

Manuscript submission and preparation for Invertebrate Biology (August 2025)

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A. Manuscript Formatting

Only electronic manuscript files can be submitted (e.g., Word). There is no maximum number of words or pages. Manuscripts should be double-spaced.

Please use line numbers for the main text file. **Insert figure images, figure captions, and tables in the main text file in line with the text.** See C. Preparing Tables and Figures.

Authors are strongly advised to read this document and use the formatting tips provided in the manuscript template. Authors who choose not to use the manuscript template should note that our publishing platform will automatically change fonts and formatting to our standards. For formatting advice contact the Editor-in-Chief.

Running Head

For single author, the LAST NAME in caps — JONES.

For two authors, list the LAST NAMES of both authors in caps, separated by "AND" in the small caps font — JONES AND SMITH.

For more than two authors, list the LAST NAME of the first author, followed by “ET AL.” in the small caps font — JONES ET AL.

Title and Authorship Information

The following information should be included:

- 1) Manuscript title - **Title should be sentence case, bold, and centered: Capitalize after a colon**
- 2) Full author names - List for each author: First name (or initials) followed by last name or family name. Use superscript numbers to indicate institutional affiliation. Use superscript letters for footnotes.
- 3) Listing of Institutional addresses or affiliations by superscript number
- 4) Listing of footnotes by superscript letter
- 5) Name and email address of the corresponding author

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Abstract

The manuscript must include an abstract in English. The abstract must be self-contained, citation-free, and should not exceed 300 words.

Authors may submit a second Abstract translated into an additional language. Authors are encouraged (but not required) to improve the accessibility of published research findings by adding a second-language Abstract. **The second-language Abstract will not be copyedited, so authors should ensure that the content and meaning of the Abstract are the same in both languages.** Please indicate the second language of your abstract in your cover letter.

Keywords

Include five keywords that are **NOT** in the title.

Headings in Articles

The main body of a manuscript submitted as a Research Article must use four main headings numbered sequentially: 1 | INTRODUCTION; 2 | METHODS; 3 | RESULTS; 4 | DISCUSSION. Throughout the manuscript, please use the **present tense** to characterize the current state of knowledge in the field and the **past tense** to describe the methods and results of this study.

Sections other than the 1 | INTRODUCTION may have up to five levels of subheadings. Subheadings should be numbered sequentially within each main heading. Only use subheadings if there are at least two subsections (e.g., do not add subheading 2.1 unless there will also be a 2.2). Subheadings should be no more than 40 characters and follow the formatting in the manuscript template and the examples below.

2 | METHODS — Bold, ALL CAPS

2.1 | Heading level two — Bold, sentence case

2.1.1 | Heading level three — Bold, sentence case. No space between heading and paragraph(s)

Heading level four — Italics, sentence case, not bold, not numbered.

Heading level five. — Italics, not bold, sentence case, followed by a period, run on with the rest of the paragraph.

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2.2 | Heading level two — Bold, sentence case

Manuscripts submitted as a Review Article, Book Review, or In Memoriam may have no main headings or may use different main headings as appropriate. Typically, sections of these article types are numbered sequentially (e.g., 1-12).

ALL MANUSCRIPTS THAT CITE REFERENCES MUST INCLUDE A SECTION WITH THE TITLE REFERENCES. ALL MANUSCRIPTS MAY INCLUDE ADDITIONAL SECTION HEADINGS AS REQUIRED ([SEE BELOW](#)).

Sections of a Research Article – (See [Tables and Figures](#) below for information about how to include and cite tables and figures in the text of the manuscript)

1 | INTRODUCTION

This section should be succinct, with no subheadings.

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The methods section should provide enough detail for others to replicate the study. If the description of more than one method is included in the manuscript, use subsections with relevant

headings (e.g., Sample collection, DNA isolation, Statistical analysis, Scanning electron microscopy, etc.).

Invertebrate Biology has no space restriction on methods. Detailed descriptions of protocols, statistical analyses, and algorithms may also be uploaded as supplementary information. Because there are no space restrictions or paper charges, authors should consider including the complete details of their methods even if a previous publication is cited. If a method was originally described in a previous article then this article must be cited and discussed. If the wording for a protocol is reused from a published article then this must be noted in the text.

If a proprietary method or tool is used in the study, the authors are responsible for checking the license and obtaining any necessary permission. If permission is required, a statement confirming that permission was granted should be included in the text.

For animal studies, a statement indicating that the protocol and procedures employed were ethically reviewed and approved, as well as the name of the body granting permission to use the protocol, must be included in the Methods section of the manuscript. Authors are encouraged to adhere to animal research reporting standards, for example, the ARRIVE guidelines for reporting study design and statistical analysis; experimental procedures; experimental animals, and housing and husbandry. Authors should also state whether experiments were performed following relevant institutional and national guidelines for the care and use of laboratory animals. US authors should comply with the US National Research Council's Guide for the Care and Use of Laboratory Animals, the US Public Health Service's Policy on Humane Care and Use of Laboratory Animals, and the Guide for the Care and Use of Laboratory Animals. UK authors should comply with UK legislation under the Animals (Scientific Procedures) Act 1986 Amendment Regulations (SI 2012/3039). European authors should comply with Directive 2010/63/EU.

3 | RESULTS

4 | DISCUSSION

CONCLUSIONS

This short **optional** section should clearly explain the main conclusions of the study and concisely highlight its importance and relevance.

ACKNOWLEDGMENTS

An **optional** section recognizing anyone who contributed to the research or manuscript, but who is not a listed author, should be acknowledged (with their permission). Please do not acknowledge funding sources in this section. Funding sources that supported the research presented in this manuscript are disclosed in the Funding sources section.

ORCID iDs

An **optional** list of the authors and their ORCID iDs.

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This is a **required** section of the manuscript in which the authors provide a detailed description of the contributions made by each author to the work presented in the manuscript.

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This is a **required** section in which Authors must declare all relevant interests that could be perceived as conflicting. Submitting authors are responsible for coauthors declaring their interests. This disclosure will also be collected during the submission of manuscript as metadata for the paper.

Any interest or relationship, financial or otherwise that might be perceived as influencing an author's objectivity is considered a potential source of conflict of interest. These must be disclosed when directly relevant or directly related to the work that the authors describe in their manuscript. Potential sources of conflict of interest include but are not limited to, patent or stock ownership, membership of a company board of directors, membership of an advisory board or committee for a company, and consultancy for or receipt of speaker's fees from a company.

Authors should explain why each interest may represent a conflict. The existence of a conflict of interest does not preclude publication. If no conflicts exist, the authors should state this.

DATA AVAILABILITY

This disclosure on data availability will also be collected during the submission of manuscript as metadata for the paper.

When supplementary data are made available, authors must provide a data availability statement that should describe how readers can access the data supporting the conclusions of the study and clearly outline the reasons why unavailable data cannot be released, such as when specific legal or ethical requirements prohibit public sharing of a dataset. Examples may include location information or other unique data that may place vulnerable species or sites at risk (including endangered animals or plants, rare fossil or mineral locations, designated archaeological sites, etc.). When access to sensitive data is restricted by law, authors should describe the process by which researchers can apply for access. When data are available on request, please do use one individual as the only contact for obtaining access to the data.

Authors are strongly encouraged to share their data, including scripts, code, and other artefacts supporting the results in the paper by archiving them in an appropriate public repository or as supplementary materials (see SUPPLEMENTARY MATERIALS below). Data in a public repository should be cited by accession number or digital object identifier. Please note that the data in databanks must be released, at the latest, upon publication of the article. We trust in the cooperation of our authors to ensure that atomic coordinates and experimental data are released on time.

Nucleotide sequence data must be submitted in electronic form to a major collaborative database (e.g., DDBJ, EMBL, GenBank). Genome or transcriptome sequences should be uploaded to a suitable data archive (e.g., Sequence Read Archive); assemblies may also be uploaded to an online repository (e.g., Transcriptome Shotgun Assembly Database). The suggested wording for referring to accession-number information is: “These sequence data have been submitted to the GenBank databases under accession number U12345”. Descriptions of molecular structures (e.g., spectroscopy or crystallography) and the associated experimental data must be deposited in the appropriate databank (e.g., Cambridge Crystallographic Data Centre; Protein Data Bank; BioMagResBank).

Also, authors need to detail how data used in their research was acquired from third-party sources and verify the permissions of those sources for the data to be included in the published paper. If a commercial data set was purchased, then the authors must disclose how others can purchase the same data set. Authors given data by a third party (e.g., a research colleague who is not an author on the submitted manuscript) must describe how others may also obtain this data, either from the authors or their third-party source (this third-party source should also be included in the Acknowledgements section with their permission).

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Authors must state how the research and publication of their article was funded, by naming financially supporting body(s) (written out in full) followed by associated grant number(s) in square brackets (if applicable). For example, "This work was supported by the Natural Sciences and Engineering and Research Council [grant numbers xxxx, yyyy]; the National Science Foundation [grant number zzzz]; and a Leverhulme Trust Research Project Grant.” Authors are responsible for correctly identifying funders. If authors are unsure about the identity of their funders, please check the Open Funder Registry for the correct nomenclature.

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If the authors received no specific financial support, then the authors must include this statement: “No specific funding was provided in support of the research or publication of this paper.”

REFERENCES

This section is **required** for every manuscript that cites references.

References should be prepared according to the Publication Manual of the American Psychological Association (APA) (7th edition, 2020). This means in-text citations should follow

the author-date style in which the author's last name and the year of publication for the source should appear in the text, for example, (Jones, 1998). Articles with one or two authors include all names in every in-text citation; articles with three or more authors abbreviate to the first author name plus et al. Include the year in the indirect repeated citations, for example, “Several studies (Johnson 2007a, 2007b; Smith & John, 2005a, 2005b)...”. **List parenthetical citations in alphabetical (not chronological) order.**

If two references with the same year shorten to the same form, cite the surnames of the first authors and as many of the subsequent authors as necessary to distinguish the two references, followed by a comma and et al., for example, Bradley, Ramirez, and Soo (1994) and Bradley, Soo, et al. (1994).

If two references with six or more authors shorten to the same form, cite the surnames of the first authors and of as many of the subsequent authors as necessary to distinguish the two references, followed by a comma and et al. For example, if the references ‘Barrett, Koenig, Cave, Tang, Lane, and Gabriel (1996)’ and ‘Barrett, Koenig, Wood, Kengman, Mosy, and Daly (1996)’ were cited in the paper, then the respective in text citations would be as follows: Barrett, Koenig, Cave, et al. (1996) and Barrett, Koenig, Wood, et al. (1996).

The complete list of references should be sorted alphabetically by name. **Please note that for journal articles, issue numbers are not included unless each issue in the volume begins with page 1.** A DOI should be provided for all references when available. For more information about APA referencing style, please refer to the [7th edition - Common Reference Examples - APA Style](#).

Reference examples in APA 7th edition format:

Journal article:

Allen, J. D., & Pernet, B. (2007). Intermediate modes of larval development: Bridging the gap between planktotrophy and lecithotrophy. *Evolution & Development*, 9, 643–653.
<https://doi.org/10.1111/j.1525-142X.2007.00202.x>

Please delete issue numbers for journals with consecutive pagination within a volume.

Surnames and initials for up to 20 authors should be provided in the reference list. If there are more than 20 authors, then list 19 authors, followed by an ellipsis, followed by last author:

Zhang, X., Sun, L., Yuan, J., Sun, Y., Gao, Y., Zhang, L., Li, S., Dai, H., Hamel, J.-F., Liu, C., Yu, Y., Liu, S., Lin, W., Guo, K., Jin, S., Xu, P., Storey, K.B., Huan, P., Zhang, T., ..., & Xiang, J. (2017). The sea cucumber genome provides insights into morphological evolution and visceral regeneration. *PLoS Biology*, 15, e2003790.<https://doi.org/10.1371/journal.pbio.2003790>

Book:

Byrne, M., & O'Hara, T. D. (2017). *Australian echinoderms: Biology ecology and evolution*. CSIRO Press. <https://doi.org/10.1071/9781486307630>

Book chapter:

Hodin, J. A., Heyland, A., Mercier, A., Pernet, B., Cohen, D. L., Hamel, J-F., Allen, J. D., McAlister, J. S., Byrne, M., Cisternas, P., & George, S. B. (2019). Culturing echinoderm larvae through metamorphosis. In K. R. Foltz & A. Hamdoun (Eds.), *Echinoderms, Part A* (pp. 125–169), *Methods in cell biology*, Vol. 150. Elsevier. <https://doi.org/10.1016/bs.mcb.2018.11.004>

Dissertation or Master's Thesis:

Harrigan, J. F. (1972). The planula larva of *Pocillopora damicornis*: Lunar periodicity of swarming and substratum selection behavior. (Parts I and II) [Dissertation]. University of Hawai'i at Manoa.

Optional Information Submitted Through the Manuscript Submission System

SUPPLEMENTARY MATERIALS

Supplementary materials are the additional parts of a study or manuscript that provide greater depth and background for readers. **Each element of the supplementary materials must be submitted in a separate file of the appropriate type.** Examples include non-molecular data such as audio files, video clips, datasets, images, figures, or tables.

Supplementary Material files are hosted online and are downloadable by readers but are not edited or typeset by the journal. Authors may want to consider sharing material such as audio files and video clips through a third-party repository so that the authors can preserve the availability of these files by updating them as technologies change. Molecular datasets (e.g., nucleotide sequences or protein structures) must be uploaded to a public repository and cited by an accession number or digital object identifier provided in the DATA AVAILABILITY statement.

Supplementary Material files can be upload at the time of the original submission of the manuscript, submission of the revised manuscript, and after the manuscript has been copyedited. Supplementary Material files are hosted with the full-text article on BioOne. BioOne supports hosting Supplementary Materials in a variety of formats including PDF, DOC, DOCX, XSL, XSLX, CSV, PNG, TIFF, or JPEG. Supplementary materials are not modified by our production team. Authors are responsible for uploading the final supplementary materials files that will be published along with the article. When uploading Supplementary Material files, please

Files containing supplementary materials can also be uploaded to a third-party repository (e.g., Dryad, FigShare, GitHub). If third-party repositories are used, please cite digital object identifiers (DOI) or accession numbers in 2 | METHODS or 3 | RESULTS **AND** in the DATA AVAILABILITY statement. Authors are encouraged to consult repository-vetting sites such as

re3data.org or fairsharing.org for help in identifying registered and certified data repositories relevant to any specific discipline or subject area.

Supplementary Materials files should have representative names, such as Figure, Table, Video, Dataset, or Appendix, and numbered sequentially within each category of supplementary material corresponding to when each file is cited in the main text (e.g., Supplementary Figure-S1.tif, Supplementary Figure-S2.jpg, Supplementary Table-S1.xlsx, Supplementary Appendix-S1.pdf, Supplementary Video-S1.mp4, etc.). When the files are uploaded please give each file a brief descriptive title, such as:

Supplementary Figure S1. Brief description of this figure

Supplementary Figure S2. Brief description of this figure

Supplementary Table S1. Brief description of this table

Supplementary Appendix S1. Brief description of this dataset or text file

Supplementary Video S1. Brief description of this video

B. FORMATTING AND STYLE

Text

Please write in complete sentences (including diagnoses in taxonomic descriptions). Each paragraph should consist of two or more sentences. Use the present tense to describe the current state of knowledge in the field and use the past tense to describe what was done and discovered in the new study.

Avoid using slash phrases such as “and/or” (these phrases have ambiguous meaning). Latin abbreviations such as e.g., i.e., and etc. should be used in parenthetical phrases only. Commas are required following e.g. and i.e. Use quotation marks “ ” only for direct quotations from cited references; if an important word or phrase has a different implied meaning, explain that meaning instead of putting the phrase in “scare quotes” to imply a different meaning. An em-dash (—) can be used in place of a colon or semicolon to link clauses. (Note: in Microsoft Word an em-dash can be found in the Special Characters tab of the Symbol Tool under Insert in the Main Menu.)

Titles of companies that sell supplies or equipment should be treated as proper nouns (e.g., Nikon, Thermofisher, Zeiss, Olympus, Vector Labs, New England Biolabs, Ted Pella, Electron Microscopy Sciences, etc.) and trademark names need to be indicated.

Although all manuscripts published in *Invertebrate Biology* are copyedited, all authors are strongly encouraged to have others read their manuscript before submission to ensure that their manuscript is written with the organization and clarity required for peer view. Manuscripts that are within the aims and scope of the journal that do not meet these requirements, will be returned to the authors for revision before peer review.

Dates

Write out dates in full to avoid confusion between all-numeral date styles. For example, 11/10/2018 should be 10 November 2018.

Numbers, Equations, and Statistics

Numbers under 10 are spelled out, except for measurements with a unit (8 mmol/L); age (6 weeks old); or lists with other numbers (11 arthropods, 9 annelids, 4 molluscs). For negative numbers, including those in superscripts, use the minus sign, not an en-dash (e.g., -32 not –32; larvae L⁻¹ not larvae L⁻¹). For ranges of numbers, use an en-dash rather than a hyphen or minus sign (e.g., 10–40). (Note: in Microsoft Word en-dash can be found in the Special Characters tab of the Symbol Tool under Insert in the Main Menu.)

Equations should be editable using the Word equation editor or another format (e.g., MathML or MathType). Equations must not be embedded as images. Equations are not figures and should not be given captions. If more than one equation is included in the manuscript, then each equation should be numbered (in parentheses) in the order in which it is presented and cited in the main text.

Full statistical results need to be presented including the name of the statistical test, sample sizes, degrees of freedom, and p-values (when appropriate both actual and adjusted). Statistical results for Analysis of Variance (ANOVA), Analysis of Covariance (ANCOVA), Repeated Measures ANOVA, must also include a table of sums of squares, F statistics, actual p-values, and if possible, effect size.

When presenting statistics in figures, identify in the figure or caption all symbols and measurements of error (e.g., standard deviation, standard error, confidence intervals, data range). For Box Plots (and other similar plots), please indicate what is represented by the boxes (e.g., upper and lower quartiles), the central line (e.g., mean or median), whiskers (e.g., standard deviation, standard error, confidence intervals, data range), and any additional data points (e.g., outliers, points outside of 95% confidence intervals, or range).

SI, Metric, and Other Units

Please use SI and metric units throughout: h, hour; min, minute; s, second; ms, millisecond (but don't abbreviate longer time units such as day, week, month, or year); L, liter; mL, milliliter; µL, microliter; °C, degrees Celsius (please use the degree symbol, not a superscript "o"; e.g., 22°C). For ratio units use a slash (e.g., "mg/kg"), but for compound ratios use superscripts (e.g., mg kg⁻¹ h⁻¹). Use the unit of measurement as the abbreviation, not the name of the variable (e.g., "h" or "min" for time, not "t").

Salinity does not have units. Just state a salinity of xx (e.g., the salinity was 32, or animals were held at a salinity of 25).

Scientific names

Scientific names (species and genera) must be italicized, **including in the references**. If scientific names are in the title of a book, which is formatted in *italics*, then the scientific name should not be italicized in the citation in the REFERENCE section.

Use the full binomial (*Ostrea edulis*) at the first mention in each section of the paper, and then abbreviate (*O. edulis*, not *Ostrea* unless referring to the whole genus). The scientific name of any taxon is capitalized and treated as a singular noun, not a plural or an adjective (e.g., “*Cancer productus* is a wide-spread species”, not “*Cancer productus* are widespread.”). In particular, authors should avoid using taxon names as adjective phrases (e.g., “the chelae of *C. productus*”, not “*C. productus* chelae”).

Upon its first use in the main text and title, the common name of a species should be followed by the scientific name (genus and species, in parentheses). For well-known species, however, scientific names may be omitted from manuscript titles. If no common name exists in English, only the scientific name should be used.

Genetic sequence variants should be described in the text and tables using both DNA and protein designations whenever appropriate; gene names should be italicized; protein names should be in plain type face. Sequence variant nomenclature must follow the current guidelines appropriate for the taxonomic group that was studied.

Taxonomic Authority

The complete species name and taxonomic authority for the species studied should be given either at the first mention in sections 1 | INTRODUCTION or 2 | METHODS, but not in the title or abstract. For each species studied, the complete scientific name with taxonomic authority and date should be given. The taxonomic authority must be written in sentence case using the SMALL CAPS FONT. Use a comma to separate the taxonomic authority from the year of publication. For example, *Ostrea edulis* LINNAEUS, 1758, for a species and its original taxonomic description; or *Pisaster brevispinus* (STIMPSON, 1857), for a species with a revised taxonomic description or genus assignment. When the research subject is either an unidentified species in a genus or a group of unidentified species in a genus, then the taxonomic authority of the genus must be provided. For example, *Littorina* sp. (Genus: *Littorina* FÉRUSAC, 1822) and *Littorina* spp. (Genus: *Littorina* FÉRUSAC, 1822). Please include the cited taxonomic authority in the References section of the manuscript. For marine invertebrates (and many other organisms), authors should use the World Register of Marine Species as an authoritative source for up-to-date information about species names, taxonomic authorities, and classification.

Technical Terms

In general, technical terms should not be abbreviated unless they are used repeatedly and the abbreviation is helpful to the reader. Initially, use the word or phrase in full, followed by the abbreviation in parentheses. Thereafter use the abbreviation only.

Chemical and Drug Names

Chemicals and drugs should be referred to by their generic name if possible. If proprietary drugs or chemicals have been used in a study, refer to these by their generic name, mentioning the proprietary name and the name and location of the manufacturer in parentheses.

Citing Tables and Figures in the Text

Please use the following examples as a guide for citing tables and figures in the text of the manuscript.

Citing Tables:

Average annual temperatures for the 10 study sites are shown in Table 1.

Average annual temperatures increased at 10 of the 25 study sites (Table 1).

Citing Figures:

Average annual temperatures for the 10 study sites are shown in Figure 1.

The early developmental stages of *G. species* are shown in Figures 1 and 2.

Specimens of *G. species* were collected from 15 sites along the west coast of the United States (Figure 1).

Citing panels of multi-panel figures:

Figure 1 if citing the entire figure;

Figure 1A if citing only one panel of a multi-panel figure;

Figures 1A,B or Figures 1A,C if citing only two panels of multi-panel figure;

Figures 1A,C,D if citing a non-consecutive subset of panels of a multi-panel figure;

Figures 1A–C if citing a consecutive subset of panels of a multi-panel figure using an en-dash to separate the first and last panel;

Figures 1A–D,F or Figures 1A,E–G if citing a subset of consecutive panels and additional individual panels of the same multi-panel figure; and

Figures 1A–C and 2 or Figures 1A–C, 2, and 3D–F if citing subsets of panels from one or more multi-panel figures and additional figures.

Citing a table and a figure:

Specimens of *G. species* were collected from 15 sites along the east coast of the United States (Table 1; Figure 1; Table S1).

C. Preparing Tables and Figures

Whenever practical, data should be presented in graphs rather than tables. Authors are encouraged to design tables and figures with readability in mind. Tables and figures must be placed in the main text near the first citation of the table or figure. **Therefore, only cite tables and figures for the first time near where you want them to appear in the article.** Citing tables and figures containing results for the first time in METHODS may result in your tables and figures being renumbered and reordered within the manuscript.

Tables

Tables should be numbered sequentially in the order in which each table is referred to in the main text. Each table must have a short descriptive title followed by a brief caption or text description of the table's contents (above the tabular contents). Footnotes should be labeled with lower-case superscript letters a, b, etc. Units of measure should be included in the column headings.

Tables should be self-contained and should complement, not duplicate, information contained in the text or figures. Please do not present the same information in both a table and a figure (use just the figure). The table caption should be concise but comprehensive – the table, caption, and footnotes must be understandable without reference to the main text.

Tables must be submitted as text in line with the main text or as a stand-alone Word document (not embedded as an image or a PDF). Please use the Microsoft Word table formatting tools. Do not make tables out of tab-delimited text. Vertical rules should not be used.

Figures

Figures must be submitted in publication-ready form. Figures must be between 85 and 175 mm wide, and up to 230 mm high. Each figure should be numbered sequentially in the order in which it is referred to in the main text. Each figure should be inserted in the Word file near the first citation of the figure in the text. Insert a text box for each caption, typically below the figure. Format the figure and caption with the Word text wrapping called "Top and Bottom". This formatting will leave some blank space before and after each figure and caption. **Each figure caption should be concise but comprehensive – the figure and its caption must be understandable without reference to the text. Include definitions for all symbols and define or explain all abbreviations and units of measurement.**

Best Practices for Assembling Figures

Please use the RGB color palette for color figures. Save figures without color content as grayscale images (to reduce file sizes and upload times).

Figures composed as line art or data illustrations (e.g., schematic diagrams, scatterplots, bar graphs, box-and-whisker plots, regressions) should be submitted as vector graphics in Encapsulated PostScript (.eps) or PDF format. It is acceptable but less desirable to submit line art as TIFF images; for line art submitted in TIFF format, the minimum acceptable resolution is 1200 ppi (between 85 mm and 175 mm wide, and up to 230 mm high).

Figures composed as pixel-based images (e.g., digital images, photographs, micrographs, drawings) can be submitted as bitmaps in Tagged Image File Format (.tif), PNG (.png), or JPEG (.jpg). Bitmap images should have dimensions between 85 mm wide and 175 mm wide, and up to 230 mm high, with a resolution of at least 300 ppi (for RGB color) or 500 ppi (for grayscale images). Micrographs, maps, anatomical drawings, and similar images should each include a scale bar in the figure and its value included in the figure or the caption; please do not use expressions of magnification.

Authors must adopt a uniform style for labeling the elements of figures, structures in micrographs or anatomical drawings, locations on maps, or differences among treatment groups in data graphics. The figure must be readable and understandable without reference to the main text.

Each figure (or element of a multi-part figure) must include a key or legend within the figure that explains important graphical elements (e.g., the meanings of different symbol shapes or colors in a data graphic). For data graphics, label each axis using a short descriptive phrase (e.g., Treatment group, Mortality (%)). Use sentence case, put units in parentheses, and ensure units are the same as units in Methods or Results. Label categories using sentence case. Use italics for genus and species names as in the main text. In micrographs or anatomical drawings or data graphics, use lower-case letters or abbreviated phrases to identify anatomical structures and other elements (e.g., a or ant), or to indicate differences among treatment groups (e.g., a, b, etc.).

Multiple-part figures must be uploaded as a single merged figure. To avoid confusion between labels for panels and labels for elements in a figure, **please use only upper-case letters (A, B, etc.) to label the panels or parts of multiple-part figures.** Figures composed of color and grayscale images should be submitted at a resolution of at least 500 ppi; figures composed of line art and bitmap images (.jpg, .png, or .tif) should be submitted as a TIFF bitmaps at a resolution of 1200 ppi. Authors must not place a frame or box around individual panels in multipart figures, except where the frame adds information (e.g., frames that show latitude and longitude on maps or charts, or gutters that separate histological images from each other).

Each figure should be formatted, cropped, and sized in a graphics application (e.g., Photoshop or Adobe Illustrator). Do not crop or format figures with Microsoft Word or PowerPoint. Similarly, figures should not be created in-line using Microsoft Word tools for drawing or smart objects.

In addition to inserting each figure in the Word file, authors should upload each inserted figure as an individual image file during submission. Full-page multi-panel figures with high-resolution bitmap images may be large files. LZW compression can be used to reduce file size without affecting image quality.

Maps

Maps are figures, and as such must be numbered sequentially along with the other figures, given a figure caption, and inserted in the main manuscript file. Invertebrate Biology and the American Microscopical Society remain neutral concerning jurisdictional claims of published maps. For reasons of consistency, authors are requested to use accepted standard maps as the basis for drawing maps (e.g., using the latest standard base-map of Map Press). Authors are encouraged to draw maps or charts of study areas with open-source tools and data or use maps and charts that are in the public domain. Responsibility for maps rests with the author(s) and it is their responsibility to provide any copyright or license information when using maps that are not owned or created by the author (e.g., Google Maps).