

# PHYLACINE 1.2.1:

## An update to the Phylogenetic Atlas of Mammal Macroecology

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### Introduction

PHYLACINE, The Phylogenetic Atlas of Mammal Macroecology, is a taxonomically integrated platform that contains phylogenies, range maps, trait data, and threat statuses for all known mammal species that lived since the last interglacial. Here, in this minor update to the PHYLACINE 1.2 database, we have made corrections to improve the data. For each section of the dataset, we list the changes made to PHYLACINE 1.2 below. Where changes are not easily reproducible from the source provided, we have given additional detail. We also provide information on where to download the latest version of the database as well as how to cite specific versions of the database. This updated version of the PHYLACINE database should be used over the original version and will be useful to any researcher who wishes to investigate large-scale ecological patterns.

### Phylogeny:

In the Small\_phylogeny.nex file, the following names in phylogeny have been aligned to match the accepted taxonomy used in other data types in PHYLACINE:

- *Alces scotti* is now *Cervalces scotti*.
- *Nothrotheriops shastense* is now *Nothrotheriops shastensis*.
- *Pachyarmatherium brasiliense* is now *Pachyarmatherium brasiliense*.
- *Tapirus copei* is now *Tapirus merriami*.
- *Valgipes deformis* is now *Valgipes bucklandi*.

In the Small\_phylogeny.nex file, *Epomophorus minor* has been removed, as this tree only includes species with genetic data and species for which topological placement was unambiguous based on taxonomy.

### Trait data:

Life habits:

The following species life habits have been changed to terrestrial and freshwater and a new source provided.

- *Hydrochoerus hydrochaeris*
- *Hydrochoerus isthmus*
- *Neochoerus aesopi*

#### Body mass:

- *Arctotherium tarijense* body mass has been corrected and a new source provided.
- *Dusicyon australis* body mass has changed and a new source provided.
- *Equus spp.*: All extant species now uses masses reported in the Handbook of the Mammals of the World. Where a range of body mass given, we report the average of the range.
- *Equus francisci* body mass has changed and a new source provided.
- *Hydrochoerus hydrochaeris* body mass is now the average body mass of the reported range from the Handbook of the Mammals of the World.
- *Leopardus jacobita* body mass has been corrected and a new source provided.
- *Sinomegaceros ordosianus* body mass has now been phylogenetically imputed.
- *Stegodon florensis* body mass has changed and a new source provided.

#### IUCN status:

- *Elaphurus davidianus* IUCN status has been changed from Extinct in the Wild (EW) to Critically Endangered (CR), as there are reintroduced populations, and we, for internal consistency reasons, do not want species in the dataset with an extant range coded as extinct.

#### Diet:

- *Ailuropoda melanoleuca* diet information has been updated and a new source provided.
- *Pan paniscus* diet information has been updated and a new source provided. Diet now comes from *Handbook of the Mammals of the World: 3. Primates*. We based diet on reported feeding time: 68% fruit, 29% leaves, and 3% animal matter. The animal matter was divided between vertebrates and invertebrates similar to *Pan troglodytes*.
- *Pan troglodytes* diet information has been updated and a new source provided. Diet now comes from all populations mentioned in Bogart and Pruetz (2010). From Table 9, we merged diet classes and removed unclassifiable "other" categories and rescaled to 100 %. We then calculated the mean plant diet. The mixed vertebrate/invertebrate classes we scaled according to the fractions from the populations where they were reported separately. One population with mixed "other" and "vertebrate/invertebrate" was omitted.
- *Sus scrofa* diet information has been updated and a new source provided.

#### Ranges:

##### Current ranges:

The current ranges for three species were modified from IUCN 2016-3 where only coarse country level ranges were provided. As there are no indications of anthropogenic range expansion for the following species, we removed any cell not in their present-natural range from their current range:

- *Ceratotherium simum*
- *Diceros bicornis*
- *Lontra canadensis*

##### Present natural ranges:

The historical ranges for four North American mammals include areas north of the current ranges, but there is no evidence for any local extinction from the northern part of their range for these species. We therefore reinterpreted these northern areas as a function of imprecision of the historical ranges rather than true range reduction in these parts of the

species ranges. Specifically, we removed any part of the present-natural ranges for the following species north of their current range but kept the remaining differences between the current and present-natural ranges for these species:

- *Lynx canadensis*
- *Martes pennanti*
- *Oreamnos americanus*
- *Ursus americanus*

Current and present natural ranges:

*Muntiacus reevesi* was coded erroneously in the IUCN range maps as reintroduced rather than introduced as it should have been for Great Britain. In our maps we include reintroduced but not introduced parts of ranges for all species. We therefore removed Great Britain from both current and present natural ranges.

Meta-data issues:

We corrected the sources for the following species:

- *Lontra canadensis*
- *Martes americana*
- *Martes pennanti*
- *Ursus americanus*

### Missing data:

Values were imputed for the life habits of 375 species, the diets of 493 species, and the masses of 203 species. Imputed values are clearly marked and should be removed before some phylogenetic analyses to avoid circularity.

### Authentication procedures:

Checksums for the data:

- (1) Trait\_data.csv MD5 1ccb3d897f08982c205eae41193323ae
- (2) Synonymy\_table\_valid species\_only.csv MD5: 7ff6250fb7bd86a26de852a5a420ed5b
- (3) Synonymy\_table\_with\_unaccepted names.csv MD5: f9675efeff9e4e4a0255f0a7f1f830da
- (4) Completed\_phylogeny.nex MD5: e4bfdb1832c97ba0415dcbc487eab705
- (5) Small\_phylogeny.nex MD5: 27d56f99014f857367e56e209de9e054
- (6) Current\_ranges MD5: NA
- (7) Present\_natural\_ranges MD5: NA
- (8) Spatial\_metadata.csv MD5: 104ab1427953f75d7e00f24bf2afd91e

### Download the data

To read the original data paper in Ecology go here: <https://doi.org/10.1002/ecy.2443>

To download the archival version of PHYLACINE (Version 1.2.0), visit our [DataDryad here: https://datadryad.org/stash/dataset/doi:10.5061/dryad.bp26v20](https://datadryad.org/stash/dataset/doi:10.5061/dryad.bp26v20)

For this latest stable version of PHYLACINE (Version 1.2.1), visit Zenodo here: <https://doi.org/10.5281/zenodo.1250503>. You can also fork our GitHub repo ([https://github.com/MegaPast2Future/PHYLACINE\\_1.2](https://github.com/MegaPast2Future/PHYLACINE_1.2)) or click [here](#) to download all the files.

## Cite the data

To properly cite the latest stable version of the PHYLACINE, please cite the original article and the update for the current version.

The citation for the original article is:

Faurby, S., Davis, M., Pedersen, R. Ø., Schowanek, S. D., Antonelli, A., & Svenning, J.C. (2018). PHYLACINE 1.2: The Phylogenetic Atlas of Mammal Macroecology. *Ecology*, 99: 2626-2626, doi:10.1002/ecy.2443

For this updated version of PHYLACINE, the citation is:

Faurby, S., Davis, M., Pedersen, R. Ø., Schowanek, S. D., Jarvie, S., Antonelli, A., & Svenning, J.C. (2020). PHYLACINE 1.2.1: An update to the Phylogenetic Atlas of Mammal Macroecology. doi:10.5281/zenodo.3690867

Please note that users of this database are required to cite the original article on PHYLACINE 1.2 by Faurby et al. (2018) and the updated PHYLACINE 1.2.1 database by Faurby et al. (2020) as well as relevant underlying datasets. For the large underlying datasets for diet, users should also cite EltonTraits 1.0 (Wilman et al. 2014) and MammalDIET (Kissling et al. 2014); for distribution data, users should also cite IUCN (2016) and Faurby and Svenning (2015a); for body size, users should also cite MOM (Smith et al. 2003) and Faurby and Svenning (2016); for island endemism, users should also cite Faurby and Svenning (2016); and for phylogeny or taxonomy, users should also cite Faurby and Svenning (2015b).

## Author contributions

Following CRediT taxonomy, we describe the roles of each of the contributors to PHYLACINE 1.2.1.

Contributor roles	Author
Conceptualization	SF, RP, MD, SJ, SS, AA, J-CS
Data curation	SF, RP, MD, SJ, SS
Formal analysis	SF, RP, MD
Funding acquisition	SF, AA, J-CS
Investigation	SF, RP, MD, SJ, SS, J-CS
Methodology	SF, RP, MD, SJ, SS, J-CS
Project administration	SF, RP, MD, SJ, J-CS
Resources	SF, RP, MD, SJ, SS, J-CS
Software	SF, RP, MD, SJ, SS
Supervision	SF, MD, J-CS
Validation	SF, RP, MD, SJ, J-CS
Visualization	RP, MD
Writing – original draft	RP, SJ
Writing – review and editing	SF, RP, MD, SJ, SS, AA, J-CS

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