Package 'OBMbpkg'

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Type Package

Title Estimate the Population Size for the Mb Capture-Recapture Model

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Description Applies an objective Bayesian method to the Mb capture-recapture model to estimate the population size N. The Mb model is a class of capture-recapture methods used to account for variations in capture probability due to animal behavior. Under the Mb formulation, the initial capture of an animal may effect the probability of subsequent captures due to their becoming ``trap happy" or ``trap shy."

License GPL-3

Encoding UTF-8

LazyData true

RoxygenNote 5.0.1

Suggests stats

NeedsCompilation no

Repository CRAN

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Contents

OBMb *Objective Bayesian Analysis for the Mb Capture-Recapture Model*

Description

Applies an objective Bayesian method on to the Mb capturere-capture model to estimate the population size N.

Usage

```
OBMb(k, n, M, x, CI1 = 0.025, CI2 = 0.975, max = 10000, IFMLE = TRUE)
```

Arguments

k	Number of sampling occasions
n	Total number of distinct animals captured
M	Number of marked animals captured in all sampling occasions
x	The number of new animals captured at each sampling occasion
CI1	Lower confidence level
CI2	Upper confidence level
max	The maximum of function evaluations used for computing the integrated likelihood L(N|X)
IFMLE	Logical, will also print MLE results if TRUE

Value

- EMEAN: Posterior mean for N
- EMEDIAN: Posterior median for N
- OBCI: Credible interval values based on the quantiles specified by CI1 and CI2
- MLE: If IFMLE==TRUE, this is the frequentist MLE for N
- Ep: If IFMLE==TRUE, the frequentist estimate of the initial capture probability p
- MLECI: If IFMLE==TRUE, confidence interval for the MLE quantile specified by CI2

Examples

```
# Data simulation example
k=10
tN=600   #True N
p=0.06
JN=rep(0,k+1)

N=rep(0,k)
x=rep(0,k)
for (j in 1:k){
```

```
  N[j]=tN-JN[j]
  x[j]=rbinom(1,N[j],p)
  JN[j+1]=JN[j]+x[j]
}
M=sum(JN[1:k])
n=JN[k+1]

OBMb(k=k,n=n,M=M,x=x)

#Deer mouse example from Otis et al 1978
Data<-c(15, 8, 6, 3, 3, 3)   #new animals captured at each sampling occasion

OBMb(k=6,n=38,M=134,x=Data)
```

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