Package 'rorqual.morpho'

March 15, 2020

Type Package

Title Morphological Allometry of Rorquals

Version 0.1.1

Description Predicts morphological parameters of rorquals (e.g. body mass, flipper length, maximum engulfment capacity) from body length using allometric equations from Kahane-Rapport and Goldbogen (2018) <doi:10.1002/jmor.20846>.

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Depends R (>= 2.10)

Imports dplyr, magrittr

Encoding UTF-8

LazyData true

RoxygenNote 7.0.2

NeedsCompilation no

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Repository CRAN

Date/Publication 2020-03-15 11:30:02 UTC

R topics documented:

`allometry` *Allometric equations for rorqual morphology*

Description

A dataset including the intercepts and slopes of the ordinary least squares allometric regression (in log10 space) of various morphometric parameters against body length. Use the formula 10^intercept * length^slope to predict morphology.

Usage

```
allometry
```

Format

A data frame with 5 columns:

species_code two letter codes: bw, bp, mn, ba, be, and bs

binomial scientific binomials

morphology morphological parameter e.g. flipper length, body mass

slope slope of the allometric relationship

intercept intercept of the allometric relationship

Source

doi: 10.1002/jmor.20846

`morph_fun` *Generic morphology function*

Description

Generic morphology function

Usage

```
morph_fun(species, length_m, morph)
```

Arguments

species	a vector of species codes
length_m	a vector of lengths in meters
morph	name of the morphological measurement (length one character vector)

Value

vector of measurements

---

power_law *Power law*

Description

Power law

Usage

```
power_law(a, b, x)
```

Arguments

a	intercept of the log10-log10 relationship
b	slope of the log10-log10 relationship
x	untransformed values for power law calculation

Value

a vector of power law results

---

rorq_bizygomatic *Rorqual bizygomatic skull width*

Description

Rorqual bizygomatic skull width

Usage

```
rorq_bizygomatic(species, length_m)
```

Arguments

species	a vector of species codes
length_m	a vector of lengths in meters

Value

a vector of bizygomatic skull widths in m

Examples

```
# A 22m blue whale
rorq_bizygomatic("bw", 22)

# A 7m minke
rorq_bizygomatic("ba", 7)
```

---

rorq_engulf *Rorqual engulfment capacity*

Description

Rorqual engulfment capacity

Usage

```
rorq_engulf(species, length_m)
```

Arguments

species	a vector of species codes
length_m	a vector of lengths in meters

Value

a vector of engulfment capacities in kg of water

Examples

```
# A 22m blue whale
rorq_engulf("bw", 22)

# A 7m minke
rorq_engulf("ba", 7)
```

rorq_flipper *Rorqual flipper length*

Description

Rorqual flipper length

Usage

```
rorq_flipper(species, length_m)
```

Arguments

species	a vector of species codes
length_m	a vector of lengths in meters

Value

a vector of flipper lengths in m

Examples

```
# A 22m blue whale
rorq_flipper("bw", 22)

# A 7m minke
rorq_flipper("ba", 7)
```

rorq_fluke *Rorqual fluke length*

Description

Rorqual fluke length

Usage

```
rorq_fluke(species, length_m)
```

Arguments

species	a vector of species codes
length_m	a vector of lengths in meters

Value

a vector of fluke lengths in m

Examples

```
# A 22m blue whale
rorq_fluke("bw", 22)

# A 7m minke
rorq_fluke("ba", 7)
```

`rorq_mandible` *Rorqual projected mandible length*

Description

Rorqual projected mandible length

Usage

```
rorq_mandible(species, length_m)
```

Arguments

`species`	a vector of species codes
`length_m`	a vector of lengths in meters

Value

a vector of laterally projected mandible lengths in m

Examples

```
# A 22m blue whale
rorq_mandible("bw", 22)

# A 7m minke
rorq_mandible("ba", 7)
```

`rorq_mass` *Rorqual mass*

Description

Rorqual mass

Usage

```
rorq_mass(species, length_m)
```

Arguments

species	a vector of species codes
length_m	a vector of lengths in meters

Value

a vector of masses in kg

Examples

```
# A 22m blue whale
rorq_mass("bw", 22)

# A 7m minke
rorq_mass("ba", 7)
```

---

rorq_massratio *Rorqual engulfed water mass to body mass ratio*

Description

Rorqual engulfed water mass to body mass ratio

Usage

```
rorq_massratio(species, length_m)
```

Arguments

species	a vector of species codes
length_m	a vector of lengths in meters

Value

a vector of ratios (engulfed water mass to body mass)

Examples

```
# A 22m blue whale
rorq_massratio("bw", 22)

# A 7m minke
rorq_massratio("ba", 7)
```

`rorq_vgb` *Rorqual ventral groove blubber length*

Description

Rorqual ventral groove blubber length

Usage

```
rorq_vgb(species, length_m)
```

Arguments

`species`	a vector of species codes
`length_m`	a vector of lengths in meters

Value

a vector of VGB lengths in m

Examples

```
# A 22m blue whale
rorq_vgb("bw", 22)

# A 7m minke
rorq_vgb("ba", 7)
```

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