

# Package ‘dalmatian’

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**Title** Automating the Fitting of Double Linear Mixed Models in 'JAGS' and 'nimble'

**Version** 1.0.0

**Description** Automates fitting of double GLM in 'JAGS'. Includes automatic generation of 'JAGS' scripts, running 'JAGS' or 'nimble' via the 'rjags' and 'nimble' package, and summarizing the resulting output. For further information see Bonner, Kim, Westneat, Mutzel, Wright, and Schofield <[doi:10.18637/jss.v100.i10](https://doi.org/10.18637/jss.v100.i10)>.

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**License** GPL-2

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betabin_data_1	<i>Simulated data for illustrating the beta-binomial model</i>
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## Description

Simulated data to show how the beta-binomial model may be fit with fixed and random effects on both the mean and dispersion.

## Usage

```
betabin_data_1
```

## Format

A data frame containing 500 observations and 6 columns:

**ID** The individual ID.

**Rep** The replicate number.

**x1** The value of the covariate for the mean.

**x2** The value of the covariate for the dispersion.

**m** The number of Bernoulli trials for each observation.

**y** The number of successes.

---

caterpillar	<i>Caterpillar (Generic)</i>
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---

**Description**

Caterpillar (Generic)

**Usage**

```
caterpillar(object, ...)
```

**Arguments**

object	Object to assess.
...	Ignored

**Value**

A list of ggplot objects that can be used to later reproduce the plots via print.

---

caterpillar.dalmatian	<i>Caterpillar (dalmatian)</i>
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---

**Description**

Construct caterpillar plots for key (or selected) parameters in a dalmatian object.

**Usage**

```
## S3 method for class 'dalmatian'  
caterpillar(  
  object,  
  family = NULL,  
  nstart = start(object$coda),  
  nend = end(object$coda),  
  nthin = thin(object$coda),  
  show = TRUE,  
  return_plots = TRUE,  
  ...  
)
```

**Arguments**

object	Object of class <code>dalmatian</code> created by <code>dalmatian()</code> .
family	String defining selected family of variables (see help for <code>ggs()</code> ).
nstart	Start point for computing summary statistics (relative to true start of chain).
nend	End point for computing summary statistics (relative to true start of chain).
nthin	Thinning factor for computing summary statistics (relative to full chain and not previously thinned output).
show	If TRUE then plots are displayed on the computer screen and the session is paused between each plot.
return_plots	If TRUE then a named list of ggplot objects containing the plots will be returned as output.
...	Ignored

**Value**

A list of ggplot objects that can be used to later reproduce the plots via `print`.

**References**

Bonner, S., Kim, H., Westneat, D., Mutzel, A., Wright, J., and Schofield, M.. (2021). `dalmatian`: A Package for Fitting Double Hierarchical Linear Models in R via JAGS and nimble. *Journal of Statistical Software*, 100, 10, 1–25. doi: [10.18637/jss.v100.i10](https://doi.org/10.18637/jss.v100.i10).

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coef.dalmatian	<i>Coefficients function for dalmatian objects</i>
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---

**Description**

`coef(dalmatian)`

**Usage**

```
## S3 method for class 'dalmatian'
coef(object, summary = NULL, ranef = NULL, ...)
```

**Arguments**

object	Object of class <code>dalmatian</code> created by <code>dalmatian()</code> .
summary	Posterior summaries computed from the supplied <code>dalmatian</code> object (optional).
ranef	Random effects summary computed from the supplied <code>dalmatian</code> object (optional).
...	Ignored

**Details**

Extracts coefficients for the mean and dispersion components of a dalmatian model.

**Value**

List of three lists named mean, dispersion, and joint each containing the posterior means of the coefficients corresponding to the fixed and random terms of that model component (if present).

**Author(s)**

Simon Bonner

**References**

Bonner, S., Kim, H., Westneat, D., Mutzel, A., Wright, J., and Schofield, M.. (2021). dalmatian: A Package for Fitting Double Hierarchical Linear Models in R via JAGS and nimble. *Journal of Statistical Software*, 100, 10, 1–25. doi: [10.18637/jss.v100.i10](https://doi.org/10.18637/jss.v100.i10).

---

convergence

*Convergence Diagnostics (S3 Generic)*

---

**Description**

Generic function for computing convergence diagnostics.

**Usage**

```
convergence(object, ...)
```

**Arguments**

object	Object to asses.
...	Ignored

**Value**

List containing Gelman-Rubin and Raftery convergence diagnostics and effective sample sizes for the selected parameters. This information is used to diagnose convergence of the MCMC sampling algorithms.

**References**

Bonner, S., Kim, H., Westneat, D., Mutzel, A., Wright, J., and Schofield, M.. (2021). dalmatian: A Package for Fitting Double Hierarchical Linear Models in R via JAGS and nimble. *Journal of Statistical Software*, 100, 10, 1–25. doi: [10.18637/jss.v100.i10](https://doi.org/10.18637/jss.v100.i10).

---

convergence.dalmatian *Convergence*

---

### Description

Compute convergence diagnostics for a dalmatian object.

### Usage

```
## S3 method for class 'dalmatian'
convergence(
  object,
  pars = NULL,
  nstart = start(object$coda),
  nend = end(object$coda),
  nthin = coda::thin(object$coda),
  raftery = NULL,
  ...
)
```

### Arguments

object	Object of class <code>dalmatian</code> created by <code>dalmatian()</code> .
pars	List of parameters to assess. If <code>NULL</code> (default) then diagnostics are computed for the fixed effects and random effects standard deviations in the mean, dispersion, and joint components.
nstart	Start point for computing summary statistics (relative to true start of chain).
nend	End point for computing summary statistics (relative to true start of chain).
nthin	Thinning factor for computing summary statistics (relative to full chain and not previously thinned output).
raftery	List of arguments to be passed to <code>raftery.diag()</code> . Any values not provided will be set to their defaults (see <code>help(raftery.diag())</code> for details).
...	Ignored

### Value

List containing Gelman-Rubin and Raftery convergence diagnostics and effective sample sizes for the selected parameters. This information is used to diagnose convergence of the MCMC sampling algorithms.

### References

Bonner, S., Kim, H., Westneat, D., Mutzel, A., Wright, J., and Schofield, M.. (2021). `dalmatian`: A Package for Fitting Double Hierarchical Linear Models in R via JAGS and nimble. *Journal of Statistical Software*, 100, 10, 1–25. doi: [10.18637/jss.v100.i10](https://doi.org/10.18637/jss.v100.i10).

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`dalmatian`*Run DGLM in JAGS via rjags or in nimble*

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## Description

The primary function which automates the running of JAGS and nimble.

See vignettes included in the package for full documentation. The list of available vignettes can be generated with `vignette(package="dalmatian")`.

## Usage

```
dalmatian(  
  df,  
  family = "gaussian",  
  mean.model,  
  dispersion.model,  
  joint.model = NULL,  
  jags.model.args,  
  coda.samples.args,  
  response = NULL,  
  ntrials = NULL,  
  rounding = FALSE,  
  lower = NULL,  
  upper = NULL,  
  parameters = NULL,  
  svd = FALSE,  
  residuals = FALSE,  
  gencode = NULL,  
  run.model = TRUE,  
  engine = "JAGS",  
  n.cores = 1L,  
  drop.levels = TRUE,  
  drop.missing = TRUE,  
  include.checks = TRUE,  
  overwrite = FALSE,  
  debug = FALSE,  
  saveJAGSinput = NULL  
)
```

## Arguments

<code>df</code>	Data frame containing the response and predictor values for each individual. (data.frame)
<code>family</code>	Name of family of response distribution. Currently supported families include normal (gaussian) and negative binomial (nbinom). (character)
<code>mean.model</code>	Model list specifying the structure of the mean. (list)

<code>dispersion.model</code>	Model list specifying the structure of the dispersion. (list)
<code>joint.model</code>	Model list specifying structure with parameter shared between linear predictors of the mean and variance. (list)
<code>jags.model.args</code>	List containing named arguments of <code>jags.model</code> . (list)
<code>coda.samples.args</code>	List containing named arguments of <code>coda.samples</code> . (list)
<code>response</code>	Name of variable in the data frame representing the response. (character)
<code>ntrials</code>	Name of variable in the data frame representing the number of independent trials for each observation of the beta binomial model.
<code>rounding</code>	Specifies that response has been rounded if TRUE. (logical)
<code>lower</code>	Name of variable in the data frame representing the lower bound on the response if rounded. (character)
<code>upper</code>	Name of variable in the data frame representing the upper bound on the response if rounded. (character)
<code>parameters</code>	Names of parameters to monitor. If NULL then default values are selected. (character)
<code>svd</code>	Compute Singular Variable Decomposition of model matrices to improve convergence. (logical)
<code>residuals</code>	If TRUE then compute residuals in output. (logical)
<code>generatecode</code>	If TRUE then generate code potentially overwriting existing model file. By default generate code if the file does not exist and prompt user if it does. (logical)
<code>run.model</code>	If TRUE then run sampler. Otherwise, stop once code and data have been created. (logical)
<code>engine</code>	Specifies the sampling software. Packages currently supported include JAGS (the default) and nimble. (character)
<code>n.cores</code>	Number of cores to use. If equal to 1 then chains will not be run in parallel. If greater than 1 then chains will be run in parallel using the designated number of cores.
<code>drop.levels</code>	If TRUE then drop unused levels from all factors in <code>df</code> . (logical)
<code>drop.missing</code>	If TRUE then remove records with missing response variable. (logical)
<code>include.checks</code>	If TRUE (default) then include extra Bernoulli variables in the model to ensure that the mean and dispersion parameters remain within their support. (logical)
<code>overwrite</code>	If TRUE then overwrite existing JAGS files (non-interactive sessions only). (logical)
<code>debug</code>	If TRUE then enter debug model. (logical)
<code>saveJAGSinput</code>	Directory to which <code>jags.model</code> input is saved prior to calling <code>jags.model()</code> . This is useful for debugging. No files saved if NULL. (character)

## Details

The primary function in the package, `dalmatian` automates the generation of code, data, and initial values. These are then passed as arguments to function from the `rjags` package which automates the generation of samples from the posterior.

**Value**

An object of class `dalmatian` containing copies of the original data frame, the mean model, the dispersion model the arguments of `jags.model` and `coda.samples`. and the output of the MCMC sampler.

**Author(s)**

Simon Bonner

**References**

Bonner, S., Kim, H., Westneat, D., Mutzel, A., Wright, J., and Schofield, M.. (2021). `dalmatian`: A Package for Fitting Double Hierarchical Linear Models in R via JAGS and nimble. *Journal of Statistical Software*, 100, 10, 1–25. doi: [10.18637/jss.v100.i10](https://doi.org/10.18637/jss.v100.i10).

**Examples**

```
## Not run:
## Load pied flycatcher data
data(pied_flycatchers_1)

## Create variables bounding the true load
pfdata$lower=ifelse(pfdata$load==0,log(.001),log(pfdata$load-.049))
pfdata$upper=log(pfdata$load+.05)
## Mean model
mymean=list(fixed=list(name="alpha",
                      formula=~ log(IVI) + broodsize + sex,
                      priors=list(c("dnorm",0,.001))))

## Dispersion model
myvar=list(fixed=list(name="psi",
                    link="log",
                    formula=~broodsize + sex,
                    priors=list(c("dnorm",0,.001))))

## Set working directory
## By default uses a system temp directory. You probably want to change this.
workingDir <- tempdir()

## Define list of arguments for jags.model()
jm.args <- list(file=file.path(workingDir,"pied_flycatcher_1_jags.R"),n.adapt=1000)

## Define list of arguments for coda.samples()
cs.args <- list(n.iter=5000)

## Run the model using dalmatian
pfresults <- dalmatian(df=pfdata,
                      mean.model=mymean,
                      dispersion.model=myvar,
                      jags.model.args=jm.args,
```

```

coda.samples.args=cs.args,
rounding=TRUE,
lower="lower",
upper="upper",
debug=FALSE)

## End(Not run)

```

---

gamma_data_1	<i>Simulated data to show how the gamma model may be fit with fixed and random effects on both the mean and dispersion.</i>
--------------	---

---

### Description

Simulated data to show how the gamma model may be fit with fixed and random effects on both the mean and dispersion.

### Usage

```
gamma_data_1
```

### Format

A data frame containing 1500 observations and 5 columns:

**ID** The individual ID.

**Rep** The replicate number.

**x1** The value of the covariate for the mean.

**x2** The value of the covariate for the dispersion.

**y** The response.

---

nbinom_data_1	<i>Simulated data to show how the negative binomial model may be fit with fixed and random effects on both the mean and dispersion.</i>
---------------	---

---

### Description

Simulated data to show how the negative binomial model may be fit with fixed and random effects on both the mean and dispersion.

### Usage

```
nbinom_data_1
```

**Format**

A data frame containing 1500 observations and 5 columns:

**ID** The individual ID.

**Rep** The replicate number.

**x1** The value of the covariate for the mean.

**x2** The value of the covariate for the dispersion.

**y** The count.

---

pfdata	<i>Pied flycatcher feeding data</i>
--------	-------------------------------------

---

**Description**

Dataset containing 5795 records of 60 pied flycatchers from 33 nest boxes feeding their nestlings during a brood manipulation experiment.

**Usage**

pfdata

**Format**

A data frame containing 5795 rows and 17 variables

---

plot.dalmatian	<i>Plot Function for dalmatian objects</i>
----------------	--

---

**Description**

Create traceplots and caterpillar plots from output of the fitted model.

**Usage**

```
## S3 method for class 'dalmatian'
plot(
  x,
  trace = TRUE,
  caterpillar = TRUE,
  show = TRUE,
  return_plots = FALSE,
  ...
)
```

## Arguments

x	Object of class dalmatian created by dalmatian().
trace	If TRUE (default) then generate traceplots.
caterpillar	If TRUE (default) then generate caterpillar plots
show	If TRUE (default) then display plots as they are generated.
return_plots	If TRUE (not default) return a list of ggplot objects representing the plots.
...	Ignored

## Details

This function is a wrapper for the functions `traceplots.dalmatian()` and `caterpillar.dalmatian()` which create traceplots and caterpillar plots of all variables stored by the sampler. Further control is available by calling these functions directly.

## Value

List of ggplot objects if `return_plots` is true.

## Author(s)

Simon Bonner

## References

Bonner, S., Kim, H., Westneat, D., Mutzel, A., Wright, J., and Schofield, M.. (2021). dalmatian: A Package for Fitting Double Hierarchical Linear Models in R via JAGS and nimble. *Journal of Statistical Software*, 100, 10, 1–25. doi: [10.18637/jss.v100.i10](https://doi.org/10.18637/jss.v100.i10).

## Examples

```
## Not run:  
## Plot results for pied-flycatcher model without random effects  
plot(pfresults)  
  
## Plot results for pied-flycatcher model with random effects  
plot(pfresults2)  
  
## End(Not run)
```

---

predict.dalmatian      *Prediction method for dalmatian objects*

---

### Description

Prediction method for dalmatian objects

### Usage

```
## S3 method for class 'dalmatian'
predict(
  object,
  newdata = object$df,
  method = "mean",
  population = FALSE,
  se = TRUE,
  ci = TRUE,
  type = c("link", "response"),
  level = c(0.5, 0.95),
  ...
)
```

### Arguments

object	Object of class dalmatian created by dalmatian().
newdata	data frame containing predictor values to predict response variables. Defaults to data in object if not supplied. (data.frame)
method	Method to construct the fitted model. Either posterior mean ("mean") or posterior mode ("mode") (character)
population	If TRUE then generate predictions at the population level rather than the individual level. (logical)
se	if TRUE return the posterior standard deviation (logical)
ci	returning credible intervals for predictions if TRUE (logical)
type	The type of prediction required (as in predict() for models generated by glm()). The default is on the scale of the linear predictors; the alternative "response" is on the scale of the response variable. E.g., if the link between the mean and its linear predictor is the logit function then the default prediction for the mean will be on the scale of the log-odds. If the link between the mean and its linear predictor is the log function then the defaults prediction will be on the scale of the log.
level	vector of levels of credible intervals for predictions (numeric)
...	Ignored

### Value

predictions (list)

---

print.dalmatian      *Printed Summary of a dalmatian Object*

---

## Description

Prints summary information about a fitted model of class `dalmatian`.

## Usage

```
## S3 method for class 'dalmatian'  
print(x, summary = TRUE, convergence = TRUE, ...)
```

## Arguments

<code>x</code>	Object of class <code>dalmatian</code> created by <code>dalmatian()</code> .
<code>summary</code>	If TRUE (default) compute posterior summary statistics via <code>summary.dalmatian()</code> .
<code>convergence</code>	If TRUE (default) compute MCMC convergence diagnostics via <code>convergence()</code> .
<code>...</code>	Ignored

## Details

This function produces a description of the model's structure and (by default) computes and prints the summary statistics computed via `summary.dalmatian()` and the MCMC convergence diagnostics computed via `convergence.dalmatian()`. Further control is available by calling these functions directly.

## Value

List of two elements containing posterior summary statistics and convergence diagnostics (if requested).

## Author(s)

Simon Bonner

## References

Bonner, S., Kim, H., Westneat, D., Mutzel, A., Wright, J., and Schofield, M.. (2021). `dalmatian`: A Package for Fitting Double Hierarchical Linear Models in R via JAGS and nimble. *Journal of Statistical Software*, 100, 10, 1–25. doi: [10.18637/jss.v100.i10](https://doi.org/10.18637/jss.v100.i10).

## Examples

```
## Not run:  
## Print summary of dalmatian objects  
print(pfrresults)  
print(pfrresults2)  
  
## End(Not run)
```

---

```
print.dalmatian.summary  
      Print Summary (dalmatian)
```

---

## Description

Print Summary (dalmatian)

## Usage

```
## S3 method for class 'dalmatian.summary'  
print(x, digits = 2, ...)
```

## Arguments

x	Object of class dalmatian.summary created by summary.dalmatian().
digits	Number of digits to display after decimal.
...	Ignored

## Value

No return value. This function prints the summary of a dalmatian object in a nicely formatted manner.

## References

Bonner, S., Kim, H., Westneat, D., Mutzel, A., Wright, J., and Schofield, M.. (2021). dalmatian: A Package for Fitting Double Hierarchical Linear Models in R via JAGS and nimble. *Journal of Statistical Software*, 100, 10, 1–25. doi: [10.18637/jss.v100.i10](https://doi.org/10.18637/jss.v100.i10).

---

ranef	<i>Random Effects (S3 Generic)</i>
-------	------------------------------------

---

**Description**

Generic function for exporting summaries of random effects.

**Usage**

```
ranef(object, ...)
```

**Arguments**

object	Input object
...	Ignored

**Value**

List containing elements providing information on the predicted values of random effects as appropriate for the model.

**References**

Bonner, S., Kim, H., Westneat, D., Mutzel, A., Wright, J., and Schofield, M.. (2021). *dalmatian*: A Package for Fitting Double Hierarchical Linear Models in R via JAGS and nimble. *Journal of Statistical Software*, 100, 10, 1–25. doi: [10.18637/jss.v100.i10](https://doi.org/10.18637/jss.v100.i10).

---

ranef.dalmatian	<i>Random Effects (dalmatian)</i>
-----------------	-----------------------------------

---

**Description**

Compute posterior summary statistics for the individual random effects in each part of the model.

**Usage**

```
## S3 method for class 'dalmatian'  
ranef(  
  object,  
  nstart = start(object$coda),  
  nend = end(object$coda),  
  nthin = thin(object$coda),  
  ...  
)
```

**Arguments**

object	Object of class dalmatian created by dalmatian().
nstart	Start point for computing summary statistics (relative to true start of chain).
nend	End point for computing summary statistics (relative to true start of chain).
nthin	Thinning factor for computing summary statistics (relative to full chain and not previously thinned output).
...	Ignored

**Value**

List containing elements mean, dispersion, and/or joint as appropriate. Each element provides information on the predicted values of the random effects as appropriate for each component of the model.

**References**

Bonner, S., Kim, H., Westneat, D., Mutzel, A., Wright, J., and Schofield, M.. (2021). dalmatian: A Package for Fitting Double Hierarchical Linear Models in R via JAGS and nimble. *Journal of Statistical Software*, 100, 10, 1–25. doi: [10.18637/jss.v100.i10](https://doi.org/10.18637/jss.v100.i10).

---

residuals.dalmatian *Residuals method for dalmatian fitted objects*

---

**Description**

Computes posterior summaries of the residuals for each observation. Summary statistics include the posterior mean and the upper and lower bounds of the 95 If the response is not rounded then the residuals can either be sampled as part of the MCMC or computed during post-processing. If computed as part of the MCMC then residuals() will simply summarize the posterior distributions. Otherwise, residuals() will compute the residuals and their posterior summaries. If the response is rounded then the residuals must be sampled when the MCMC sampler is run.

**Usage**

```
## S3 method for class 'dalmatian'
residuals(object, ...)
```

**Arguments**

object	Object of class dalmatian created by dalmatian().
...	Ignored

**Value**

Data frame containing original data augmented with posterior mean and lower and upper bounds of the 95 residual for each observation.

**Author(s)**

Simon Bonner

**Examples**

```

## Not run:
## Here we rerun the first example in
## \code{vignettes(pied-flycatcher-1)} with \code{residuals = TRUE}
## in order to sample the residuals and then use the \code{residuals()}
## function to summarize the posterior distributions. This is necessary
## because the output is too large to store inside the package.

## Load pied flycatcher data
data(pied_flycatchers_1)

## Create variables bounding the true load
pfdata$lower=ifelse(pfdata$load==0,log(.001),log(pfdata$load-.049))
pfdata$upper=log(pfdata$load+.05)

##### Model 1 #####

## Mean model
mymean=list(fixed=list(name="alpha",
  formula=~ log(IVI) + broodsize + sex,
  priors=list(c("dnorm",0,.001))))

## Dispersion model
mydisp=list(fixed=list(name="psi",
  link="log",
  formula=~broodsize + sex,
  priors=list(c("dnorm",0,.001))))

## Set working directory
workingDir <- tempdir()

## Define list of arguments for jags.model()
jm.args <- list(file=file.path(workingDir,"pied_flycatcher_1_jags.R"),n.adapt=1000)

## Define list of arguments for coda.samples()
cs.args <- list(n.iter=5000,thin=20)

## Run the model using dalmatian
pfresults <- dalmatian(df=pfdata,
  mean.model=mymean,
  dispersion.model=mydisp,
  jags.model.args=jm.args,
  coda.samples.args=cs.args,
  rounding=TRUE,
  lower="lower",
  upper="upper",

```

```

n.cores = 3,
residuals = TRUE,
overwrite = TRUE,
debug=FALSE)

## summarize residuals
res.pfresults <- residuals(object = pfresults)

## End(Not run)

```

---

setJAGSInits

*Set initial values for dalmatian*


---

## Description

Set initial values for dalmatian

## Usage

```

setJAGSInits(
  mean.model,
  dispersion.model,
  fixed.mean = NULL,
  fixed.dispersion = NULL,
  y = NULL,
  random.mean = NULL,
  sd.mean = NULL,
  random.dispersion = NULL,
  sd.dispersion = NULL
)

```

## Arguments

mean.model	Model list specifying the structure of the mean. (list)
dispersion.model	Model list specifying the structure of the dispersion. (list)
fixed.mean	Initial values for the fixed effects of the mean. (numeric)
fixed.dispersion	Initial values for the fixed effects of the dispersion. (numeric)
y	Initial values for the true response. This should only be specified if the rounding = TRUE in the main call to dalmatian.
random.mean	Initial values for the random effects of the mean. (numeric)
sd.mean	Initial values for the standard deviation of the random effects of the mean. (numeric)
random.dispersion	Initial values for the random effects of the dispersion. (numeric)
sd.dispersion	Initial values for the standard deviation of the random effects of the dispersion. (numeric)

**Details**

Allows the user to set initial values for `dalmatian`. Any values not specified will be initialized by JAGS.

**Value**

inits (list)

**Author(s)**

Simon Bonner

---

summary.dalmatian      *Summary (dalmatian)*

---

**Description**

Summary (dalmatian)

**Usage**

```
## S3 method for class 'dalmatian'
summary(
  object,
  nstart = start(object$coda),
  nend = end(object$coda),
  nthin = thin(object$coda),
  ...
)
```

**Arguments**

<code>object</code>	Object of class <code>dalmatian</code> created by <code>dalmatian()</code> .
<code>nstart</code>	Start point for computing summary statistics (relative to true start of chain).
<code>nend</code>	End point for computing summary statistics (relative to true start of chain).
<code>nthin</code>	Thinning factor for computing summary statistics (relative to full chain and not previously thinned output).
<code>...</code>	Ignored

**Value**

output (list)

**References**

Bonner, S., Kim, H., Westneat, D., Mutzel, A., Wright, J., and Schofield, M.. (2021). `dalmatian`: A Package for Fitting Double Hierarchical Linear Models in R via JAGS and nimble. *Journal of Statistical Software*, 100, 10, 1–25. doi: [10.18637/jss.v100.i10](https://doi.org/10.18637/jss.v100.i10).

---

terms.dalmatian	<i>Terms function for dalmatian objects</i>
-----------------	---

---

**Description**

terms (dalmatian)

**Usage**

```
## S3 method for class 'dalmatian'
terms(x, ...)
```

**Arguments**

x	Object of class dalmatian created by dalmatian().
...	Further object passed directly to terms. Recycled for each model component.

**Details**

Constructs a list of terms objects for each component of the model specified in the input object.

**Value**

List of with two lists named mean and dispersion each containing terms objects corresponding to the fixed and random components of that model component (if present).

**Author(s)**

Simon Bonner

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traceplots	<i>Traceplots (Generic)</i>
------------	-----------------------------

---

**Description**

Traceplots (Generic)

**Usage**

```
traceplots(object, ...)
```

**Arguments**

object	Object to assess.
...	Ignored

**Value**

A list of ggplot objects that can be used to later reproduce the plots via print.

---

```
traceplots.dalmatian  Traceplots (dalmatian)
```

---

**Description**

Construct traceplots for key (or selected) parameters in a dalmatian object.

**Usage**

```
## S3 method for class 'dalmatian'
traceplots(
  object,
  family = NULL,
  nstart = start(object$coda),
  nend = end(object$coda),
  nthin = thin(object$coda),
  show = TRUE,
  return_plots = TRUE,
  ...
)
```

**Arguments**

object	Object of class dalmatian created by dalmatian().
family	String defining selected family of variables (see help for ggs()).
nstart	Start point for computing summary statistics (relative to true start of chain).
nend	End point for computing summary statistics (relative to true start of chain).
nthin	Thinning factor for computing summary statistics (relative to full chain and not previously thinned output).
show	If TRUE then plots are displayed on the computer screen and the session is paused between each plot.
return_plots	If TRUE then return list of ggplot objects.
...	Ignored

**Value**

A list of ggplot objects that can be used to later reproduce the plots via print.

**References**

Bonner, S., Kim, H., Westneat, D., Mutzel, A., Wright, J., and Schofield, M.. (2021). dalmatian: A Package for Fitting Double Hierarchical Linear Models in R via JAGS and nimble. *Journal of Statistical Software*, 100, 10, 1–25. doi: [10.18637/jss.v100.i10](https://doi.org/10.18637/jss.v100.i10).

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weights_data_1	<i>Simulated data for illustrating the use of weights</i>
----------------	---

---

**Description**

Simulated data for illustrating the use of weights in the particular case when the responses are averages of observed with different denominators

**Usage**

```
weights_data_1
```

**Format**

An object of class `data.frame` with 100 rows and 3 columns.

**Details**

@format A data frame with 100 rows and 3 columns:

**n** The number of observations.

**x** The common predictor value.

**y** The mean response value.

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