

Package: sepkoski (via r-universe)

February 26, 2025

Title Sepkoski's Fossil Marine Animal Genera Compendium

Version 0.0.1.9000

Description Stratigraphic ranges of fossil marine animal genera from Sepkoski's (2002) published compendium. No changes have been made to any taxonomic names. However, first and last appearance intervals have been updated to be consistent with stages of the International Geological Timescale. Functionality for generating a plot of Sepkoski's evolutionary fauna is also included. For specific details on the compendium see: Sepkoski, J. J. (2002). A compendium of fossil marine animal genera. *Bulletins of American Paleontology*, 363, pp. 1–560 (ISBN 0-87710-450-6). Access:
<https://www.biodiversitylibrary.org/item/40634#page/5/mode/1up>.

License GPL (>= 3)

Language en-GB

Encoding UTF-8

LazyData true

Depends R (>= 4.0)

Imports deeptime, ggplot2, palaeoverse, rlang

Roxygen list(markdown = TRUE)

RoxygenNote 7.3.2

Config/testthat/edition 3

URL <https://github.com/LewisAJones/sepkoski>,
<https://lewisajones.github.io/sepkoski/>

BugReports <https://github.com/LewisAJones/sepkoski/issues>

Suggests covr, knitr, testthat (>= 3.0.0), vdiff (>= 1.0.0)

Config/pak/sysreqs libfontconfig1-dev libfreetype6-dev libgdal-dev
gdal-bin libgeos-dev libicu-dev libjpeg-dev libpng-dev
libxml2-dev libssl-dev libproj-dev libsqlite3-dev
libudunits2-dev libnode-dev

Repository <https://lewisajones.r-universe.dev>
RemoteUrl <https://github.com/lewisajones/sepkoski>
RemoteRef HEAD
RemoteSha eb2bb1cca7fa7565e762eb8e73cbc34b16f6b7d2

Contents

interval_table	2
sepkoski	3
sepkoski_curve	4
sepkoski_curve_base	5
sepkoski_raw	6
Index	8

interval_table	<i>Interval table for linking and standardising intervals</i>
----------------	---

Description

This dataset provides the interval table used for updating the intervals in Sepkoski’s fossil marine animal genera compendium with the **International Geological Time Scale 2023**. This table was generated based on published literature and the **GeoWhen Database**. In the majority of cases, this was a clear conversion. However, in several cases reasonable interpretation was required.

Usage

interval_table

Format

- A data.frame with 302 rows and 4 variables:
- interval_max** A character denoting the oldest international geological stage.
 - interval_min** A character denoting the youngest international geological stage.
 - code** A character denoting the original interval abbreviation.
 - original_interval** A character denoting the original interval.

sepkoski*Sepkoski's marine animal genera compendium*

Description

This dataset is a port of [Sepkoski's \(2002\)](#) published compendium of fossil marine animal genera. This version of the dataset was pulled from Shanan Peters' [online database](#). No changes have been made to any taxonomic names. However, first and last appearance intervals have been updated to stages from the [International Geological Time Scale 2023](#). In updating interval names, some interpretation was required. The [interval_table](#) dataset documents the linked interval names.

Usage

sepkoski

Format

A data.frame with 35826 rows and 9 variables:

phylum A character denoting the phylum of the taxon.

class A character denoting the class of the taxon.

order A character denoting the order of the taxon.

genus A character denoting the genus of the taxon.

fauna A character denoting the great evolutionary fauna type of the taxon.

interval_max A character denoting the interval of first occurrence.

interval_min A character denoting the interval of last occurrence.

max_ma A numeric denoting the interval age of first occurrence.

min_ma A numeric denoting the interval age of last occurrence.

References

Sepkoski, J. J. (2002). A compendium of fossil marine animal genera. *Bulletins of American Paleontology*, 363, pp. 1–560.

Source

Shanan Peter's 'Sepkoski's Online Genus Database': <http://strata.geology.wisc.edu/jack/>.

sepkoski_curve*Plot Sepkoski's evolutionary fauna using ggplot*

Description

This function plots Sepkoski's evolutionary fauna (Sepkoski, 1981), using the Sepkoski (2002) fossil marine animal genera compendium (i.e. the included [sepkoski](#) dataset). No changes have been made to any taxonomic names in this dataset. However, first and last appearance intervals have been updated to stages from the [International Geological Time Scale 2023](#). As such, minor differences may be observed to previously published plots. See [interval_table](#) for interval definitions.

Usage

```
sepkoski_curve()
```

Details

Taxa are assigned to evolutionary fauna (EF) categories as follows:

- Cambrian EF: Trilobita, Polychaeta, Tergomya ("Monoplacophora"), Inarticulata, and Hyolithomorpha.
- Paleozoic EF: Anthozoa, Articulata, Asteroidea, Cephalopoda, Crinoidea, Ostracoda, Ophiuroidea, Somasteroidea, and Stenolaemata.
- Modern EF: Bivalvia, Chondrichthyes, Demospongia, Echinoidea, Gastropoda, Gymnolaemata, Malacostraca, and Osteichthyes.

Value

Function is primarily used to plot Sepkoski's curve with ggplot2. A ggplot object is returned invisibly.

References

Sepkoski, J. J. (1981). A factor analytic description of the Phanerozoic marine fossil record. *Paleobiology*, 7(1), pp. 36–53.

Sepkoski, J. J. (2002). A compendium of fossil marine animal genera. *Bulletins of American Paleontology*, 363, pp. 1–560.

Examples

```
# Generate default plot
sepkoski_curve()

# Customise plot colours
library(ggplot2)
sepkoski_curve() +
  scale_fill_brewer()
```

```
# Customise geological timescale
library(deeptime)
sepkoski_curve() +
  coord_geo(
    pos = as.list(rep("bottom", 2)),
    dat = list("stages", "periods"),
    height = list(unit(1, "lines"), unit(1, "line")),
    size = list(2.5, 2.5),
    lab = list(FALSE, TRUE))
```

sepkoski_curve_base *Plot Sepkoski's evolutionary fauna using base R*

Description

This function plots Sepkoski's evolutionary fauna (Sepkoski, 1981), using the Sepkoski (2002) fossil marine animal genera compendium (i.e. the included [sepkoski](#) dataset). No changes have been made to any taxonomic names in this dataset. However, first and last appearance intervals have been updated to stages from the [International Geological Time Scale 2023](#). As such, minor differences may be observed to previously published plots. See [interval_table](#) for interval definitions.

Usage

```
sepkoski_curve_base(plot_args = NULL, axis_args = NULL, legend_args = NULL)
```

Arguments

plot_args	list. A named list of optional arguments that are passed directly to graphics::plot() . If NULL (default), a default list of arguments are used.
axis_args	list. A named list of optional arguments that are passed directly to palaeoverse::axis_geo() . If NULL (default), a default list of arguments are used. If FALSE, no axis is added.
legend_args	list. A named list of optional arguments that are passed directly to graphics::legend() . If NULL (default), a default list of arguments are used. If FALSE, no legend is added.

Details

Taxa are assigned to evolutionary fauna (EF) categories as follows:

- Cambrian EF: Trilobita, Polychaeta, Tergomya ("Monoplacophora"), Inarticulata, and Hyolithomorpha.
- Paleozoic EF: Anthozoa, Articulata, Asteroidea, Cephalopoda, Crinoidea, Ostracoda, Ophiuroidea, Somasteroidea, and Stenolaemata.
- Modern EF: Bivalvia, Chondrichthyes, Demospongia, Echinoidea, Gastropoda, Gymnolaemata, Malacostraca, and Osteichthyes.

Value

No return value. Function is used to plot Sepkoski's curve with user-defined arguments.

References

Sepkoski, J. J. (1981). A factor analytic description of the Phanerozoic marine fossil record. *Paleobiology*, 7(1), pp. 36–53.

Sepkoski, J. J. (2002). A compendium of fossil marine animal genera. *Bulletins of American Paleontology*, 363, pp. 1–560.

Examples

```
# Plot curve with default arguments
sepkoski_curve_base()

# Plot curve with user-defined arguments
sepkoski_curve_base(plot_args = list(main = "Sepkoski's Curve"),
                    axis_args = list(intervals = list("stages", "periods"),
                                     lab = FALSE),
                    legend_args = list(bty = "o"))
```

sepkoski_raw

Sepkoski's marine animal genera compendium (raw)

Description

This dataset is a port of [Sepkoski's \(2002\)](#) published compendium of fossil marine animal genera. This version of the dataset was pulled from Shanan Peters' [online database](#). No changes have been made to any taxonomic names or first and last appearance data. The definitions of stage/period abbreviations are provided in [Sepkoski's \(2002\)](#), or can be accessed via the included [interval_table](#) for convenience.

Usage

```
sepkoski_raw
```

Format

A data.frame with 35826 rows and 8 variables:

phylum A character denoting the phylum of the taxon.

class A character denoting the class of the taxon.

order A character denoting the order of the taxon.

genus A character denoting the genus of the taxon.

FOP A character denoting the geological period of first occurrence.

FOS A character denoting the geological stage of last occurrence.

LOP A character denoting the geological period of first occurrence.

LOS A character denoting the geological stage of last occurrence.

References

Sepkoski, J. J. (2002). A compendium of fossil marine animal genera. *Bulletins of American Paleontology*, 363, pp. 1–560.

Source

Shanan Peter's 'Sepkoski's Online Genus Database': <http://strata.geology.wisc.edu/jack/>.

Index

* datasets

interval_table, [2](#)

sepkoski, [3](#)

sepkoski_raw, [6](#)

graphics::legend(), [5](#)

graphics::plot(), [5](#)

interval_table, [2](#), [3–6](#)

palaeoverse::axis_geo(), [5](#)

sepkoski, [3](#), [4](#), [5](#)

sepkoski_curve, [4](#)

sepkoski_curve_base, [5](#)

sepkoski_raw, [6](#)