Package 'sepkoski'

November 23, 2022

Title Sepkoski's Fossil Marine Animal Genera Compendium

Version 0.0.1

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 (>= 3.5.0)

RoxygenNote 7.2.1

Config/testthat/edition 3

URL <https://github.com/LewisAJones/sepkoski>

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

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

NeedsCompilation no

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Repository CRAN

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R topics documented:

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interval_table   *Interval table for linking and standardising intervals*

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 2022. 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.

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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 2022. 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/>.

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sepkoski_curve	*Plot Sepkoski's evolutionary fauna*

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 2022. As such, minor differences may be observed to previously published plots.

Usage

```
sepkoski_curve(
  title = NULL,
  height = 0.05,
  cols = NULL,
  int_lab = TRUE,
  int_size = 1,
  fill = FALSE,
  legend = TRUE,
  legend_size = 1
)
```

Arguments

title	`character`. Title of the plot. Defaults to `NULL`.
height	`numeric`. Height of the Geological Time Scale relative to the plot area. Defaults to 0.05.
cols	`character`. The colours of the polygons in the plot area.
int_lab	`logical`. Should interval labels be added? Defaults to TRUE.
int_size	`numeric`. The size of the interval labels. Defaults to 1.
fill	`logical`. Should interval boxes be plotted with the ICS colour scheme? Defaults to FALSE.
legend	`logical`. Should a legend be added to the plot? Defaults to TRUE.
legend_size	`numeric`. The size of the legend. Defaults to 1.

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()

# Plot curve with user-defined arguments
sepkoski_curve(title = "Sepkoski's curve",
               col = "black",
               fill = TRUE,
               legend = FALSE)
```

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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/.

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