

# Package ‘rorqual.morpho’

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**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>](https://doi.org/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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allometry	<i>Allometric equations for rorqual morphology</i>
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### 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  $10^{\text{intercept}} * \text{length}^{\text{slope}}$  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](https://doi.org/10.1002/jmor.20846)

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morph_fun	<i>Generic morphology function</i>
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### 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

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power\_law            *Power law*

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**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

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rorq\_bizygomatic      *Rorqual bizygomatic skull width*

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**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)
```

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rorq_engulf	<i>Rorqual engulfment capacity</i>
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**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	<i>Rorqual flipper length</i>
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**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	<i>Rorqual fluke length</i>
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---

**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)
```

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rorq_mandible	<i>Rorqual projected mandible length</i>
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---

**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)
```

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rorq_mass	<i>Rorqual mass</i>
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**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*

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**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*

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**Description**

Rorqual ventral groove blubber length

**Usage**

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

**Arguments**

<code>species</code>	a vector of species codes
<code>length_m</code>	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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