

GUIDE TO MANUSCRIPT PREPARATION

FOR THE

JOURNAL OF VERTEBRATE PALEONTOLOGY

Adherence to the Guide to Manuscript Preparation provided here is mandatory. Do not rely on older issues of the Journal of Vertebrate Paleontology (JVP) as a style guide.

All manuscripts must be submitted electronically through the ManuscriptCentral/ScholarOne manuscripts submission site at <https://mc.manuscriptcentral.com/jvp>. For assistance with this process, please use the help tools provided through links at the web site.

Note also that strict adherence to the file-format, resolution, and size requirements for figures is absolutely essential for final acceptance to JVP.

Note also that JVP has stricter requirements for data sharing and open access to data than those posted on the journal web page, which are those imposed by the publishers, Taylor & Francis, on all their journals.

AIMS AND SCOPE

The Journal of Vertebrate Paleontology publishes original contributions on all aspects of vertebrate paleobiology, including vertebrate origins, evolution, functional morphology, taxonomy, biostratigraphy, phylogenetics, paleoecology, paleobiogeography, and paleoanthropology. JVP publishes high quality peer-reviewed original articles, and occasional reviews and interdisciplinary papers. It is international in scope, and emphasizes both specimen- and field-based based research and the use of high-quality illustrations. Priority is given to articles dealing with topics of broad interest to the entire vertebrate paleontology community and to high-impact specialist studies. Articles dealing with narrower topics, including notes on taxonomic name changes (unless these deal with errors published in JVP), preliminary site reports, and documentation of new specimens of well-known taxa, are afforded lower priority.

MANUSCRIPTS

Manuscript Categories

The Journal publishes two categories of papers: Articles and Short Communications. Authors must indicate during submission in which category they wish their manuscript to be considered.

The JVP no longer publishes book reviews. Book reviews should be submitted to the Society of Vertebrate Paleontology Newsletter.

Monographs can be considered for publication as supplements to the Journal; consult the Monographs Editor prior to submission.

Articles—Manuscripts intended as Articles (papers of 6 or more printed pages in the Journal) must not exceed 100 pages of double-spaced typescript including references, tables, and appendices at US Letter (21.5 by 28.0 cm; 8.5 by 11.0 in) or A4 (21.0 by 29.7 cm) page size. Longer manuscripts, or ones with an

unusually large number of figures or tables, may be considered, but the Senior Editors must be consulted prior to submission. The manuscript should not exceed a ratio of approximately 1:3 between the number of figures plus tables and the number of typescript pages exclusive of references and captions. Submission of a color figure suitable for use on the cover of the journal is encouraged, but use of a submitted figure cannot be guaranteed.

Short Communications—Shorter manuscripts, usually not more than about 12–13 manuscript pages (approximately 4000–4200 words) long and with two to three small figures, are published as Short Communications. Short Communications do not have a published abstract, though an abstract and a plain-language summary are required as part of the on-line submission process.

Manuscript Requirements

The main text document for all submissions should have its contents arranged in the following order: title page, abstract (no abstract for Short Communications), main text, acknowledgments, literature cited, and figure captions. A short checklist:

- All typescript pages, including references, figure captions, tables, and appendices, must be double-spaced.
- All pages must be numbered. Leave at least 25 mm (1 in) margins on all sides of each page.
- Do not use two or more spaces after periods or colons anywhere in the manuscript.
- Type must be 12-point font size, Times New Roman is recommended.
- The right margin must not be justified. This combination of margins, double spacing and type size should yield about 26 lines per page.

Manuscripts must conform to the mandatory provisions of the Fourth Edition (1999) of the International Code of Zoological Nomenclature (ICZN, available on-line at iczn.org). New taxon names must be registered in ZooBank (ZooBank.org). Instructions on how to do this **will be provided with the proofs**. Sections on systematic paleontology should include, where appropriate and in that order, synonymy, holotype or type species, hypodigm, etymology, occurrence or distribution, diagnosis, description, and discussion or remarks. Each of these sections should be started as a tertiary heading (see below). All new taxa must be so designated (e.g., gen. et sp. nov.) and accompanied by an etymology including intended gender of the name and a concise differential diagnosis, written in telegraphic style and specifying the apomorphies of the taxon if known. Taxon definitions (node-, stem-, or apomorphy-based) are an accepted but not mandatory part of the Systematic Paleontology section.

Specific reference must be made to every illustration in the main text. Figures should be numbered in the order they are cited. Cite figure number (e.g., Fig. 3A-C) rather than specimen number to support descriptive statements. The specimen number must be included in the figure caption. All specimens used in diagnostic descriptions, in illustrations, or in taxonomic discussions must be properly curated and deposited in a recognized public or private, non-profit institution. All material mentioned in a paper must fulfill the criteria set out within the Society's Bylaw on Ethics (available at <http://vertpaleo.org/the-Society/Governance-Documents/Bylaw-on-Ethics-Statement.aspx>).

If a manuscript includes a phylogenetic analysis, special requirements apply. These can be found [here](#). In addition, for the sake of transparency and to enhance collaboration, we also strongly recommend uploading

the dataset, character descriptions and accompanying images to a suitable online repository (MorphoBank, <http://www.morphobank.org>) is recommended), although this is not a mandatory requirement for publication. Similarly, data sets supporting statistical analyses should also be uploaded as Supplementary Data for the benefit of reviewers, and readers. Such supplementary files must be submitted and available to the reviewers along with the main manuscript files. If you are not sure about the disposition of particular data sets, contact the Senior Editors about whether or not they will be published in JVP or placed on the web page.

All raw data necessary for validating anatomical descriptions must be included as supplementary material, uploaded to a freely publicly accessible data repository whose appropriateness will be determined at the discretion of the editors. These data include but are not limited to raw (i.e., unsegmented) x-ray or optical image stacks. Authors are permitted to crop tomographic slices to the reported feature(s) of interest provided they include the correct scaling/pixel size for the newly cropped image. Examples include providing raw CT scans of endocranial, nasal, or inner ear cavities rather than simply providing segmented 3D models. Statements to the effect of “Data are available upon request from the authors” are not permitted in JVP.

Exceptions to this policy can be made in cases of copyright restrictions imposed by museums, human subjects data, or other sensitive data (such as those involving endangered species), at the discretion of the editors.

Manuscript Submission

All manuscripts must be submitted via the Journal’s on-line submission site at ScholarOne Manuscripts: <https://mc.manuscriptcentral.com/jvp>. Submit the main document as one file (includes title page, body of manuscript, literature cited, and figure captions). Submit the main text, as well as each table, appendix, or supplementary data file as a separate MS Word or RTF file. (See [here](#) for instructions on formatting 3D images as supplementary files.) Provide an abstract in the main document file for Articles, and provide both abstract and plain-language summary in the requested place on the submission web site for all manuscripts. Submit each figure as a separate file. Figures should be LZW compressed, gray-scale or RGB if color publication is intended (avoid CMYK files at this stage), 600 dpi TIFF files (see detailed guidelines [here](#)). The submission web site will create pdf versions of most figure files, and a combined pdf file of text and figures for review purposes only. Upon completion of the submission process, an automated email acknowledgment will be sent to the corresponding author and to all co-authors whose email addresses have been entered correctly, and further communication concerning the manuscript will be via email.

Peer Review and Decision

Manuscripts are processed by a Senior Editor and assigned to a member of the Editorial Board who manages the review process. Possible decisions include Accept, Minor Revision, Moderate Revision, Major Revision and Reject. A rejected manuscript is normally not eligible for revision and resubmission to JVP. A manuscript in need of Major Revision or Moderate Revision may be resubmitted, but only after fundamental changes are made, which may include new data collection, new analysis, extensive changes to text, and new or revised figures. In the case of Major Revision or Moderate Revision, the manuscript will normally undergo a full review process upon resubmission and there is no guarantee of eventual acceptance. After Minor Revision, the Editor may or may not decide to consult with one or more of the original referees. After decisions of Minor Revision, Moderate Revision, and Major Revision, there is a time limit for resubmission, after which a manuscript will be considered withdrawn. Consult the decision letter from the Editor for details of necessary

changes. The revision deadline (date) can be found on the manuscript page on the website. If your revision is expected to exceed this date, request an extension to the deadline from your editor.

Publication Schedule

Manuscripts are normally published on line in the order in which a letter of acceptance is issued by the Senior Editors. After a manuscript has been accepted, consult a Managing Editor for concerns about publication schedule and corrections in proof.

COPYRIGHT, PDF FILES, PAGE CHARGES, AND REPRINTS

Copyright

The author(s) must declare the inclusion of any material in the manuscript that has been published or submitted for publication elsewhere, and must obtain permission from the JVP Senior Editors and from the copyright holder for including this material in the manuscript. With this exception, the author(s) must declare that they hold exclusive copyright in the material, including text, figures, and parts of figures, that the material has not been published and is not being considered for publication elsewhere, and that, if it is accepted for publication in JVP, it will not be submitted for publication elsewhere.

The author(s) is (are) required to agree to the copyright transfer statement during the submission process, in which case no separate forms are required, or else to complete and sign the Copyright Transfer Form available on the journal web site:

(<http://vertpaleo.org/Publications/copyright-permissions-policy/JVPcopyrighttransfer.aspx>),

assigning exclusive copyright in the published material to the Society of Vertebrate Paleontology. The signed form(s) may be scanned and uploaded during the submission process (preferred), or sent by mail to a Senior Editor. The signing author must obtain consent of the co-authors to sign on their behalf, or else all authors must sign the form. Failure to submit the signed form will result in delays in publication or rejection of the manuscript. Special rules apply to employees of certain national governments — use the appropriate statement of agreement and/or copyright form. Consult a Managing Editor for details if necessary.

The following rights are retained by the author: the right to use, without fee, all or part of the article in print or electronic form for personal, non-profit, educational and research purposes, giving reference to the original place of publication and the copyright held by the Society of Vertebrate Paleontology. In the case of classroom copies, copyright must be attributed to The Society of Vertebrate Paleontology on each copy.

PDF Files

The Journal provides the corresponding author with a high-quality pdf file of her/his article a short time after online publication. The corresponding author may share this pdf file with the other authors. Please note that the Society of Vertebrate Paleontology retains copyright to the article as published; as set out above, authors are required to transfer copyright prior to publication of their article.

SVP policy on distribution of the author's pdf file gives the following rights to the author:

- (1) Subject to payment of the required, one-time, non-refundable fee, the right to post the published pdf file as provided by JVP on a single, author-controlled, private or institutional web site for public access.
- (2) Without fee payment, the right to include on the author's personal or institutional Web page (a) a link to the JVP web site

where members and subscribers may download a pdf copy of the article; (b) a link whereby interested persons may email the author and request a pdf copy for their own personal use but not for re-distribution.

- (3) Without fee payment, the right to send a copy of the article in pdf form to persons on their reprint mailing list, and to persons who request a copy as per (1) above, provided that the pdf is accompanied by the clear statement that:
- (4) the Society of Vertebrate Paleontology is the copyright holder of the article and pdf; (b) the pdf is provided to the recipient for her/his personal use only and is not to be redistributed or disseminated, except for educational use within a school, college, or university setting, and then only if accompanied by a clear statement of these conditions. Such an author-distributed version must be identical to the final published version.
- (5) Without fee payment, the right to include on the author's personal or institutional or other non-profit Web site the manuscript pre-print (i.e., pre-reviewing) or post-print (i.e., final draft post-reviewing). JVP is Romeo Green; for detailed regulations see the Sherpa/Romeo website: <http://www.sherpa.ac.uk/romeo/>

Page Charges

There are no mandatory page charges for publishing in JVP. However, there may be charges for publishing color illustrations in the print journal, or for making extensive changes to proofs.

Consult the SVP Business Office for questions regarding charges and fees.

Reprint Purchase

The corresponding author receives 50 free printed reprints in addition to the author's pdf file, both of which may be shared with the other authors. Restrictions on use of the pdf file are as outlined above. Authors are given the opportunity to purchase additional hard-copy reprints when corrected proofs are returned. Direct queries about reprint orders to the address on the reprint order form. Reprint costs depend on the length of the paper and on whether there are color illustrations. Under certain circumstances it may be possible to order reprints after publication of an article, though the quality of such reprints may not equal that of those produced during printing of the issue. Please note that the Society of Vertebrate Paleontology retains copyright of the article represented by the reprint; authors are required to sign the copyright transfer form prior to publication.

FORMATTING YOUR MANUSCRIPT

A guide to some issues of style is provided [here](#)

USE THE FOLLOWING EXAMPLE AS A GUIDE BUT SEE ALSO [HERE](#):

TITLE PAGE

Osteology and relationships of the Early Permian pelycosaur *Sphenacodon ferox* Marsh, 1878

MARTHA T. THOMPSON^{*1} and T. JOHN SMITH²

¹Quaternary Sciences Program, and Department of Geology, Northern Arizona University, Flagstaff, Arizona 86011 U.S.A., doodaa@Arizona.com;

²University of Toronto in Mississauga, 3359 Mississauga Road, Mississauga, Ontario, L5L 1C6, Canada,
jqp@uknow.ca

- For Short Communication—addresses as for Articles but run together and flush left, following authors' names: MARTHA T. THOMPSON,¹ and T. JOHN SMITH²; ¹Quaternary Sciences Program and Department of Geology, Northern Arizona University, Flagstaff, Arizona 86011 U.S.A., doodaa@arizona.com; ²University of Toronto in Mississauga, 3359 Mississauga Road, Mississauga, Ontario, L5L 1C6, Canada, jqp@uknow.ca

RH: THOMPSON AND JONES—*OREAMNOS* OF NORTH AMERICA

ABSTRACT

ABSTRACT—An informative abstract is required for Articles. Short Communications do not have an abstract in the main text file, but an abstract must be entered separately during web submission because it is used to help reviewers decide whether they are willing to review the manuscript. The abstract for Articles must be formatted as in this example and must begin on a new page. It should summarize the main facts, ideas, and conclusions of the Article, and not simply list the topics discussed, but it **must not exceed 250 words**. Include all new taxonomic names for referencing purposes. Abbreviations that are not listed in the Details of Style for Text (provided [here](#)) should be avoided. Literature citations are normally not allowed in the abstract.

ALTERNATE-LANGUAGE SUMMARY

A non-English-language summary may be added to the standard abstract in exceptional cases. Permission to have such a category comes from the Senior Editor. The summary should be an exact translation of the English abstract, placed after the Abstract and before the beginning of the text.

Please note that the Journal of Vertebrate Paleontology does not employ Key Words.

HEADINGS

There are three types of headings (or headers) as per the following examples.

PRIMARY HEADING

Text or secondary heading follows after a blank line. Do not write the primary heading in small caps. A blank line precedes the primary heading.

The Systematic Paleontology section requires some specific formatting. See [here](#) for examples.

Secondary Heading

Text, if any, follows on the next line, indented. A blank line precedes the secondary heading. Use Title Capitalization (Capitalize the Important Words), not sentence capitalization. Do not cite figures or tables within headings.

Tertiary Heading—Text follows here after an em dash, without spaces. The em dash should not be bold. The heading should be indented, but there is no blank line preceding a tertiary heading. Use Title Capitalization (Capitalize the Important Words). If you are unable to generate an em dash, use two hyphens.

Do not cite figures, catalogue numbers, tables, or anatomical abbreviations within a heading or immediately following the em dash.

All paragraphs in running text should be indented.

Abbreviations

There can be separate ‘Institutional Abbreviations’ and ‘Anatomical Abbreviations,’ each beginning with a tertiary heading. The list should be ordered alphabetically by abbreviation. Note that the abbreviation is in bold but the punctuation is not. Examples:

Institutional Abbreviations—**AMNH**, American Museum of Natural History, New York; **MCZ**, Museum of Comparative Zoology, Harvard University.

Anatomical Abbreviations—**a**, articular; **prz**, prezygapophysis; **z**, zygantrum.

List anatomical abbreviations either in a separate section as in this example, especially when captions are used in multiple figures, or else in the figure captions, but not in both places. If listing them in figure captions, include all abbreviations for a given figure within its caption; do not refer the reader to another caption.

ACKNOWLEDGMENTS

Note the spelling of this heading with no ‘E’ after the ‘G’. Avoid long and unnecessarily flowery acknowledgments. Use initials for all individuals being thanked, except to begin a sentence; avoid using titles such as Dr. or Prof.; use initials to distinguish among authors of the manuscript, and abbreviations for institutions listed in the manuscript text. Consider thanking the reviewers, including those remaining anonymous, and the Editor who handled the manuscript. Use active voice and concise language, as in this example: “I/We thank A. Able, B. Baker, and C. Charles for capable field assistance, and D. Delta for assisting EFG during a collection visit to the AMNH. Editor B. Careful and reviewers A. Positive and O. Negative made constructive suggestions for improvement of the manuscript. NSF grant 12345 to H.I.J. supported this research.”

LITERATURE CITED

An EndNote style file is available on the journal website.

General Rules

Double-space all entries; make first line flush left, then use hanging indent for remainder of citation:

Sues, H.-D., E. Frey, D. M. Martill, and D. M. Scott. 2002. *Irritator challengeri*, a spinosaurid (Dinosauria: Theropoda) from the Lower Cretaceous of Brazil. *Journal of Vertebrate Paleontology* 22:535–547.

Citation of References in Text, Basic (see [here](#) for alternatives)

(Smith et al., 1973)

Manuscript Submission and Acceptance

Submitted/accepted line in Roman type appears as the very last line of the article immediately after the Literature Cited (flush left):

Submitted August 12, 2006; revisions received Month DD, YYYY; accepted Month DD, YYYY. [dates left blank, to be completed by the editors]

Further examples and formatting specifics are provided [here](#)

PREPARING YOUR FIGURES

General Requirements

Figures must be submitted electronically. All figures must be fully compiled (a single file for each figure), and prepared for final publication size; neither the editor nor the publisher is responsible for compiling artwork. Print out each figure at its final size before submission to confirm size and quality of each figure and legibility of lettering. The author must indicate the final printed size of each figure (see below under Figure Captions). High-quality color illustrations can be printed, but the full cost for printing color illustrations must be borne by the author (see above under page charges).

Figures must all be cited in the text and they must be numbered in the order in which they are cited. The figure with its caption should be comprehensible without reference to the text; for example, identify the taxon in the caption even if all figures concern the same taxon. The parts of a composite figure are identified by capital letters in a sans (non-) serif font such as **Helvetica** or **Arial**. Do not write figure numbers, author names, or captions into your image files.

Submit only photos that are in focus and cropped to minimize uninformative space. Adjust contrast and gray levels to use the full range of grays. Do not leave excessive space between parts of a compound figure. The journal prefers white backgrounds, but black backgrounds are acceptable as long as the contrast between background and image is not excessive.

For best results in converting color photographs to grayscale for figures, use the Black and White Adjustment feature in Photoshop (Image/Adjustments/Black and White) if available. Otherwise set the image mode to Grayscale. Color figures should be submitted in RGB format. CMYK versions will be requested upon acceptance, only for those color illustrations intended to be printed.

The journal encourages the use of color figures where this enhances the clarity of the paper. Authors

wishing to use color figures in the print version of their articles may consult the Senior Editors regarding the need for color images and their number, for which there may be page charges (see above under that heading). However, the journal provides color versions of figures free of charge in the on-line (and pdf) version of an article, although these figures need to be prepared in such a way that the grayscale version of the same figure is of acceptable quality to appear in the print version of the journal. In particular, ensure that grayscale versions of color diagrams and maps clearly differentiate between legend entries.

Figure Size

The illustrations must be prepared so that the figure will fit precisely to full page width (182.033 mm or 7.166 in or 4300 pixels at 600 dpi), 2/3 of full page width (122 mm or 4.8 in or 2882 pixels), or column width (88.9 mm or 3.539 in or 2100 pixels), and must be no taller than maximum page height (233 mm or 9.17 in or 5504 pixels). Check the figure size in the Image Size utility of Photoshop or equivalent program. Never submit an oversized figure. Surrounding background space is included in figure size and must be minimized. Final size of lettering must be taken into consideration: letters should not be reduced to smaller than 6 points (1.6 mm) and should not be larger than 14 points (4 mm). Figure labels and lettering should be of consistent size, not varying within a figure and of similar size in every comparable figure. Therefore, plan ahead for the intended publication size. Do not use hairline widths in line art. Illustrations in which magnification is of consequence must include scale bars. Lengths of scale bars may be either included in the figure or given in the caption; listing of magnifications/reductions in the captions is unacceptable. Measurements must be in metric units. Stereo photographs should be created for reproduction at an interocular width of 65 mm at final size.

File Format and Resolution

Submit all image files at final resolution, which is 600 dpi (236 pixel/cm) or better. The online system will automatically generate a combined pdf file. Name each figure file with author and figure number (e.g., SmithetalFig2.tif).

Remove color depth from grayscale images (see above) unless intending to pay for color printing and compress TIFFs using LZW compression to reduce file size without loss of quality. Do not submit jpg files. It is highly recommended to keep lettering in a separate layer, if possible (this makes correction of spelling or other errors easier). The resulting file should be between 0.5 MB and 10 MB in size, depending on contents and dimensions of the figure.

Suggested Cover Art

The journal has a full-color cover format and we encourage authors to submit potential cover art with the post-review draft of their manuscript if they believe that their article is an appropriate candidate.

Such art can be either a photographic image of an outstanding specimen or locality, or an artist's rendering, or some combination. The art should be planned so that it will complement or enhance the cover of the journal, taking into account the main color scheme of the current covers. Editors have found that figures with plain white backgrounds do not work well, and authors are encouraged to substitute another complementary color for the background. Consult recent issues for examples.

The art should be submitted in landscape format, in color, 600 dpi, 168 mm (6.6 in, 3969 pixels) wide, and no more than 140 mm (5.5 in, 3307 pixels) tall. Final choice of Cover Article will be made by the editorial team led by the Senior Editors. Art that is not chosen for the cover of the journal could be made available as

supplementary online data at the author's discretion.

Figure Captions

These should begin with 'FIGURE' in all caps. There is a period after the figure number. Follow the example below.

FIGURE 5. Theropod skull bones in lateral view. **A**, dentary of *Allosaurus fragilis* (after Madsen, 1976); **B**, maxilla of same; **C**, dentary of *Carcharodontosaurus*, AMNH 1956. **Abbreviations:** **a**, articular; **af**, ascending facet; **rt**, recurved teeth. Scale bar equals 5 cm. [planned for column, 2/3 page width, page width]

- Note what is in bold (the punctuation is not).
- Follow the punctuation conventions exactly.
- Spell out 'equals.'
- Note that the items in the abbreviations are listed alphabetically based on the abbreviation.
- Include a notation in square brackets at the end of each caption specifying the planned printed size of the figure "[planned for column width] or [planned for 2/3 page width] or [planned for page width]." In case the figure contains a stereo pair and requires a different size than page or column width, mention this within the square brackets [stereo pair; print exact size].

TABLES

All tables must be cited in the text and the tables must be numbered in the order in which they are cited in the text, even if there is only one table (i.e., Table 1). Tables with their captions should be comprehensible without reference to the text. Foldouts are not acceptable, but tables and charts can be reproduced to cover facing pages. The heading/caption for the table should appear in the table file, above the table, not in a list at the end of the manuscript document. Use 'TABLE' (all caps), flush left, in the table heading, with a period after the table number, as in this example:

TABLE 2. This is the caption of the table.

If a table continues on a second page, begin the next page with "TABLE 1. (Continued)". Do not use vertical lines in any table. Use only those few, black, horizontal lines (usually three) found in recently published examples in JVP. Tables should not use bold face.

Never use spaces for aligning numbers or text; use of tabs for aligning columns is discouraged; instead, use the table function of the word processor. Double-space everything even if this means that a table extends to more than one manuscript page.

Submit each table as a separate file (labeled, e.g., 'Author.Table1.doc').

APPENDICES

Appendices appear following the literature cited in the print and pdf versions of an article, and should be less than e.g., four manuscript pages in length. More extensive information (e.g., faunal lists, character lists,

specimen lists, etc.) should be included as supplementary data (see below for details). Material for an appendix should be double-spaced and submitted as a separate file or files. An appendix or appendices (use Arabic numbers, beginning with 1) must be referred to in the text and/or in the tables/figures.

SUPPLEMENTAL DATA

Supplementary material (on-line only content) is supporting material that cannot be included in the printed version for reasons of space. JVP requires that all data files needed to replicate phylogenetic or statistical analyses published in the journal be made accessible to the reader. For phylogenetic analyses, see specific details below. This will enable others to replicate the research without the need to obtain such files directly from the author and will improve the accessibility and stewardship of information, as well as transparency.

Format the supplementary data file similarly to the published article, including title page with title, authors, and 'Journal of Vertebrate Paleontology,' and on following pages use text headings, figures, tables, and appendices as necessary. Each such file should be self-contained; if literature is cited within the supplementary data, the file must contain its own literature-cited section. The published article must not contain references that are cited only in the supplementary data. If a supplementary file contains tables, figures, or appendices, use Table S1, S2, Figure S1, S2, Appendix S1, etc., to prevent confusion with tables or figures in the main article. Each supplementary data file must be cited at the appropriate place in the text of the main manuscript (e.g., Supplementary Data 1) and be submitted as a separate file with the same name (e.g., 'supplementary_data_1.doc').

3D Models.

- Taylor & Francis Online can display 3D models inline within the article full-text. This is achieved using functionality provided by Sketchfab. Upon acceptance of your manuscript we will upload your 3D model(s) to the Taylor & Francis Sketchfab page. Upon online publication of your manuscript your 3D models will be rendered within the full-text HTML version of your article using an iframe provided by Sketchfab. 3D Models will also be openly available to view and share on the Sketchfab website, however users will not be able to download your model source files. Your 3D model will be published under the same copyright license as your manuscript.
- We accept the following 3D file formats: .obj, .ply.
- If supplying your model in .obj format please combine your files into a compressed archive file (ZIP, RAR, 7z) making sure to include all the necessary files: Your model file (.obj); your texture files (.jpg, .png, .tif, etc.); your material file (.mtl)
- Please also supply a flat image version of the 3D model which will be used for the printed (PDF) version of your article. The flat image should conform to our standard requirements for figures. As per regular figures please provide a title and caption for your model to be displayed online. You may include a maximum of three 3D models per manuscript.

DETAILS OF STYLE FOR TEXT

Journal-Specific Standards

- Use US spelling throughout.
- Use italics only for generic and specific names; also use italics for names of genes; these are the only uses of italics in the manuscript.
- Do not use underlining anywhere in the manuscript.
- Use single quotes for select wording and connotations: ‘big’ versus ‘small,’ ...it looks like an inverted ‘bell’ ...it seems to be a form of ‘bovid.’
- Use double quotes for actual quotations from the literature: ...as noted by Beard (1942:23) “the skull is twice as long as wide,” or for non-monophyletic taxa when used formally as part of a name, “Pelycosauria.”
- Always provide the page number for quotations: ...as noted by Beard (1942:23), “the skull is twice as long as wide,” There is no space between the colon and the page number or figure reference.
- Do not use a page number in a citation unless you are providing a quotation or unless there is ambiguity with various statements made by an author: The skull was stated as being large (Frank, 1928:35) but later indicated to be relatively small (Frank, 1928:52).
- Do not use the apostrophe with numbers or acronyms: use 1950s not 1950’s; NALMAs not NALMA’s.
- Use English standards for decimal notation: 1,583,400.21.
- Mammalian teeth: lower teeth in lower case, i1, c1, p1–2, dp2, Rm3; upper teeth in upper case, I1, C1, P1, LDP2, M2–3. This does not have to be stated in the Materials and Methods section.
- Use comparative anatomical terminology, not medical anatomical terminology, e.g., ‘dorsal’ rather than ‘superior.’
- Use metric throughout; include Imperial system in parentheses only if absolutely necessary. Abbreviations: m, meter; mm, millimeter; cm, centimeter; km, kilometer; μm , micron (not μ), micron or micrometer if spelled out; mi, mile; ft, feet; in, inch; gal, gallon; l, liter (spell out if without prefix: 3 ml and 1.2 g/ml, but 3 liters and 1.2 g/liter); ml, milliliter; g, gram (not gm); kg, kilogram; mg, milligram. Separate the unit from the numerical quantity by a space (e.g. 3.2 m, 0.5 g).
- If it is necessary to use mathematical symbols (+, -, =, ’), separate with spaces before and after (e.g., CI = 0.63).
- Hyphens, en dashes, and em dashes are used in different situations. The hyphen (-) is used between parts of a compound word, as in ‘re-interpretation’ or ‘the basal-most taxon.’ The en dash (–) is used for a range of values, as in ‘pp. 33–44,’ ‘Figs. 5–7,’ ‘Triassic–Jurassic,’ and ‘2–7 hemal arches.’ The em dash (—) is used in running headers and in tertiary headings, such as Diagnosis—Skull large; etc., to indicate missing values in tables, and to emphasize parenthetical phrases, as in ‘The skull—the only element preserved—is extremely wide.’ Do not separate any hyphen or dash from the words around it by spaces.
- Spell out ‘Figure’ when part of a sentence; abbreviate as ‘Fig.’ when citing a figure in parentheses.
- Do not cite anatomical abbreviations within the text (e.g., Fig. 3:pt); they should be in the figure caption or in Abbreviations instead.
- Accepted abbreviations are: aff.; ca.; cf.; e.g.; etc.; i.e.; no. for number (not #); Ma not Mya for megannum; M.A.; M.Sc.; Ph.D., P.O.; viz. vs. (or versus). In a sentence, e.g. and i.e. should be followed by commas, ca. and cf. should not, as in: Diversity includes ca. nine families, e.g., Mustelidae, Felidae, and Canidae.
- The ‘sister group’ (but ‘sister-group relationship’); ‘crown group’; ‘ingroup’; ‘outgroup’; ‘stem group’; ‘total group’; ‘anterodorsal’, ‘posteroventral’, etc. (rather than ‘antero-dorsal’); ‘basal-most’ or ‘anterior-most’ item; ‘cheek tooth’ not ‘cheektooth’; ‘co-ossified’, not ‘coossified’; ‘cross-section’ and ‘cross-sectional view’; ‘field work’ rather than ‘fieldwork’; ‘fishes’; ‘forelimb’ but ‘hind limb.’
- Latin phrases are not italicized: Examples: a priori; gen. et sp. nov.; incertae sedis; in vivo; in vitro; M. supracoracoideus anterior; nomen dubium; per se; sensu; sensu lato; sensu stricto.
- Avoid single-sentence paragraphs.
- When providing a numbered sequence of items in one sentence, preceded by a colon, do so in the following style:

“Explanations for the extinctions include: (1) climate; (2) temperature only (see Graham, 1956); and (3) predation by carnivorans.”

- When citing a reference within a parenthetical phrase, avoid nested brackets by using the following style when the phrase is not complicated: “...there are three centra (four according to Smith, 2006) in the...”
- When nested brackets are unavoidable, use outer parentheses and inner square brackets, i.e., (text [text]).

COMMON ERRORS TO AVOID

- Names of higher taxa are plural for purposes of grammar, as in “The Squamata *are* a taxon that includes snakes and lizards.” Contrast this to the following: “The taxon Squamata *includes* snakes and lizards.” Here, the subject of the sentence is the word ‘taxon,’ and the associated verb is singular.
- Terms such as ‘available’ and ‘valid’ have particular meanings under ICZN and should be avoided unless the specific meaning is intended.
- A comma separates the name of a taxonomic authority from the date of publication, and commas surround the date when a taxonomic authority is used in a sentence, as in, “...the species *Esox lucius* Linnaeus, 1758, is the...”
- Never cite a reference in brackets immediately after the name of a species unless you intend it as a taxonomic authority: “*Hensodon spinosus* (Hennig, 1907)” means that Hennig named this species in a different genus; see ICZN Article 51.
- A citation in brackets is acceptable after a generic or other higher taxonomic name because a taxonomic authority for a genus or higher taxon is never in brackets: contrast “...as in *Esox* Linnaeus, 1758” [authority] with “...as in *Esox* (Schmidt, 1875)” [ordinary citation].
- ‘Upper’ and ‘lower’ refer to rock or time-stratigraphic units; ‘late’ and ‘early’ refer to time. Use lower case when the age constraints are not known, generalizations are made, or when no formal subdivision exists. Use upper case only where mandated by current USGS recommendations—‘Early/Lower Cretaceous,’ ‘Middle Devonian’ (for periods/systems and epochs/series), but ‘late/upper Miocene,’ ‘middle Eocene,’ ‘early Paleozoic,’ ‘early/lower Albian,’ and ‘early/lower Tortonian’ (for stage/age/informal subdivision of stage/age/epoch/series).
- ‘Runs’ implies motion; use ‘extends,’ ‘connects,’ ‘projects’: ‘the lamina extends between the two...’.
- Avoid overuse of weak words such as ‘suggests,’ ‘appears,’ ‘appears to be,’ ‘probably,’ ‘may be.’ Use stronger words: ‘indicates,’ ‘implies,’ ‘shows,’ ‘illustrates,’ ‘proposes.’ If you know something to be true, then state it.
- ‘Show’ is often overused: ‘The occipital condyle shows damage...’; write instead ‘...the occipital condyle is damaged.’
- ‘Possess’ is often overused: ‘The femur possesses a protrusion...’; use the simpler ‘has’ if possible.
- Avoid words that incorrectly imply ‘time’ such as: ‘since,’ ‘while,’ ‘frequently’; instead use ‘because,’ ‘whereas,’ ‘many.’
- Don’t use ‘oval-shaped,’ ‘square-shaped,’ ‘triangular-shaped,’ etc., when ‘oval,’ ‘square,’ or ‘triangular’ is meant.
- Use ‘farther’ when the meaning involves physical distance, ‘further’ to indicate a greater degree or additional point.
- “The crest on the bone is well developed” (note the correct absence of the hyphen), but, “The bone has a well-developed crest” (hyphen required); “...the small, water-worn tooth...” but “the thin, laterally expanded arch.”
- Rocks do not ‘outcrop’; rocks do ‘crop out.’
- Capitalization with multiple proper names: ‘Mississippi River’ vs ‘Mississippi and Missouri rivers’; also counties, formations, oceans, states, etc.
- Comma and period inside closing quotation marks, as in “...is long and thin,” and “...is short and thick.” Colon and semicolon outside quotation marks: “...include the following ‘orders’: Rodentia and Lagomorpha...” and “...the so-called ‘palatine’; however, it...”
- ‘As’ implies a comparison: red as a rose. ‘Because’ implies the result of some action. “The skull is unknown as it is missing” should be “The skull is unknown because it is missing.”
- Use “the blade of the scapula...” or “the scapular blade...” rather than “the scapula’s blade...” because inanimate

objects cannot possess.

- ‘Which’ is used to describe, and its phrase is normally set off by commas, whereas ‘that’ defines a situation and is normally used without surrounding commas: “... the basiptyergoid process, which is small, is rugose...” versus “... the events that affected dinosaur communities were many ...”
- ‘However’ is often over-used. Avoid the common error of linking two independent/principal clauses by ‘however’ or ‘therefore’ without the required semicolon or period. “The pelvis is large, however, the ilium is small” [incorrect] should be “The pelvis is large; however, the ilium is small” or, “The pelvis is large. However, the ilium is small.”
- Avoid overuse of the semicolon. Consider if a colon or period would be better.

[Return to main text](#)

SYSTEMATIC PALEONTOLOGY EXAMPLES

There now are three different ways to provide your hierarchy: a traditional Linnean ranked hierarchy, an unranked classification with ranked lower levels, and an unranked monophyletic hierarchy. Examples of each type are:

Ranked Hierarchy

Order PYCNODONTIFORMES Berg, 1937

Family COCCODONTIDAE Berg, 1937

HENSODON SPINOSUS (Hennig, 1907)

(Figs. 2–4)

Mesodon spinosum Hennig, 1907:364, fig. 3 (original description).

Mesodon spinosus Hennig, 1907: Steinmann, 1928:56, fig. 14 (emended spelling).

Hensodon spinosus (Hennig, 1907): Kriwet, 2004:526, figs. 1–3, 5–9 (new combination).

Diagnosis—Diagnosis should be differential. Apomorphies of taxon specified if known.

Telegraphic style (no verbs, no articles) strongly encouraged in diagnoses. Example—Apomorphies of taxon: orbit large, longer than deep; mandible shallow, flared posteriorly; mental foramen opening below second premolar. Differing from *Alphus brevis* in: incisors spatulate; diastema between I1 and C1.

- Note in the above that ranks are provided, in upper and lower case.
- All taxonomic names are written in all capital letters and centered (do not use large and small caps).
- Unranked taxa may be inserted between ranked taxa in the hierarchy.
- Generic and specific names are in italics and all caps.
- There is no comma between the taxon and the author but there is a comma between the author and the year of publication.
- All cited taxonomic authorities must be in the Literature Cited, including those in the synonymy. Follow guidelines in ICZN (1999) for citation of taxonomic authorities.
- The synonymy should be formatted as in the above example (left justified, with hanging indent if an entry continues on a new line). Leave vertical space above and below the synonymy to set it off from the taxonomic headings and the following text.
- The punctuation within the synonymy is important. The first line illustrates a first use of a taxonomic name (original

description). In the second and third lines of the synonymy, the colon is used to set off the taxonomic name used, with appropriate authority, from a citation of the author who used it in this way. Spell out multiple authors, rather than using ‘et al.’ Cite only the first page establishing the usage, but list all figures.

- If diagnosing a new, monotypic genus, with separate listings for the genus and the species, the generic diagnosis should be, “As for type and only species.” The full diagnosis is then provided for the new species. An alternative is a combined description of both taxa (“gen. et sp. nov.”) as in the following examples, which would require just one diagnosis.
- Richter’s signs are acceptable in synonymy lists, but cite Matthews, S. C. 1973. Notes on open nomenclature and synonymy lists. *Palaeontology* 16:713–719, in the text.

Unranked Hierarchy

REPTILIA Laurenti, 1768
SQUAMATA Oppell, 1811
TEIIDAE Gray, 1827

BISCUSPIDON NUMEROSUS, gen. et sp. nov.
(Figs. 2–4)

Monophyletic Hierarchy

REPTILIA sensu Gauthier, Estes, and de Queiroz, 1988

SQUAMATA sensu Estes, de Queiroz, and Gauthier, 1988

SCLEROGLOSSA sensu Estes, de Queiroz, and Gauthier, 1988
TEIIDAE Estes, de Queiroz, and Gauthier, 1988

BISCUSPIDON NUMEROSUS, gen. et sp. nov. (Figs. 2–4)

- You may add ‘sensu Author, date’ if there is a particular phylogenetic definition of a traditional Linnean name. The binomen is equivalent to the genus and species for purposes of conformity with ICZN and must be italicized. Both the genus and species must be declared as new when applicable. Family-group and binomial names are regulated by the ICZN and must be correctly formed. Do not use regulated endings (-oidea, -idae, -inae, -ini, -ina) for new, unranked taxa.

[Return to main text](#)

TITLE PAGE SPECIFICS

Title

- Title of the paper should be in upper and lower case (so-called Sentence capitalization), in lightface (not bold), centered for Articles, and flush left for Short Communications. The title will be used as is (in Sentence capitalization) for the Table of Contents on the back of the journal, but it will be converted by the copy editor to all upper case for use on the first page of the article within the journal.
- The name of a new taxon may appear in the title.
- Taxonomic names listed in titles and abstracts should be separated by commas. The most inclusive taxon name will

go first (i.e., Mammalia, Carnivora, Canidae).

- Names of genus- or species-group taxa or equivalent must be in italics.
- Avoid titles that include a subtitle set off by a colon, that are constructed as multiple sentences, or that are excessively long. Do not end the title with a period.

Author names

- Author names are all caps and centered for Articles, but flush left for Short Communications.
- Full first names are preferred (GEORGE G. SIMPSON), but initials are acceptable (G. G. SIMPSON). Be consistent.
- Denote author address by superscript number: T. JOHN SMITH² (the superscript appears immediately after any punctuation (usually a comma) that follows an author's name: GEORGE G. SIMPSON,^{1,†} ALFRED S. ROMER,^{*,2} and WILLIAM K. GREGORY³
- Clearly denote corresponding author with a superscript asterisk (see above example), and provide *Corresponding author as a footnote.
- For current address different from address where work was done, denote with superscript dagger and provide footnote: †Current address: Department of. . . .
- For Article—provide complete postal address and postal codes for all authors; spell out all; use upper and lower case; center; separate addresses with semicolon and new line; provide email address; omit period at end of last address

Addresses

- Use country names for all affiliations (United Kingdom, Russia, Australia); spell out name (exception: use U.S.A.).
- Spell out names of states and provinces.

Running header

- Provide a running header, all caps, containing authors' names and brief title, separated by em dash without spaces

[Return to main text](#)

SPECIFICS OF CITATIONS

Citation of references in text

- For three or more authors use 'et al.', but spell out all authors if taxonomic authority (use initials if two names with same date).
- For personal communications, author must obtain written permission from the person being cited, such as signed copy of page where cited, or email quoting passage and giving permission.
- No space between year/colon and page number or figure, table, and plate designation: (Smith, 1972:16; Smith, 1974:fig. 1). Use lower case for 'fig.', 'pl.', and 'table' in citations of other people's work and in synonyms.
- Order of references cited in parentheses is, first, chronological, in order of first publication by a particular author, then alphabetical in the case of different authors with first publication in the same year: (Hibbard, 1947; Albertson, 1953; Hibbard and Taylor, 1965) (Lund, 1976, 1992, 2003; Lund and Janvier, 1986; Lund and Lund, 1986, 1987; Lund and Youngman, 1994; Lund et al., 1998, 2002).

Citation of references in text: additional examples

(Smith, 1972a, 1972b, 1972c, 1976) (Smith, 1972:16)

(Smith, 1972; Smith, Jones, and Lee, 1973; Jones and Lee, 1975) (Smith, Jones, and Lee, 1973; Smith, Lee, and Jones, 1973)

If more than three authors with same first author and same year of publication, then: (Smith, Jones, et al., 1973; Smith, Lee, et al., 1973)

(Smith, 1972:12–15, 1974)

(Smith, 1972:fig. 1, table 4)

(Smith, 1972:table 3)

...Smith's (1972) figure 3... (pers. comm., April, 2004) (unpubl.)

(Smith in Jones, 1781)

Literature cited: general rules

- Last name first only for the first author, then typical style of first-name initial, middle-name initial, then last name; note use of comma before 'and'; see above example.
- Personal communications, submitted manuscripts, manuscripts in preparation, manuscripts under review, and field notes are **not** permitted in the Literature Cited; instead, cite these in text; e.g., '(pers. comm.)' or, if it is the author's own work, '(pers. observ.)' or '(unpubl. data)'; '(field notes of G. G. Simpson, 1933, AMNH).'
- All citations and taxonomic authorities, including those in the Systematic Paleontology section and figure captions, or within figures and tables, must be included in the Literature Cited. References cited only in on-line supplementary data should not be in the Literature Cited.
- Primary order is by first author and by date. Secondary sort is by number of co-authors (two-authored references, then three-authored references, then four, and so forth). Within that sort, ordering is by alphabetization of junior authors, then by date (oldest first):
Lund, R. 1984.
Lund, R. 1985a.
Lund, R. 1985b.
Lund, R., and P. Janvier. 1986.
Lund, R., and C. Poplin. 1985.
Lund, R., and C. Poplin. 1986.
Lund, R., and R. Zangerl. 1984.
Lund, R., C. Poplin, and E. Grogan. 1995.
Lund, R., E. Grogan, C. Poplin, and R. Zangerl. 1985.
- Authors must verify that all references cited in the text (including taxonomic authorities) appear in the Literature Cited section, and that all citations in the Literature Cited section are cited in the text and/or table/figure captions.

Author styles, additional examples

- Sues, H.-D.
- Thompson, W. A., III
- Smith, L. L., Jr.
- Use commas between all authors, and separate authors' initials by a space.
- Repeat author names, as shown above with the examples of 'Lund'.
- Do not use full names, just last names and initials.

Journal Article Examples

Author, I. 2002. Article title in sentence capitalization: subtitle, if any, beginning in lower case after colon or em dash.
Always Spell Out Journal Name 25:152–159. [No spaces between colon, numbers, or en dash; no comma after journal name.]

Damiani, R. 2004. Cranial anatomy and relationships of *Microposaurus casei*, a temnospondyl from the Middle Triassic of South Africa. *Journal of Vertebrate Paleontology* 24:533–541.

- Use issue number only if each issue begins with page one: 25(6):1–23.
- Avoid including the leading article of journal names such as: *The Journal of Ecology*.
- Use italics for genus or species in titles.
- Separate page numbers by en dash (–), not hyphen (-)

Hou, L. 2002. [A late Pleistocene lizard from Inner Mongolia]. *Vertebrata PalAsiatica* 50:88–95. [Chinese]

Chen, G. 1991. A new genus of Caprini (Bovidae, Artiodactyla) from upper Pliocene of Yushe, Shansi. *Vertebrata PalAsiatica* 29:230–239. [Chinese 230–236; English 237–239]

- The square brackets indicate that the article is solely or primarily in a non-English language, Chinese in this example.
- Some journals publish a full-text English translation following the article in its original language; if both languages are used, provide both citations.

Henkel, S., and B. Krebs. 1969. Zwei Säugetier-Unterkiefer aus der Unteren Kreide von Uña (Prov. Cuenca, Spanien). *Neues Jahrbuch für Geologie und Paläontologie, Monatshefte* 1969:449–463.

Geraads, D. 1994. Les gisements de mammifères du Miocène supérieur de Kemiklitepe, Turquie: 4. Rhinocerotidae. *Bulletin du Museum national d'Histoire naturelle, Paris 4 sér.* 16:81-95.

- For foreign-language titles and names of institutions or journals in non-English-speaking countries, use the accents and capitalization conventions of the foreign language, as in the above examples.
- Titles and journal names presented in their original language **do not** require identification of the language in square brackets, but **do** indicate if an English abstract is available..

Books, Dissertations, and Theses

Vrba, E. S., and G. B. Schaller (eds.). 2000. *Antelopes, Deer, and Relatives: Fossil Record, Behavioral Ecology, Systematics, and Conservation*. Yale University Press, New Haven, Connecticut, 341 pp.

Schatzinger, R. A. 1975. Later Eocene (Uintan) lizards from the greater San Diego area, California. M.Sc. thesis, San Diego State University, San Diego, California, 212 pp.

Saysette, J. E. 1999. Postcranial estimators of body mass in pecorans with emphasis on *Capromeryx* (Mammalia: Artiodactyla). Ph.D. dissertation, Colorado State University, Fort Collins, Colorado, 192 pp.

- Book titles are title capitalized, but thesis titles are sentence capitalized.
- Spell out everything except given names, ‘eds.’ and ‘pp.’
- Repeat the city or country if the name is a part of the publisher or university: The University of Chicago Press, Chicago, Illinois.
- Spell out cities, states, countries (except for U.S.A.): Australian Museum, Sydney, New South Wales, Australia.
- Use ‘thesis’ for bachelors’ or masters’ degrees and ‘dissertation’ for doctoral degrees.

Articles in Books or Large Works

- Emry, R. J., P. R. Bjork, and L. S. Russell. 1987. The Chadronian, Orellan, and Whitneyan North American Land Mammal Ages; pp. 118–152 in M. O. Woodburne (ed.), *Cenozoic Mammals of North America*. University of California Press, Berkeley, California.
- Emslie, S. D., and N. J. Czaplewski. 1999. Two new fossil eagles from the late Pliocene (late Blancan) of Florida and Arizona and their biogeographic implications; pp. 185–198 in S. L. Olson (ed.), *Avian Paleontology at the Close of the 20th Century: Proceedings of the 4th International Meeting of the Society of Avian Paleontology and Evolution*, Washington, D.C., 4–7 June 1996. *Smithsonian Contributions to Paleobiology* 89.

Volumes in Edited Series

- Stahl, B. J. 1999. Chondrichthyes III: Holocephali; in H.-P. Schultze (ed.), *Handbook of Paleoichthyology*, Volume 4. Verlag Dr. Friedrich Pfeil, München, 164 pp.

Articles In Press

- Zhang, J.-Y. In press. New fossil osteoglossomorph from Ningxia, China. *Journal of Vertebrate Paleontology*.

- For in-press book or article in edited book or series, see examples above.

Articles as Abstracts in Symposium or Conference Proceedings

- Nydam, R. L. 2002. Advances in our understanding of the polyglyphanodontine lizards of North America. *Journal of Vertebrate Paleontology* 22(3, Supplement):93A.

Software, Maps, Web Sites, and Web-based Articles

- Swofford, D. A. 2003. PAUP* 4.0. Sinauer Associates, Sunderland, Massachusetts.
- Izett, G. A., and J. G. Honey. 1995. Geologic map of the Irish Flats NE Quadrangle, Meade County, Kansas, U.S. 1:24,000. U. S. Geological Survey. Geological Survey Miscellaneous Investigations Series Map I- 2498.
- Scotese, C. R. Plate tectonic maps and continental drift animations: Late Permian. Paleomap Project, Department of Geology, University of Texas at Arlington. Available at www.scotese.com. Accessed November 8, 2004.
- Janvier, P. 1997. Craniata. Tree of Life Web Project. Available at www.tolweb.org/Craniata/14826. Accessed November 30, 2006.

[Return to main text](#)

PHYLOGENETIC ANALYSES: BEST PRACTICES

RUNNING ANALYSES, REPORTING, AND PRESENTING RESULTS

Materials and methods

- Include the size of the matrix (number of characters, number of taxa)
- Include a brief description of the matrix, if it is based on another matrix, if it is new, etc.
- Include the name of the software that you used to build the matrix
- We recommend using Mesquite or MorphoBank and saving the matrix as a Nexus file (specifying the precise format), such that all characters, character states and taxa are in a single file. You must ensure consistency in these respects between the number of characters and taxa in the manuscript and in the Supplementary file.
- Check for uninformative characters
- Taxa: use only species-group taxa as terminals and avoid using genera, families, clades etc. as terminals. If a single

specimen is used for scoring, indicate which one it is; in case you use one taxon as representative of a clade (e.g., for the outgroup) please indicate which taxon the scoring is based on.

- Avoid chimaeric terminals
- Do not use a hypothetical outgroup with all 0s

Phylogenetic analysis: Provide a detailed methodology of the analysis

Specify the software and version used to perform the analysis (e.g., PAUP*, TNT), what kind of search you have done (e.g., exact or heuristic search); if you carried out a heuristic search, which kind of algorithm you used (e.g., TBR, SPR), how many replicates, how many hits on the shortest tree, how many trees held per replicate; calculate branch support using Bremer (or Decay Index), bootstrap or jackknife; report if you calculate a consensus tree and what kind of consensus tree you report.

Exact searches: For matrices comprising fewer than 25 taxa.

Heuristic searches: For matrices comprising more than 25 taxa. A heuristic parsimony analysis consists of two main processes: tree building, followed by branch swapping. One round of tree building followed by branch swapping can be called a replicate.

The two most common programs PAUP* and TNT approach these two parts a little differently. Report these appropriately.

- PAUP*: A typical heuristic search strategy in PAUP* consists of numerous (e.g., 10,000) replicates consisting of building a starting tree using random addition sequence (RAS) followed by tree bisection and reconnection branch swapping (TBR) keeping all the shortest trees in each replicate (summarized as RAS+TBR)
- A typical heuristic search strategy in TNT typically consists of fewer replicates (e.g., 1,000) of building a starting tree (Wagner tree) using RAS, but holding only a few of the shortest trees per replicate. Once all the replicates are done additional rounds of TBR are needed (swapping on the trees in RAM) to find the final set of most parsimonious trees. If this is not done your analysis will undersample the set of most parsimonious trees. [summarized as ((RAS + TBR) + TBR)]

Additionally for parsimony analysis,

- Are there characters with ordered/additive character states? If yes, which ones? Include the ordering in the nexus file.
- Do the characters have the same weight? If not, explain why.
- If implied weights have been used, specify how the k value was calculated (Maximum parsimony specific)
- If constraints have been used, specify the methodology and from which paper you took the topology (if applicable) and include the constraints, preferably in the Nexus file.
- If a script is used in the phylogenetic analysis be sure that it is available in a published paper. If it is a new script, it should be uploaded as supplementary material. The results of the script should be also added as supplementary material (see below).

Bayesian inference analyses:

Specify the software and version used to perform the analysis (e.g., MrBayes, RevBayes, BEAST). Specify the model used (e.g., the Markov k-state variable model: Mk_v) and whether a gamma rate variation parameter was used (recommended). Was your data partitioned? How long did you run your MCMC chain? How was convergence assessed (split frequency cut-off value? ESS value?). What kind of summary tree are you presenting? Report the posterior probabilities on the summary tree. If more complex models are used (as in BEAST) be sure to provide details on all the model specifications and priors used. In the case of RevBayes, for more complex models please consider providing as supplementary information an image of the graphical model.

Results

Maximum parsimony—report:

- Length of the tree/s, consistency index (CI), retention index RI (rescaled consistency index, RCI, is not required). Homoplasy index should not be reported: it is 1-CI.
- Number of most parsimonious trees (MPT's)
- If a consensus tree was calculated, which kind of consensus is it?
- Support values for all nodes (preferably on the figure)
- When referring to synapomorphies please report unambiguous, common synapomorphies (common to both ACCTRAN and DELTRAN optimizations); otherwise please specify.

[Return to main text](#)

MAKING YOUR DATA AND ANALYSIS METADATA AVAILABLE AT TIME OF SUBMISSION

Parsimony Analysis

Supplementary material should include the following files.

- **Full** matrix in .nex or .tnt format (without the trees) [mandatory; with the character and state information embedded verbatim as they are in the text or cited text of a previous analysis, and unabbreviated taxonomic names; do not just provide added/modified taxa/characters]
- README file including all the steps needed to replicate the primary phylogenetic analysis and any sensitivity or secondary analyses that were conducted [mandatory].
- Detailed information on the character/taxon sampling (description of characters; changes from previous matrices; specimens used to score; relevant literature; figures of character states; photographs of specimens) [optional]
- Sets of MPT's for all analyses in .tre or .ctf format [mandatory]
- List of common synapomorphies in .pdf or .txt format [optional]
- In case of constrained analysis the tree used to constrain and which nodes were constrained [mandatory]
- If scripts were used please provide the results of the scripts in a single .pdf or .docx file [optional]

Bayesian Analysis

Please provide as Supplementary Material all files used to perform analyses. In the case of MrBayes, best practice is to embed commands within the included nexus file.

Appendix

Matrices printed as an Appendix are not longer accepted, instead provide the .nex or .tnt file as Supplementary Material (see above).

We strongly urge authors to upload their matrices, results, and any other relevant files to MorphoBank. If authors decide to benefit from this option, insert the MorphoBank Matrix ID (Mnnnnn) and Project ID (Pnnnn) in the cover letter. Additional relevant files may also be uploaded to MorphoBank in the Documents section (morphological matrices should not go in the Documents section). Also, to facilitate the work of the reviewers, we encourage to set Reviewer Login, whereby MorphoBank issues a password for optional anonymous log in to the data during review by reviewers.

MorphoBank users should release your data upon publication (or at whatever juncture JVP wishes to specify).

[Return to main text](#)

