Package: mbpp (via r-universe)

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Type Package

Title Model-based estimation of northern fur seal pup production

Version 0.0.1

Author Devin S. Johnson

Maintainer Devin S. Johnson <devin.johnson@noaa.gov>

Description Impliments methods for model-based estimation of northern fur seal pup production.

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Imports TMB, R2jags, dplyr, magrittr, numDeriv

Encoding UTF-8

LazyData true

RoxygenNote 7.1.2

Repository https://dsjohnson.r-universe.dev

RemoteUrl https://github.com/dsjohnson/mbpp

RemoteRef HEAD

RemoteSha d18485ffddca62347db618bfe321b3410cbecdbb

Contents

asym_mbpp — *Fit asymptotic approximation of hierarchical N-mixture model for estimation of northern fur seal pup production.*

Description

Fit asymptotic approximation of hierarchical N-mixture model for estimation of northern fur seal pup production.

Usage

```
asym_mbpp(
  det_formula = ~rcode * resample * observer,
  avail_formula = ~rcode,
  mark_data,
  resight_data,
  par,
  ...
)
```

Arguments

det_formula	formula for the detection model
avail_formula	formula for the avaialbility model
mark_data	Data frame providing pups marked and dead pup counts for each site
resight_data	Data frame providing marked and unmarked resight counts
par	Optional start value specification.
...	additional arguments passed to nlminb() or TMB::MakeADFun() for optimization

Author(s)

Devin S. Johnson

boot_asym — *Parameteric bootstrap sample for abundance*

Description

Parameteric bootstrap sample for abundance

Usage

```
boot_asym(object, size = 10000)
```

Arguments

`object`	A fitted model object from aysm_mbpp
`size`	Number of bootstrap samples to draw

Details

This function uses the asymtotic model fit from TMB to generate a bootstrap sample for parameter inference

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`compile_mbpp_tmb` *Compile package TMB function*

Description

Compile package TMB function

Usage

```
compile_mbpp_tmb()
```

Arguments

`model`	Details which model to compile

Details

This function is only used once after the package is installed to compile the c++ TMB code for asymptotic abundance estimation. Simply call the function to compile the source code.

`jags_mbpp` *Fit asymptotic approximation of hierarchical N-mixture model for estimation of northern fur seal pup production.*

Description

Fit asymptotic approximation of hierarchical N-mixture model for estimation of northern fur seal pup production.

Usage

```
jags_mbpp(
  dp_formula = ~0 + log(harem_bulls),
  avail_formula = ~rcode,
  mark_data,
  resight_data,
  par,
  ...
)
```

Arguments

avail_formula	formula for the avaialbility model
mark_data	Data frame providing pups marked and dead pup counts for each site
resight_data	Data frame providing marked and unmarked resight counts
par	Optional start value specification.
...	additional arguments passed to R2jags::jags such as n.chains, n.iter, n.burnin, or n.thin for optimization
det_formula	formula for the detection model

Author(s)

Devin S. Johnson

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nfs_mark *Northern fur seal shear marking data from 2016*

Description

Northern fur seal shear marking data from 2016

Format

A data frame with 19 observations on the following 6 variables.

icode Island designation

rcode Rookery designation

deadpups Number of dead pups counted on survey

pupsborn Estimated pup production using design-based method

sep Estimated standard error using design-based method

M Number of pups shear marked

Source

Marine Mammal Laboratory, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA 7600 Sand Point Way NE Seattle, WA 98115

`nfs_resight` *Northern fur seal mark resight data from 2016*

Description

Northern fur seal mark resight data from 2016

Format

A data frame with 76 observations on the following 6 variables.

icode Island designation

rcode Rookery designation

resample The resight occasion designation

observer The observer designation

m Number of marked pups observed

u Number of unmarked pups observed

Source

Marine Mammal Laboratory, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA 7600 Sand Point Way NE Seattle, WA 98115

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