



Centre for
Ecology & Hydrology

NATURAL ENVIRONMENT RESEARCH COUNCIL

rnbh and sparta

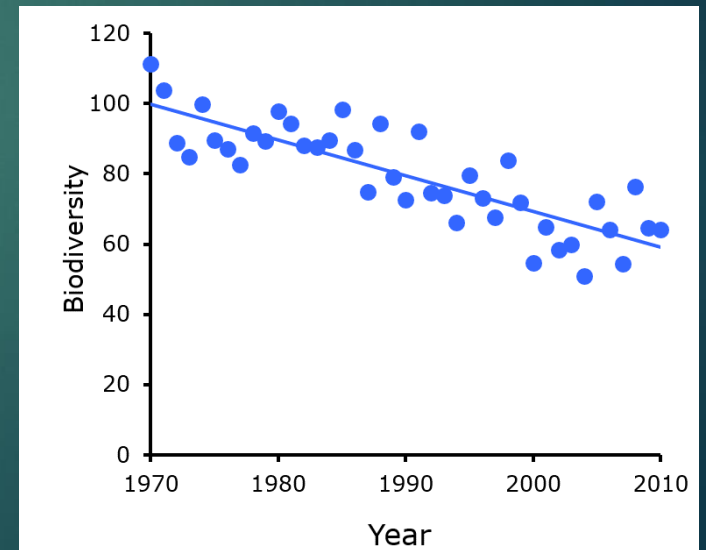
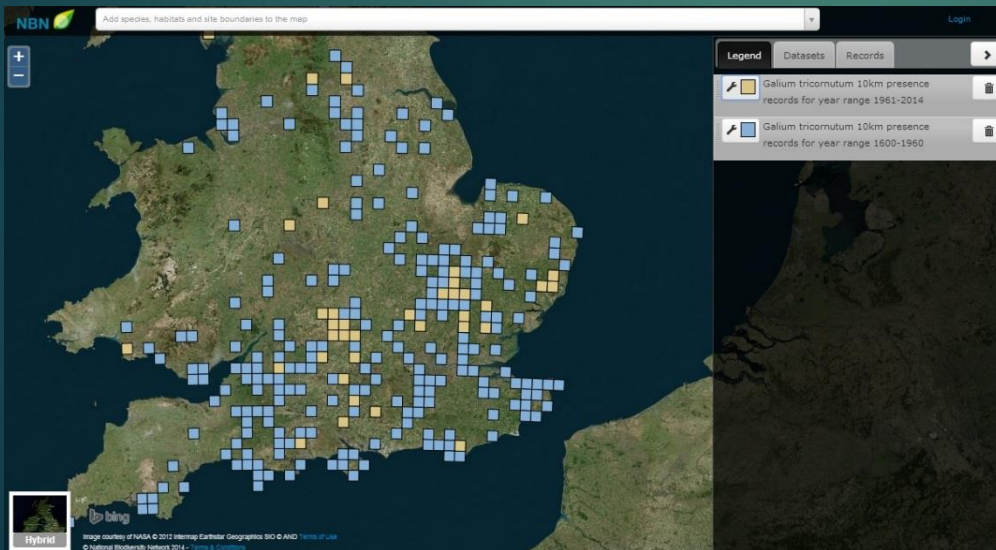
ACCESSING NBN DATA FROM R AND
ANALYSING TRENDS IN SPECIES
OCCURRENCE OVER TIME



@TomAugust85

Why would you need this?

- ▶ If you work in R
- ▶ If you want easy access to UK occurrence data
- ▶ If you want access to tools for estimating species trends
- ▶ If you like free stuff



What does it do?

► rnb

- Easy access to over 100 million wildlife records in the UK
- Programmatic access allows for complex data searches

```
TVK <- getTVKQuery('badger', top = TRUE)
myData <- getOccurrences(tvks = TVK$ntaxonVersionKey,
                        startYear = 2000,
                        VC = 'East suffolk')
myData[,c('pTaxonName', 'location', 'startDate')]
```

	pTaxonName	location	startDate
1	Meles meles	TM48Z	2005-01-21
2	Meles meles	TM48Z	2005-01-21
3	Meles meles	TM03Y	2003-01-01
4	Meles meles	TM03Y	2003-06-25
5	Meles meles	TM25C	2012-02-27
6	Meles meles	TM48Z	2012-05-22

► Sparta

- Tools to analyse species trends over time

```
head(exampleData)
# taxa site time_period
# m A9 2019-07-06
# z A14 2018-08-14
# l A11 2011-05-20
# n A4 2018-08-14
# w A8 2017-11-26
# x A14 2017-05-29

# Run the model
results <- reportingRateModel(taxa = exampleData$taxa,
                              site = exampleData$site,
                              time_period = exampleData$time_period)

results[,c('species_name', 'year.estimate', 'year.pvalue')]

# species_name year.estimate year.pvalue
# a 0.0152407956 0.69274724
# b -0.0065463818 0.86235807
# c 0.0211942021 0.58283508
# d -0.0593663001 0.13569389
# e 0.0226955174 0.54544157
# f 0.0747229766 0.04534570
```

How do I get it?

► rnbm

► On CRAN

```
install.packages('rnbm')
```

► Sparta

► On Github

```
library(devtools)  
install_github('biologicalrecordscentre/sparta')
```

Getting species occurrence records

First install and load the package

```
# Install the package  
install.packages('rnbm')
```

```
# Load the package  
library(rnbm)
```

The `getOccurrences` function gets a data.frame of species occurrence records from the NBN Gateway. Columns include name, TVK, date and location of the observation as a minimum, and may include other columns depending what has been submitted by the data providers and what access they allow. The first time this function is used in an R session you will be asked to enter your username and password at the console. An alternative method for logging in is to use the `nbnLogin` function (see below)

The minimum information required to request species occurrences from the NBN Gateway is one of the following: a Taxon Version Key (TVK), a grid reference or the name of a species group.

Independent of which method you use there are three messages that will appear in your console:

```
# I could log in like this...  
# nbnLogin(username = 'myUsername', password = 'myPassword')  
# ...or let getOccurrences prompt me. The latter is more  
# secure as I dont have to include my password in my scripts
```

```
# Request occurrence data using taxon version key  
occ <- getOccurrences(tvks = 'NBNSY5000002010')
```

```
## Requesting batch 1 of 1  
## Requesting data providers' information
```



A screenshot of the GitHub repository page for 'BiologicalRecordsCentre / sparta'. The page shows the repository name, navigation links (Unwatch, Unstar, Fork), and a commit history table. The commit history includes entries for 'sampleRd help file added', 'Fix telfer conflict', 'Frescalo is update to take 3 LC weights file names, LCUK, LCGB and LCNI', 'Frescalo executable replaced', 'Committing lots of changes over the last few months, including the add...', and 'sampleRd help file added'. The commit history also shows the version number '0.0.7 - initial commit to GitHub' and '0.0.13 - world map updated in plot.GIS (includes country boundaries) ...'. The right sidebar shows 'Code', 'Issues', 'Pull requests', and 'Wiki'.

