

Package ‘COSTmbe’

July 31, 2009

Title COSTmbe

Maintainer Hanne Rognebakke <hanne.rognebakke@nr.no>

Version 1.0

Author Hanne Rognebakke, David Hirst and Geir Storvik

Depends R (>= 2.8.1), MASS, COSTsim

Description Performs catch at age analysis using MCMC

License GPL2

LazyLoad Yes

LazyData Yes

R topics documented:

run.bayes 1

run.bayes *Run Bayesian analysis to catch at age model*

Description

Using age, length and weight data, caa fits catch at age model to data using a Bayesian approach and MCMC simulations.

The model contain three sub-models.

Age model: Multinomial with probabilities given by a "multilogistic" relation to covariates which can include intercept (always included), year-effect, season-effect, gear-effect, area-effect and haul effect (always included).

Length given age model:

$$\log(l_{t,f}) = \beta_{0,t} + \beta_{1,t}g(a_{t,f}) + \varepsilon_{t,f}$$

where $g(a)$ is log-linear (scaled to be between zero and one). Both $\beta_{0,t}$ and $\beta_{1,t}$ are linear in covariates. $\beta_{0,t}$ can include intercept (always included), year-effect, season-effect, gear-effect, area-effect and haul effect, while $\beta_{1,t}$ includes intercept only.

Weight given length model:

$$\log(w_{t,f}) = \delta_{0,t} + \delta_{1,t} \log(l_{t,f}) + \varepsilon_{t,f}$$

Both $\delta_{0,t}$ and $\delta_{1,t}$ are linear in covariates. $\delta_{0,t}$ can include intercept (always included), year-effect, season-effect, gear-effect, area-effect and haul effect, while $\delta_{1,t}$ includes intercept only.

Usage

```
run.bayes(COST.data, fit=NULL, do.predict=T, species, timeStrata="quarter",
          burnin=2000, thin=1, nmcmc=1000, ageMin=0, ageMax=20,
          usewglrel=T, cov.list=NULL, pred.cov.real=NULL, arealist=NULL, l.int)
```

Arguments

<code>COST.data</code>	An object of type ...
<code>fit</code>	ToDo
<code>do.predict</code>	ToDo
<code>species</code>	ToDo
<code>timeStrata</code>	Time resolution of sampling. Can be "quarter" (default) if sampled by season, or "month" if sampled by months.
<code>burnin</code>	Number of MCMC iterations before storing samples.
<code>thin</code>	Number of iterations between each time samples are stored.
<code>nmcmc</code>	Number of samples to be stored. The total number of iterations will be <code>burnin + thin * envnmcmc</code> .
<code>ageMin</code>	Minimum age in the model.
<code>ageMax</code>	Maximum age in the model.
<code>usewglrel</code>	ToDo
<code>cov.list</code>	ToDo
<code>pred.cov.real</code>	ToDo
<code>arealist</code>	ToDo
<code>l.int</code>	ToDo

Value

An object `fit` from the estimation and an object `predict`

Index

run.bayes, 1