

Package ‘MixFishSim’

October 12, 2016

Title Mixed Fishery fleet dynamics simulation tool

Version 0.0.0.9000

Description A simulation framework for evaluating fleet dynamics in mixed fisheries.

Depends R (>= 3.3.1),

Imports spate

License What license is it under?

Encoding UTF-8

LazyData true

RoxygenNote 5.0.1

Suggests testthat

R topics documented:

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create_fields	<i>Create species distribution fields</i>
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Description

create_fields parametrises and returns the spatio-temporal fields used for the relative species spatial distribution and movement for the fishery simulations.

The spatio-temporal fields are generated using [spate.sim](#) function from the *spate* package using an advective-diffusion Stochastic Partial Differential Equation (SPDE). See *Lindgren 2011 and Sigrist 2015* for further detail.

Usage

```
create_fields(npt = 1000, t = 1, seed = 123, n.spp = NULL,  
             spp.ctrl = NULL, plot.dist = FALSE, plot.file = getwd())
```

Arguments

npt	Numeric integer with the dimensions of the field in $npt * npt$
t	Numeric integer with the number of time-steps in the simulation
seed	(Optional) Numeric integer with the seed for the simulation
n.spp	Numeric integer with the number of species to be simulated. Each species must have an individual control list as detailed below.
spp.ctrl	List of controls to generate each species spatio-temporal distribution. Must be of the form <code>spp.ctrl(list(spp.1 = c(rho0 = 0.001, ...), spp.2 = c(rho0 = 0.001, ..),...))</code> and contain the following: <ul style="list-style-type: none"> • rho0 (≥ 0) Controls the range in a matern covariance structure. • sigma2 (≥ 0) Controls the marginal variance (i.e. process error) in the matern (≥ 0) covariance structure. • zeta (≥ 0) Damping parameter; regulates the temporal correlation. • rho1 (≥ 0) Range parameter for the diffusion process • gamma (≥ 0) Controls the level of anisotropy • alpha ($[0, \pi/2]$) Controls the direction of anisotropy • muX ($[-0.5, 0.5]$) x component of drift effect • muY ($[-0.5, 0.5]$) y component of drift effect • tau2 (≥ 0) Nugget effect (measurement error) • nu Smoothness parameter for the matern covariance function
plot.dist	Boolean, whether to plot the distributions to file
plot.file	path to save the plots of the species distributions

Value

List with first level being the species (1 -> n) and the second being time (1 -> t)

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