

Package ‘sheepModel’

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Type Package

Title Sheep mechanistic model to study energy allocation in sheep and model lambs tradeoff

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Depends R (>= 4.0.0), dplyr, geosphere

Suggests testthat

Description This model consists in modelling and simulating the energy allocation trade-offs between biological functions in the ewe and her lambs.

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Encoding UTF-8

RoxygenNote 7.3.2

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sheep_model

Sheep model simulation

Description

Main function for the simulation of the ewes and their lambs

Usage

```
sheep_model(parms3, time_vec = seq(0, parms3$tsim, parms3$dT))
```

Arguments

parms3	list (or a line of a data frame) of model parameters
time_vec	time at which the results are logged

Value

A list of two elements - G0: table of ewes and lambs - w: records of ewe and lambs output_traits at time_vec times.

Examples

```
parameters_definition <- sheep_model_default_params()
parval = rbind(NULL, parameters_definition$default_value)
colnames(parval) <- parameters_definition$name
parval = as.data.frame(parval)
sheep_model(parval)
```

sheep_model_default_params

Provides the list of parameters as well as their default value and bounds

Description

It Provides the list of parameters as well as their default value and bounds

Usage

```
sheep_model_default_params()
```

Value

A data frame with all the parameters and their default values and bounds.

Examples

```
params = sheep_model_default_params()
```

sheep_model_eval	<i>Post treatment function that computes ewes and lambs output traits</i>
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Description

It computes output traits of ewes and lambs from simulation results

Usage

```
sheep_model_eval(params, w, G0)
```

Arguments

params	list (or a line of a data frame) of model parameters
w	records of ewe and lambs output_traits at time_vec times (results of simulation)
G0	table of ewes and lambs (results of simulation)

Value

A data frame giving the food availability and the energy it embeds.

Examples

```
parameters_definition <- sheep_model_default_params()
parval = rbind(NULL, parameters_definition$default_value)
colnames(parval) <- parameters_definition$name
parval = as.data.frame(parval)
sim = sheep_model(parval)
sheep_model_eval(parval, sim$w, sim$G0)
```

sheep_model_feed_quality

Initialization of the solid food for Ewes and lambs

Description

Initialization function for the sheep model simulation

Usage

```
sheep_model_feed_quality(tsim)
```

Arguments

tsim integer which gives the total time of simulation

Value

A data frame giving the food availability and the energy it embeds.

Examples

```
sheep_model_feed_quality(4000)
```

sheep_model_initialpop

Initialization of the Ewe population

Description

Initialization function for the sheep model simulation

Usage

```
sheep_model_initialpop(parms)
```

Arguments

parms list (or a line of a data frame) of model parameters

Value

G0: table of ewes

Examples

```
parameters_definition <- sheep_model_default_params()
parval = rbind(NULL, parameters_definition$default_value)
colnames(parval) <- parameters_definition$name
parval = as.data.frame(parval)
sheep_model_initialpop(parval)
```

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