

Package: pupR (via r-universe)

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License CC0
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pupR-package

Model-based estimation of northern fur seal pup production

Description

Mark-resight models for estimation of northern fur seal pup abundance.

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Type: Package
Version: 0.0.1
Date: February 27, 2017
License: CC0
LazyLoad: yes

Note

This software package is developed and maintained by scientists at the NOAA Fisheries Alaska Fisheries Science Center and should be considered a fundamental research communication. The recommendations and conclusions presented here are those of the authors and this software should not be construed as official communication by NMFS, NOAA, or the U.S. Dept. of Commerce. In addition, reference to trade names does not imply endorsement by the National Marine Fisheries Service, NOAA. While the best efforts have been made to insure the highest quality, tools such as this are under constant development and are subject to change.

Author(s)

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dbinom2

Binomial PDF

Description

A binomial pdf that handles a noninteger 'size' argument.

Usage

```
dbinom2(x, size, prob, log = FALSE)
```

Arguments

x	vector of quantiles
size	number of trials (zero or more). Unlike base 'dbinom' doesn't have to be an integer
prob	probability of success on each trial
log	logical; if TRUE, probabilities p are given as log(p)

Author(s)

Devin S. Johnson

fit_oo	<i>Fit observer by occasion model to NFS resight data</i>
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Description

Fit the observer by occasion model using maximum likelihood. The parameters, covariance matrix, and log-likelihood are returned in a list.

Usage

```
fit_oo(data, M, start_val = NULL, refit = TRUE, ...)
```

Arguments

data	A data frame containing the resight information. The data must contain the columns (1) 'obs'– the categorical name of the observer. (2) 'resample'– a variable indicating the resample occasion (3) 'm'– the counts of marked pups by each observer (4) 'u'– the counts of unmarked pups
M	the total number of unmarked pups in the population
start_val	an optional vector of starting values for the model
refit	logical. should the function attempt a refit to help ensure global optimum is reached
...	holding space for any other variable supplied, these will be ignored

get_IS_sample	<i>Draw posterior sample using Sample-Importance-Resample algorithm</i>
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Description

Uses SIR methodology to draw a sample from the posterior distribution. A MVN proposal is used based on the MLE list output of the model fitting function

Usage

```
get_IS_sample(fit, data, M, res = 5000, initial = 10000, ...)
```

Arguments

fit	A list produced by 'fit_oo' function
data	The resampling data
M	the total number of pups shear marked
res	the size of the resample
initial	size of the initial sample from the MVN proposal
...	holding space for any other variable supplied, these will be ignored

ln_lik_oo	<i>log likelihood funtion for observer by occasion model</i>
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Description

calculate log-likelihood for the observer by occassion model

Usage

```
ln_lik_oo(par, M, u, m)
```

Arguments

par	parameter vector
M	Number of marks distributed
u	vector on unmarked animals counted by each observer on each occasion
m	vector on marked animals counted by each observer on each occasion

Author(s)

Devin S. Johnson

load_demo_data	<i>Load raw example data</i>
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Description

Load the 2016 shearing data into the global workspace.

Usage

```
load_demo_data()
```

see_demo	<i>View demonstration</i>
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Description

This function allows users to access a full step-by-step guide for using 'pupR' and other packages in the R statistical environment for estimating northern fur seal pup production.

Usage

```
see_demo()
```

show_data_loc	<i>Locate raw example data</i>
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Description

Show the location of the installed raw data .csv files for the 2016 shearing season

Usage

```
show_data_loc()
```

`summarize_oo`*Summarize the posterior sample*

Description

Here we summarize the posterior sample into a table for each rookery

Usage

```
summarize_oo(SIR, M, ...)
```

Arguments

SIR	a matrix of posterior samples from the 'get_IS_sample' function
M	total number of sheared pups
...	holding space for any other variable supplied, these will be ignored

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