



Data Archiving & Supporting Information

Any additional files supporting your paper should be separated into 'data' and 'supporting information'.

Raw data should be archived in a suitable repository. The Palaeontological Association will cover the cost of a general Dryad record for any paper published in one of its journals, but recommends that some data types are archived in a specialist repository (e.g. MorphoSource or MorphoBank). The following table provides details of common data and supporting information types and their recommended repository:

File type	Examples/notes	Recommended repository
Raw data	Measurements; photos; lists of specimens. This is an independent publication and files should not be labelled as 'supplementary' (e.g. use Data 1 not Table S1, Appendix S1). The record must include a README file to explain the content (see Dryad helpfiles for a template or https://data.research.cornell.edu/content/readme). Tabulated data should be in a simple format (no merged cells, coloured formatting etc.) preferably .csv format.	Dryad
Supplementary figures	Present in a single Word or PDF document, each figure with its caption; print on demand and high-resolution access to images is not available, so images should be no more than 300 dpi at required size (enlarge on screen to check that the required level of detail is clearly visible, and all text is clearly legible). May be combined with other elements in a single Appendix. Name as Fig. S1 etc.	Supporting Information
R code	Dryad can provide a separate, linked Zenodo record for code if a CC0 licence is not appropriate, but will now also allow it to be included in the main record. If there is no other, raw data to archive, it could also be submitted as Supporting Information (e.g. Appendix S1).	Dryad (directly or via Zenodo) OR Supporting Information
Phylogenetic data	Data matrix; character list; can be copied to Supporting Information, but should be archived as well.	MorphoBank
3D scan data	Raw data must be supplied, in addition to any models. New records should not be published until the paper is accepted. Review access is available whilst records are in private mode. MorphoSource can make data open access, or available on request from the holding institution.	MorphoSource
Photogrammetry	As above.	MorphoSource
Supplementary tables	As for supplementary figures, these can be supplied in a single file, or included in a combined Appendix. Name as Table S1 etc.	Supporting Information
Appendices	Additional text; may include different elements, such as figures, tables and text.	Supporting Information

If you have both data and supporting information, please do not name these files in the same sequence. A Dryad, MorphoSource or MorphoBank data record is a separate publication and will be cited as such, without detailed explanations or captions in the main paper. Files submitted as supporting information will be itemised separately in the paper and can be linked individually in the html edition of the main text, as for any figure or table appearing within the text. Do not use 'supplementary' or 'S1' etc. in the file name for Dryad data files.

If in doubt, submit all relevant files in a clear and logical manner and we will check and advise further if necessary as part of the review process. We will provide referees with a temporary link to any large tables or figures that do not fit into the format of the automatic review proof, after you have submitted.

Supporting Information

Any additional text, supplementary figures and/or tables should be supplied as Supporting Information. R code can be uploaded to Dryad if you also have raw data (it requires a different CC licence so Dryad will provide a gateway to Zenodo and link it to your Dryad record).

Text, figures and tables can be supplied separately or combined in a single Word or PDF file. It is not necessary to follow a specific style, but for combined appendices we recommend including a 'Supporting Information' heading, as well as the title of the paper and author names (e.g. <https://doi.org/10.1002/spp2.1472>). If you cite the figures and/or tables in the main text, these should be numbered in the order in which they are cited (e.g. Fig. S1, Table S1 etc.) If they are not individually cited, name your supporting information document 'Appendix S1' and cite it as a whole.

Include a **Supporting Information** statement:

Examples:

Additional Supporting Information can be found in the online version of this article [[doi to be inserted by typesetter](#)]:

Appendix S1. [e.g. Additional methodology and Figures S1–S3; R-code; character–taxon matrix used for cladistic analysis]

Table S1/Fig. S1. [e.g. measurements of all specimens; list of MorphoSource DOIs; specimen photographs]

Data Archiving

Any data required to test your conclusions should be published alongside the paper (unless it is part of a larger dataset that is still being investigated; in this case data can be archived with an embargo period). The Palaeontological Association will cover the cost of a Dryad record to contain any dataset required to support a paper in one of its publications, but we also recommend considering a specialist repository that will curate specific data types and may offer technical assistance. We will accept archiving in any recognised long-term repository but guidance on a few examples is given below.

MorphoSource

- We recommend that you use MorphoSource as a repository for 3D scan data and models. Using a specialist repository will allow the data to be more discoverable and will also better link it to the physical material (MorphoSource feed back metadata to institutional collections). The data can be open access or, if the institution holding the associated physical specimen does not wish it to be made publicly available, an access request link can be provided instead (this should be a permanent, generic contact, not a personal author email).
- If you are uploading 3D scan data, please follow the recommendations of Davies *et al.* (2017) (<https://doi.org/10.1098/rspb.2017.0194>) for what to upload.
- A 3D scan data set should include the full-resolution image stack (e.g. TIFF) as well as the model(s) in STL format. You should also include a text file with a description of the scan settings, voxel settings, techniques used to create images (even if this is mentioned in the paper, it is also essential to anyone using the data package) and specimen information (e.g. any copyright, repository, accession number).
- To use MorphoSource, create a project here: <https://www.morphosource.org/>
- For practical help with creating a MorphoSource record, see https://www.youtube.com/watch?v=hD_ISjfnhc
- For information on how to create a MorphoSource archive for CT data, please see <https://wiki.duke.edu/display/MD/Preferred+Deposit+Structures> and <https://wiki.duke.edu/display/MD/CT+data>

- If you are depositing data from scans that initially contained multiple specimens please consult your collection manager or curator about the best way to archive the individual specimens. The MorphoSource administrators are also very helpful and responsive. Please contact them at an early stage if you have any questions about archiving or citing data (morphosource@duke.edu).
- Please create a temporary access link for your project, to allow the Editor and Referees to view the files before they are published. There are instructions here: <https://tinyurl.com/zpt6v5e7>
- Add this link to your Data Archiving Statement.
- If your paper is accepted, MorphoSource will supply a DOI for each file stack and model in the project, which we can add to the manuscript during the production process. If the list is long, we will include this as a supporting information appendix.

MorphoBank

- For matrices and associated information (including character lists and images, but also other supporting files in any format) we now strongly recommend that you create a record on MorphoBank. Either login at <https://morphobank.org> or register at <https://morphobank.org/index.php/LoginReg/form/showRegister/1> and follow the links to create a project. This is your own private workspace and will remain private until you release your data in conjunction with a peer reviewed paper. You should invite all collaborators so that they can be credited.
- If you do this, please activate 'Reviewer' access in the project. You can then create a password so that we can view the record before it is published. Please include the project number and reviewer login password in the Data Archiving Statement (this would be updated to the final DOI as part of our production process if your paper is accepted).
- To ensure clarity and reusability of your matrix, it should be parsed to the MorphoBank matrix editor, which you will see as a tab in your Project. To do this you must have the character names and state names data embedded in the file itself (you can also create a matrix here from scratch). MorphoBank accepts Nexus and TNT format files including TNT files with continuous data coded as such (<https://doi.org/10.1111/j.1096-0031.2006.00122.x>). However, these domain-

specific formats are not sufficiently standardized, making the files sometimes hard to reuse. MorphoBank standardizes the formats to guarantee reusability, which is critical if scientific results are to be truly archived. Users trying to upload Nexus and TNT files to MorphoBank occasionally run into difficulties for this reason.

MorphoBank's curators respond quickly to any requests sent to support. A small amount of work at this stage ensures long term reusability of the file.

- Other kinds of data can be uploaded to the Documents tab (e.g. Excel spreadsheets, notes on copyright, additional methods). Occasionally authors will store a matrix here, such as one that has molecular data.
- Please add your MorphoBank DOI to the data archiving statement and activate 'Reviewer' access. You can then create a password so that we can view the record before it is published.

Dryad

- If your paper is accepted, the Palaeontological Association will pay the fee required to publish the Dryad record.
- You can request a Dryad link on the submission form, or at any time after submission by contacting editor@palass.org
- We will send metadata for the paper (including title, abstract, keywords and contact information for all authors) to Dryad and you will be able to use this to populate a data record on their website.
- If you ask for the link on submission, we may ask you to upload files before review (if there are large tables in the review proof) or as part of any revision. All data must be uploaded and checked prior to final acceptance. If your files are small enough to upload with your submission, we can share them with referees without immediate Dryad upload. In this case, you will be advised on how to upload your files in the first decision letter.
- Dryad will supply you with a review link and a final DOI. Please include the review link and not the DOI in your manuscript (this will be updated as part of our production process if your paper is accepted; the review link will allow the Editor and

Referees to access your unpublished files). The DOI will not be registered until the record is published.

- To upload your data:
 - Go to <https://datadryad.org/stash> and click on the 'Submit Now' button
 - Login or create an ORCID ID to access the Dryad submission site
 - Select 'Start New Dataset'
 - Journal Name = [Palaeontology/Papers in Palaeontology]
 - Manuscript Number = PALA-xx-xx-xxxx [found on any correspondence from the submission site]
 - Click on 'Import Manuscript Metadata'
 - Add any relevant information about your files to the Methods and Usage Notes sections (this is an independent publication that may be accessed separately from the paper)
 - We will send the DOI for the paper to Dryad to add to the 'Related Works' field if it is accepted for publication
 - Upload your data files on p. 2
 - On p. 3 of the submission form, check the box for 'Private for peer review'.
- It is essential that you note on the Dryad submission form that this data record is linked to a paper in review. Otherwise, Dryad will curate and publish the record immediately (and you may be liable for the cost of publication). On page 3 of the Dryad submission form, please check the box for '**Private for peer review**'. This will generate a review link that we can use to allow our referees access to the uploaded files prior to publication. If your paper is accepted for publication, we will inform Dryad that they should go ahead and publish the record.
- To ensure that your data are archived in the most accessible format, please take time to look at the archiving advice provided by Dryad (even if you intend to upload your data to a different repository): https://datadryad.org/stash/best_practices
- It is advisable to use non-proprietary, openly documented formats, and you should be aware that numerical or tabulated data in Word is particularly problematic as it has to be extracted and transformed in order to be reusable. There is further guidance on file formats here: https://datadryad.org/stash/best_practices

- A Dryad record is a separate publication so it is important that it is entirely self-contained. A text README file is useful, with information about what the data are, how they were obtained and, if they are not in a commonly readable format, how to use or access them. Cornell University's Research Data Management Service Group has created a helpful guide to writing such a document:
<https://data.research.cornell.edu/content/readme>
- Do not use 'supplementary' or 'S1' etc. in the file name for Dryad data files.

Paleobiology Database

If your paper uses PBDB archive data, please state the search terms that you used for the Paleobiology Database, and the date on which you downloaded the dataset. The PBDB helpfiles provide the following example:

The data were downloaded from the Paleobiology Database on 31 December 2013, using the group name 'marine' and the following parameters: time intervals = Eocene and Oligocene, region = Europe, paleoenvironment = marine, Order = Cetacea.

It is also requested that you also cite or acknowledge those workers who contributed to the dataset. According to the helpfiles, it is easy to download an associated bibliography and we'd be happy to include it in an online Appendix.

If your paper is accepted for publication without further review, we will ask you to register it as a PBDB official publication by sending the authors, title and journal to the Database Secretary (sec@paleobiodb.org).

Data archiving statement

Wherever your data is archived, please include a **Data Archiving Statement** immediately before the References in your manuscript. This may include multiple elements if more than one repository is used. Please also include a placeholder for the ZooBank LSID for the paper if it includes new zoological taxa (we will only ask you to register with ZooBank if your paper is accepted without further revision, and will update this placeholder as necessary).

Examples:

This published work and the nomenclatural act(s) it contains, have been registered in ZooBank: <https://zoobank.org/References/XXXXXXXXXX>

Data for this study are available in: MorphoSource: <include temporary review link>; MorphoBank <http://morphobank.org/permalink/?PXXX> [login with user name XXXX; password XXXX]; the Dryad Digital Repository: <include temporary review link>

[please note that the data for this paper are not yet published and this temporary link should not be shared without the express permission of the author]

Citing your data

In addition to the Data Archiving Statement, if you cite your data in the main text of your paper, please include a data reference.

Examples:

CARPENTER, D. K., FALCON-LANG, H. J., BENTON, M. J. and GREY, M. 2015. Data from: Early Pennsylvanian (Langsettian) fish assemblages from the Joggins Formation, Canada, and their implications for palaeoecology and palaeogeography. *Dryad Digital Repository*. <https://datadryad.org/stash/share/XXXX>

BECK, R. M. D. 2012. Data from: An 'ameridelphian' marsupial from the early Eocene of Australia supports a complex model of Southern Hemisphere marsupial biogeography. *MorphoBank*, P739. <https://doi.org/10.7934/P739>

BRONSEN, A. and O'LEARY, R. 2018. Project: Carcharopsis wortheni. *MorphoSource*. <https://www.morphosource.org/projects/00000C387>

RAGAZZOLA, F. 2019. Palaeoenvironmental reconstruction of Early Holocene coralline algae from the Mediterranean Sea. *Pangaea*. <https://doi.org/10.1594/PANGAEA.902268>

LONG, J. 2015. *Atractosteus spatula*, alligator gar. *Digital Morphology*. http://digimorph.org/specimens/Atractosteus_spatula/