed in the References in one of three formats: if unpublished, use unpublished format; if published in a serial, use serial format; or if published as a “one time only event,” use book format.

## EARLY WORKS

Some early works are hard to find, difficult to cite unambiguously (because dates and/or authorship are obscure), or present other noteworthy irregularities that prevent standard citation style. Supplementary bibliographic information that may be helpful to readers who wish to consult such works may be included in square brackets at the end of the reference entry:

Azara, F. de. 1802. Apuntamientos para la historia natural de los quadrúpedos del Paragüay y Río de la Plata [2 vols.]. Madrid: Imprenta de la Viuda de Ibarra. [Reprinted in the series "Biologists and their world" in 1978 by Arno Press, New York.]

des Marchais, C. 1730. Voyage du Chevalier des Marchais en Guinée, îles voisines, et à Cayenne, fait en 1725, 1726 & 1727 (4 vols.). Paris: Chez Pierre Prault. [This work, invariably cited as by des Marchais, was actually authored by J. B. Labat.]

Tschudi, J. J. von. 1844–1846. Untersuchungen über die Fauna Peruana. St. Gallen: von Scheitlin und Zollikofer. [Mammalian accounts published in different years as follows: pp. 1–76 in 1844, pp. 77–244 in 1845; pp. 245–262 in 1846; see Sherborn, 1922.]

#### WEBSITES

Websites are increasingly cited as sources of scientific information as more data are moved online. However, electronic archiving is often problematic: online resources cited by authors may subsequently be altered or removed, and URLs change frequently. Therefore, unless hosting organizations are committed to maintaining a permanent web-based repository for unaltered documents, electronic media are essentially similar to such other cited ephemera as personal communications or unpublished manuscripts.

Ideally, citations of web-based documents in the References section should include the author(s) names(s), publication (or copyright) date, and the title of the page on which the cited information appears (rather than a home page). The identifying phrase "Internet resource" should be followed by a URL or URN (in parentheses) and the most recent

date the page was accessed by the author:

Auweyida, M.K. 2009. New lizards of Nauru. Arubo, Nauru: Kayser College. Internet resource ([http://auweyida\\_lizards.nr](http://auweyida_lizards.nr)), accessed January 4, 2009.

Some web-based documents are found through a digital object identifier (doi), and this type of citation should be placed in brackets at the end of the citation, after the period and without final punctuation (i.e., another period):

Tejedor, A. 2011. Systematics of funnel-eared bats (Chiroptera: Natalidae). Bulletin of the American Museum of Natural History 353: 1–140. [doi: 10.1206/636.1]

It is the responsibility of authors to include this information in the References. At this time, inclusion of a doi citation is optional.

#### UNPUBLISHED MATERIAL

Authors should not list unpublished material in the References unless they can specify where that material can be located. Unarchived letters, manuscripts not yet submitted to any publisher, and other forms of personal communication are best cited in the text only.

#### INDEX

Authors must supply any index that is to be published with their work. Because an index is not sent to the printer until final page numbers are inserted, no index should be submitted with the manuscript. It is helpful, however, for authors to indicate that an index is forthcoming.

## Section 5

### Tables

Tables (except very simple ones with columns separated by single tabs) should be created using Excel or Word's drop-down "Table" menu. Printed copies should allow sufficient space between columns of data for easy reading by reviewers, and no more than one table should be placed on a manuscript page. All tables must be numbered, titled, and placed at the end of the manuscript (see Order of Materials, above). Authors should indicate the best location for each table in the published document by marking the table number in the margin of the manuscript at each preferred location.

Inconsistently and inappropriately styled and formatted tables are the cause of many time-consuming delays in the production process. Authors are encouraged to consult recent issues of AMNH publications for relevant examples of acceptable table layouts.

#### CONCISE PRESENTATION

Like artwork, tables can usefully summarize a variety of complex information, including statistical results that cannot reasonably be enumerated in the text. However, tables should present data as concisely as possible. Avoid large numbers of blank (no data) entries. If data for a proposed column are sparse, summarize these results concisely in a few sentences in the text or in a table footnote instead of creating a separate column. Information to be included in a table should be carefully selected. Do not repeat data already present in the text.

**CONCISE HEADINGS.** Table headings should be as concise as possible. Authors should pay special attention to condensing column headings, all of which must fit within the width of a page. In particular, authors should abbreviate long headings over narrow columns of data and spell out the abbreviation in a table key or footnote. *Do not type headings vertically on the page.* To avoid congested or layered column headings, it may be preferable to arrange the data in two or more separate tables. Row (stub) headings can be controlled to a certain extent by indenting subordinate information on subsequent lines.

Intelligible abbreviations (e.g., "usu." for "usually") and grammatical symbols (e.g., the ampersand [&] for "and") that are not permissible elsewhere in the manuscript may be used in tables if necessary. However, tabular abbreviations should be consistent throughout the manuscript, and the author should arrange similar data the same way in all tables.

#### FORMAT

In general, avoid meaningless clutter. Do not apply decorative features (e.g., borders). Do not use blank rows or columns to create extra "space." Do not use boldface or italic typefaces to make the table headings "look better." Do not use shading unnecessarily.

**TABLE TITLES AND INTRODUCTORY PARAGRAPH(s).** Center the word TABLE and its number. The title, which begins on the next line, should be in boldface and should *not* end in a period. Avoid long titles; detailed information is ideally presented in a paragraph following the title (also centered but with regular style type instead of boldface).

Authors may choose to (1) capitalize the first word of the title and proper nouns only or (2) capitalize all words except articles, prepositions, and conjunctions having fewer than four letters. However, all table titles should be consistently formatted. If authors are inconsistent, the "down" style (1) will be applied.

**IN-TABLE FOOTNOTES.** For table footnotes in *Novitates* and *Bulletin*, superscripted lower-case letters (a, b, c . . .) are preferable to numbers to avoid confusion with text footnotes and to avoid semantic ambiguities when numerical entries have numerical superscripts (for example, "51" could be read as the product 51×51). Authors of manuscripts intended for *Novitates* and the *Bulletin* should not use embedded table footnotes.

For *Anthropological Papers* authors, table footnotes may be embedded and they take the normal 1, 2, 3 . . . style, unless a majority of the tables in a monograph will be numerical data only.

**TABLE HEADINGS.** Column and horizontal row

headings should be brief and clear; normally they should NOT be italicized, unless they are names of genera or species. Boldface should not be used in headings except under exceptional circumstances; consult with the Managing Editor.

### SIZING TABLES

Considering the dimensions of a page, keep in mind the fact that a long narrow table is often preferable to a short, wide one. Row headings can be continued on a subsequent page.

The number of columns across the page is limited by the width of the page. Columns (specifically, the widest line in the table) *must* fit across the printed publication in one of the following ways: (1) across a single two-column page, (2) broadside (page turned sideways because table is too wide to fit straight up), or (3) across two facing pages.

If necessary, the printer may resort to a smaller typeface in order to fit the table to the width of the page, but type may not be infinitesimally small. Tables that are too large will be included as supplementary materials available on the web; see web options, below (this section).

**SQUEEZING TABLES INTO A NARROWER SPACE.** If the width of a table is likely to exceed page width, the author should try a different format. The following methods should be considered (there may be others depending on the nature of the particular table):

1. Remove redundant information. Authors frequently submit tables with a variety of redundancies, such as a column-head word reused in each row.

2. Combine columns. Can the data in adjacent columns be combined without loss of clarity? For example, separate columns for sample mean, observed range, and sample size could be combined into one column with statistics separated by punctuation (e.g., parentheses).

2. Eliminate unnecessary columns, especially those with little or no data. Scanty or nonessential data might be explained in a table footnote or in the text.

3. Transpose table columns and rows. However, all tables with similar content must present data in a consistent fashion, so if one table of taxon measurement data has transposed columns and rows, all must follow the same template.

**WEB OPTIONS.** Scientific Publications can now easily archive supplementary data for the *Bulletin*, the *Novitates*, and *Anthropological Papers* on the Library's D-space with permanent cyberspace locators (dois). Tables more than a couple of pages in length or that have too many columns to reasonably fit on a printed page will not be printed; such tables will be assigned a doi and posted on the Library's D-space.

Large data matrices—any larger than two printed pages—should be deposited in public archives such as GenBank, MorphoBank, TreeBase, Dryad, etc., prior to manuscript submission. (See [Submission Guidelines](#).) Likewise, new material ("addenda") and significant corrections ("corrigenda") relating to an issue number already published may be made available as supplementary data with a doi posted on D-space.

## Section 6

# Illustrations

High-quality illustrations have long been a primary objective in the three AMNH scientific series. Contributing authors should submit professionally prepared illustration e-files. Ideally, these should be submitted either as layered Photoshop-readable files (.tif or .psd) or as native Illustrator (.ai or .eps) files (see [File types and size](#)).

### ECONOMICAL ILLUSTRATIONS

Illustrations occupy valuable page space and thus should be kept to a minimum. Each one should bear relevance to the text. Resist the temptation to include repetitious photographs simply because they are “good shots” or to create needless graphics—so-called chart junk (see fig. 1).

First-time authors might find Edward Tufte’s books helpful for conceptualizing the graphical summary of scientific information: *The Visual Display of Quantitative Information* (1983), *Envisioning Information* (1990), and *Visual Explanations* (1997).

**PLACEMENT.** Normally, images are placed near the first place where they are cited in the text. Authors may indicate alternative placements for figures, if the first-citation location is not suitable, by noting the figure number in the e-file of the manuscript at the proper location, enclosing the figure number in a double set of square brackets, e.g., [[FIG. 23 HERE]].

**GROUPING.** Related figures should be grouped together into a unit (herein called a *plate* to distinguish it from the individual subimages) whenever possible for the most economical presentation. Uninformative black or white space within the rectangular area that the illustrations occupy should be kept to a minimum. (Occasionally, however, an odd number of figures must be grouped together into an arrangement that makes it virtually impossible to avoid an area of blank space.)

Position internal identifiers in the upper left-hand corner of each subimage of a drawing or photograph. Numbers (or letters) can be black or white on the same plate depending on what contrasts best with the background of the figure.

Subimage identifiers may be: either (1) capital

letters (fig. 2, opposite page) or (2) sequential figure numbers (fig. 3, page 28). Whether option (1) or (2) is adopted, the main reference to each subimage in the legend/caption should highlight its label number or letter in boldface.

The final size of the illustration should be taken into account when selecting the size of these

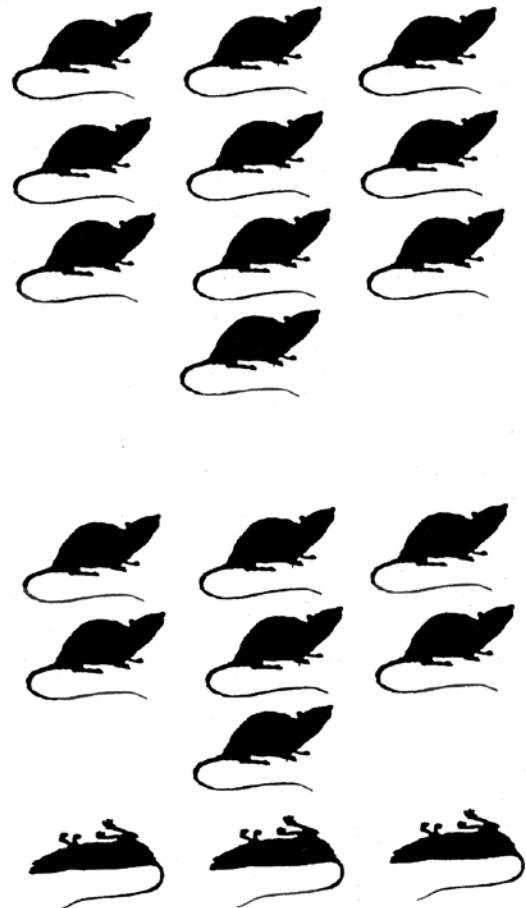


Fig. 1. A sterling example of “chart junk,” unnecessary graphics when a few words of text will do. In place of this chart, a statement in the text “30% of experimental subjects died” is preferable. (Reprinted by permission of the artist; name withheld by request)

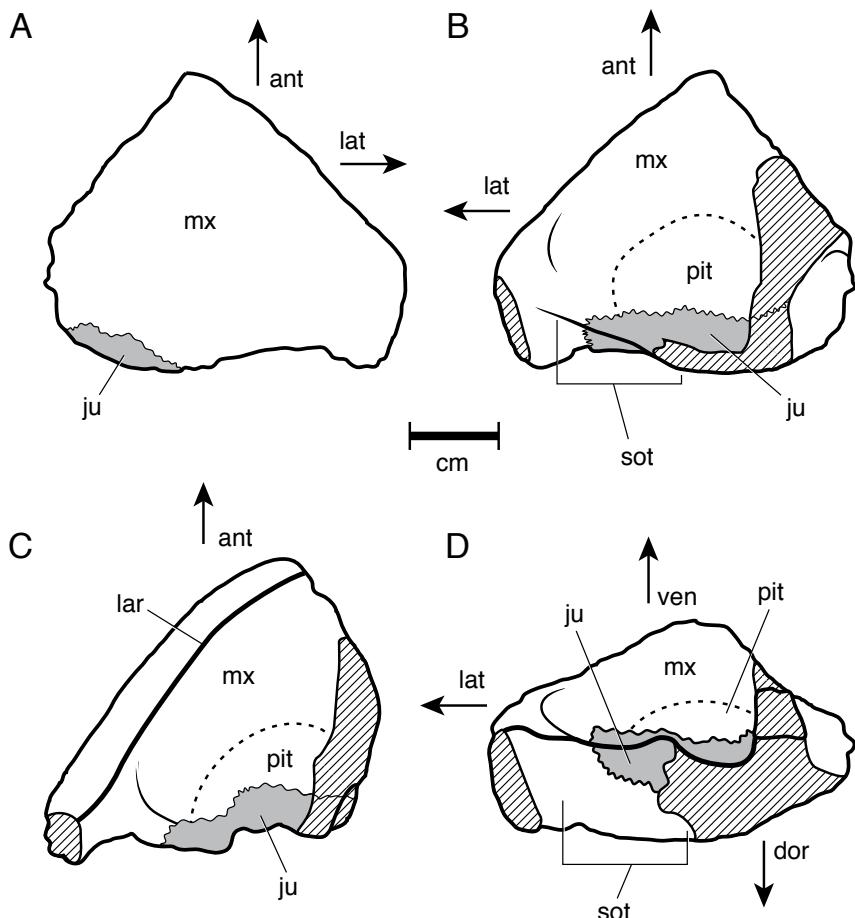


Fig. 2. Capital letters identify subimages on a single figure; the figure number does not need to appear on the figure itself, though it should appear in the image's respective caption. (*Novitates* 3655 [2009]: fig. 12)

numbers. They should be prominent enough to clearly identify the figure but not so bold that they “leap off the page” at the reader. A good final size for capital letters is 10 or 12 pt. Type should not be outlined (in Illustrator and similar software), as the size cannot be edited if necessary.

Illustration legends should be adequately informative but concise. Long captions (e.g., any exceeding one-half of a manuscript page) can cause problems in page makeup. Long descriptions should be incorporated into the running text or into tables placed near the figure.

#### FILE TYPES AND SIZE

All artwork must be readable by Adobe

Illustrator or Photoshop. Note that CorelDraw files can often be exported as Illustrator (.ai) files. At this time Scientific Publications cannot accept Freehand (.fh) illustrations. However, .pdf files of cladograms exported directly from WinClada are normally readable by Illustrator (consult with the Managing Editor).

#### ILLUSTRATOR (ai. and .eps)

Because native Illustrator files are vector based, normally resolution is not an issue, but one should scale lines and effects so they will not be too thick or too thin when printed at their “right” size. Usually a cladogram line should be 1 pt, and should not be less than 0.75 pt. Care should also be

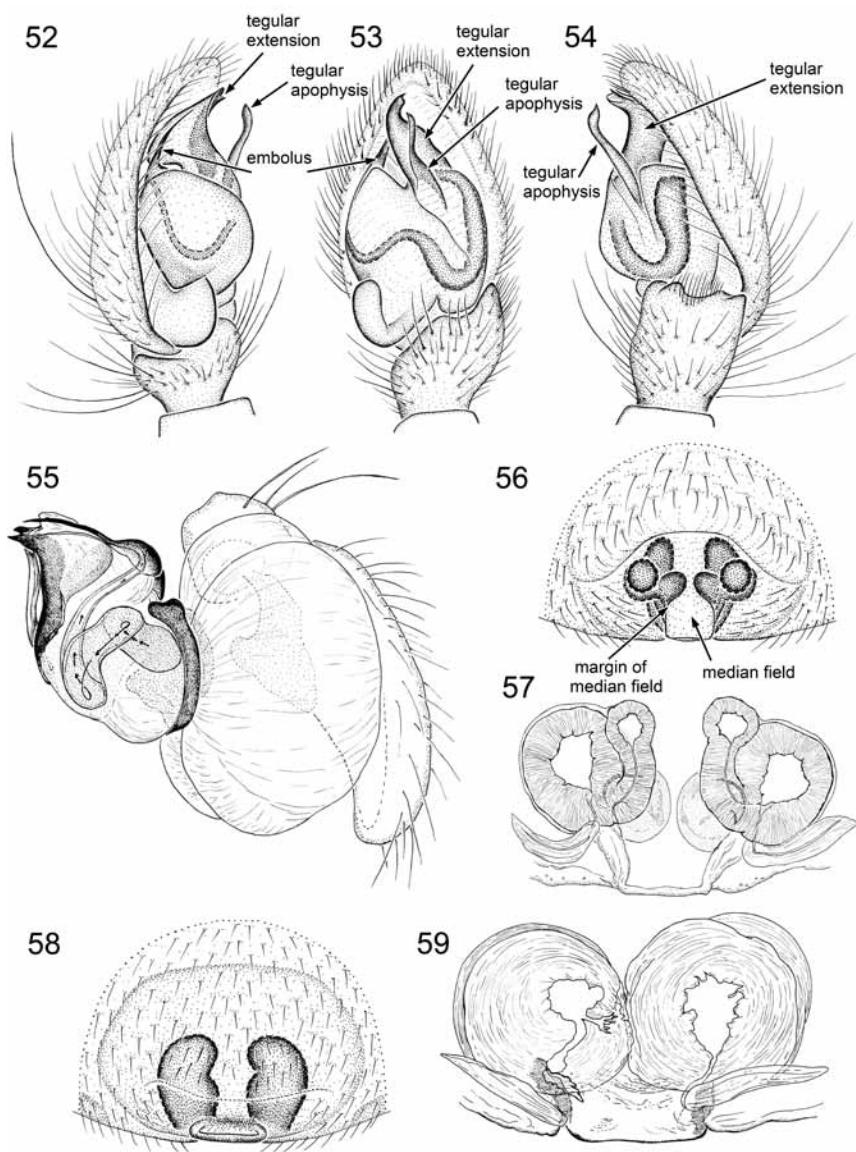


Fig. 3. Figure numbers identify subimages on this plate. The “caption and legend” that accompany this plate should incorporate descriptions of “Figures 52–59.” (*Novitates* 3625 [2008]: figs. 52–59)

taken when a photographic image (.tif) is dropped into Illustrator; that image must have appropriate resolution to print without pixelation.

#### LINE DRAWINGS

Line drawings not created in a vector-based program such as Illustrator need to be 1200 ppi for

crisp reproduction (see [Photoshop](#), below). Images should be sized for appropriate print size: There is no need to have large line drawings if there is no internal detail (but all drawings, whatever the size, need to be of high resolution, 1200 ppi).

Use scale bars for comparisons across figures and subimages rather than supersizing a simple drawing.

### PHOTOSHOP (.tif and .psd)

Because Photoshop files are pixel based, checking resolution and size is critical. Color and gray scale (halftone) photographs must be at least 300 pixels per inch (ppi), and line drawings must be 1200 ppi for cl.

Here's a simple way to check: In Photoshop's drop-down menu, go to Image>Image Size. This opens a panel of Pixel Dimensions, Document Size, and Resolution (see fig. 4).

An image's resolution may be appropriate, but the "Document Size" indicates that the image will print at postage-stamp size. DO NOT "Resample Image"! This will NOT solve the problem (fig. 5).

A resampled low-resolution image cannot be printed (unless it is supposed to be the size of a postage stamp), and will need to be remade. Usually, images downloaded from the Internet do not have sufficient resolution for printing.

A rule of thumb: If a photograph were to be printed at maximum size ( $5.75'' \times 8''$ ) at *minimum* resolution, it should be at least  $1725 \times 2400$  pixels, yielding a file size of roughly 11.8 MB. But *ideally* photographic images should be 600 ppi.

### THE GUTENBERG RULE

NO PRINTER can improve the quality of any image you submit. If your image is poor, that's exactly how it will print—it's better to remake your image.



Fig. 4. The Image Size panel of Photoshop. Although the resolution is sufficient, note that the image itself is only about an inch on a side, too small to print.

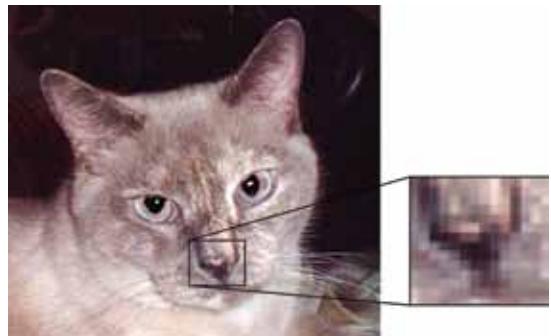


Fig. 5. When printed at normal size (e.g., 3–4 inches on a side), the one-inch image will become blotchy and pixelated, as seen at right. (Photograph by M. Knight)

### RGB OR CMYK

Because color work must be paid for by authors it is their responsibility to provide a high-quality color print for each color image to be printed, what we call a *color match* because it gives the printers something to match with their system. The file type may be RGB or CMYK, but note that the printer will convert any RGB files to CMYK, which may result in a loss in the intensity of reds, greens, and blues in particular in the printed version (some degree of these colors are replaced by proportional degrees of black).

### SIZING ARTWORK

Even before figures are drawn or photographs are labeled, the final printed size of the illustrations should be considered. Artwork should be conceived (and printed) at its "right size"—though one must bear in mind the maximum dimensions of art and legend together ( $5.75'' \times 8''$ ). At right size, illustrations convey the greatest amount of information and because the type is neither too small nor too large readers can focus on comprehending that graphic knowledge without obstacles.

The maximum width of art on a page is 5.75 inches. The maximum depth is 8 inches *with caption included* (note that the term *caption* is used in this manual to apply to both caption and legend). In exceptional circumstances SciPubs may consider an occasional bleed (i.e., running outside width and depth margins), if it is needed to convey scientific information. Please consult with the Managing Editor.

The maximum width of art in a column is 2.75 inches. Maximum depth is 8 inches *with caption included*.

**CAPTION CALCULUS.** Calculating caption (legend) depth: If you are preparing artwork for a full page, you will probably want to know how much space its caption will take so you can properly right-size the artwork. If you are working with an artist, you may alert him/her that the specs are 9 on 10 Times Roman at 2.75, 5.75, or 8 inches in width. If you are, sadly, bereft of an artist, tables 1–3 provide a rough but handy guide to caption depth (in mm).

## LABELS

Once all the artwork for an article has been sized to fit on the page with its caption, labels can

be added or (if they are already on the layered artwork) sized.

**LABEL FONTS.** Labels on artwork should be all in Arial or all in Helvetica; under certain circumstances, another sans serif font may be substituted; consult the Managing Editor.

Use capital letters for identifying components on a single plate, A, B, C . . . They are easier to distinguish from lowercase letters and thus can be in a smaller size (no more than 12 pt ideally).

For nonalphabetical labels (e.g., those that identify anatomical parts), either capitals or lowercase labels are acceptable, but every effort should be made to make them consistent throughout an entire work. (Exception: if lowercase letters are used, it is appropriate to use capitalized acronyms.)

TABLE 1  
Illustrations 2.76"–5.75" width

Depth of the first line of text is higher than successive lines because there is white space between the art and the legend (about 0.16 inches / 4 mm). Ideally, no caption should have a depth greater than six lines (about 600 characters), if possible; authors should redirect material to the body of the text.

Characters	Lines	Depth inches (mm)	Maximum Height of Art in inches
≤ 95	1	0.28 (7.175)	7.72
96–195	2	0.42 (10.703)	7.58
196–295	3	0.56 (14.231)	7.44
296–395	4	0.70 (17.759)	7.30
396–495	5	0.84 (21.287)	7.16
496–595	6	1.00 (24.8148)	7.02

TABLE 2  
Illustrations with a maximum 2.75" width

Characters	Lines	Depth inches (mm)	Maximum Height of Art in inches
≤ 50	1	0.28 (7.175)	7.72
51–100	2	0.42 (10.703)	7.58
101–150	3	0.56 (14.231)	7.44
151–200	4	0.70 (17.759)	7.30
201–250	5	0.84 (21.287)	7.16
251–300	6	1.00 (24.8148)	7.02

TABLE 3  
**Illustrations up to 8.0" width**

For artwork that must be placed lengthwise on the page so the legend is perpendicular to the top of the page, the width is 8 inches.

Characters	Lines	Depth inches (mm)	Maximum Height of Art in inches
≤ 140	1	0.28 (7.175)	5.47
141–290	2	0.42 (10.703)	5.33
291–440	3	0.56 (14.231)	5.19
441–590	4	0.70 (17.759)	5.05
591–740	5	0.84 (21.287)	4.95
741–890	6	1.00 (24.8148)	4.75

**LABEL STYLE.** Regular type is preferred, except as necessary. Italics should not appear for decorative purposes; do not use italics on labels unless the label is italicized in the text. Exception: italics are properly used for the names of bodies of water on maps, because it distinguishes them at a glance from land areas.

Labels may be regular or boldface, depending on the “weight” of the art on which it is placed. That is, if one illustration needs the weight of boldface for clarity, then that illustration may dictate that all the illustrations for the article should likewise have boldface labels. On the other hand, it may be better to use a regular style and add minimal drop shadow to the lone illustration that ostensibly “needs” boldface.

An author should always keep in mind that illustrations are all about conveying information *visually*, and thus art should take preeminence over the words of an illustration. Boldface type can distract from the scientific content of the illustration, and if so, regular style should be used or perhaps the labels should be reduced in size (normal minimum size is 8 pt; see Label size, next topic) or in number.

**LABEL SIZE.** Some consideration must be given to the final size of the illustrations before they are labeled. Labels should normally be no less than 8 pt and no more than 12 pt. The smallest acceptable size is 6 pt (which is often necessary when numbers are used on cladograms). All illustrations for a single work should be planned in advance so that the labels are identical in size and font.

If the labels run into each other at a legible size, it may be necessary to remove some of them or reconceptualize the art—art is not a substitute for

text. Alternatively, some illustrations are necessarily label heavy, e.g., cladograms. If so much textual information is included that labels are crowded and type falls below standard size, a foldout may be the solution, though the cost for this is at the expense of the author. If a foldout is not an option, authors should reconceptualize such illustrations (e.g., into smaller parts) or they will need to place their oversize work as a supplement to the publication on the web (i.e., the illustrations in question will not appear in print, but the doi to the file or files will be published in the body of the work.)

Labels of the same “level” of information should be the same size. For example, for a series of plates with subimages, all alphabetical labels (A, B, C...) might be 12 pt, while anatomical parts might be 10 pt, and the scale bar (e.g., 10 mm) might be 8 pt.

**LABEL PLACEMENT.** Alphabetical (A, B, C...) and numerical labels should be placed in the upper left-hand corner of their respective subimages.

**IMAGE TITLES.** Authors should avoid unnecessary titles on the illustrations themselves. Such titles will be deleted if they repeat information in the figure legends.

**IMAGE BORDERS.** Usually borders are not necessary. However, sometimes maps have a cleaner look with a simple 1 pt black border. Larger than this detracts from the image within the border.

**MAGNIFICATIONS AND SCALE BARS.** Scale bars, with the measurement on the art, are preferable to magnifications. This avoids the problem of altering magnifications specified in figure legends if the illustration is reduced to a size other than that originally planned. Units of measurement on scale bars should have one letter space between the number and the unit, e.g., 1 mm.

### CHARTS AND GRAPHS

Avoid chart junk, unnecessary labels, data, or decorations. Icons on charts and graphs should be simple and tasteful (e.g., circles, triangles, squares, and the like) so as not to distract from the scientific content.

The less “junk” on a chart or graph the easier it is for readers to grasp the data. For example, avoid labeling every tick on the x- or y-axis if the increments are readily apparent with fewer labels. Delete unnecessary panels or labels—but do provide appropriate level of detail on those items that remain.

Use standardized icons for the discipline. For example, for geology, we prefer USGS symbols (FGDC Digital Cartographic Standard for Geologic Map Symbolization, available at <http://pubs.usgs.gov/tm/2006/11A02/>).

### [gov/tm/2006/11A02/](http://pubs.usgs.gov/tm/2006/11A02/).

If icons are used in an illustration, e.g., on a map, include a key of the symbols.

### CLADOGRAMS

Like other illustrations, cladograms need to fit handily on the printed page (see [Sizing artwork](#)), and labels cannot be excessively small for the printed document (see [Label size](#)). Cladograms may need to be broken into smaller components that run over several pages or they may be better printed on a foldout. Authors are responsible for paying foldout charges; note that both sides of foldouts are printable. Consult with the Editor for current options and price estimates if a foldout is under consideration.

## Section 7 References

Council of Science Editors. 2006. The CSE manual for authors, editors, and publishers, 7th ed. New York: Rockefeller University Press.

Jones, Brenda. 1984. Style manual: scientific serial publications. American Museum of Natural History.

Skillins, M. E., R. M. Gay, and other authorities. 1974. Words into type, 3rd ed. Englewood Cliffs, NJ: Prentice-Hall.

University of Chicago Press. 2010. The Chicago manual of style, 16th ed. Chicago: University of Chicago Press.

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