

NBN



National Biodiversity Network

Using biodiversity data for research

SHARING INFORMATION ABOUT WILDLIFE

Using biodiversity data for research

Are you studying for an undergraduate or postgraduate degree in ecology or a related subject? Are you a science professional carrying out biodiversity research? Do you need quick and easy access to information on species, habitats and designated sites in the UK to support your studies or research?

The UK's biodiversity has been relatively well recorded for many years and for a variety of different purposes. Biological records are made by highly skilled amateur naturalists, professional ecologists, citizen scientists participating in nationally coordinated surveys, academics carrying out field work, staff at the Government conservation agencies, local environmental records centres, local authorities and wildlife NGOs. Between them, these recorders have generated a wealth of data which can be interpreted and modelled, for example to produce information on population trends or changes in species distribution in response to environmental factors.

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A one-stop shop for biodiversity data

Historically, biodiversity information has been held by many different organisations and individuals in a variety of formats. Now however, the National Biodiversity Network (NBN), a collaborative project involving all of these organisations, has made much of this information available through the internet, via the NBN Gateway. With almost 100 million species records, and close to a hundred habitat and geographic boundary layers, the NBN Gateway could be a vital resource for your work.



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2

Accessing the data

1 Find the data you need

If you are interested in finding out what the NBN Gateway has to offer, the Interactive Map provides a dynamic way of exploring the available data – it enables you to map whole datasets, create single species distribution maps, coincidence maps or biodiversity hotspot maps against a backdrop of designated site boundaries, habitats, satellite imagery or Ordnance Survey maps for the whole UK or at very fine resolution.

If you already know exactly what you want, the NBN Gateway has a query-style interface enabling users to combine taxonomic, temporal and spatial filters to find the records they need. For example, you may want records of bumblebees within a National Nature Reserve, or all UK records of red listed bird species made within the last ten years, or all records of terrestrial mammals in Hampshire – this is all possible on the NBN Gateway! You will see a list of all available datasets with records falling within your search criteria, and you can exclude specific datasets if you wish.



2 Ensure you have full access to the data and permission to use it

Public access to wildlife records sometimes has to be restricted, for example if there is a risk of environmental harm, so you may need to apply for full access to the data before downloading records. This is quick and easy to do, as you can apply for access to all records within your search filters with a single request, even though the data may have been supplied by dozens of different organisations.

If you wish to use the data for PhD or professional research, as opposed to undergraduate or MSc studies, you need to request permission from the data providers to use their data for this purpose. This is a requirement of the NBN Gateway Terms and Conditions, but is also very worthwhile as the data providers may be able to give you useful information and advice about interpreting their data.

3 Download the data

You can download the data using the taxonomic, temporal, spatial and dataset filters described above as a .TAB file for use in spreadsheets and databases or as a shapefile for use in GIS.

4 Reference the data

Guidance on how to reference data from the NBN Gateway correctly is provided on the NBN website.



Bombus pascuorum
© Jane V Adams

3



Sea anemone *Arachnanthus sarsi* © Natural England

“ JNCC used data from the NBN Gateway to provide evidence to support the control plan for *Chalara fraxinea* (ash dieback disease) ”

Most researchers will be familiar with R, the open-source statistical programming environment, within which there are thousands of packages available which are used throughout the research community for data acquisition, statistical analysis, manipulation and modelling. The launch of a web service tool to extract data from the NBN Gateway into R is an exciting new development which has considerable potential to increase use of the data for research. Additionally, there is an rGBIF package which you can use to access and analyse data from the Global Biodiversity Information Facility (GBIF).



Chalara fraxinea, ash dieback disease

Research use – case studies

Data from the NBN Gateway is already widely used by many individuals and organisations for research. Some examples include:

- JNCC used data from the NBN Gateway to provide evidence to support the control plan for *Chalara fraxinea* (ash dieback disease).
- The Belgian government used NBN Gateway data alongside data from other international sources to create predictive maps to model the risk of alien invasive species to their country.
- An Australian University used NBN Gateway records as part of a project investigating the potential impact on their native fauna of predicted human population growth and climate change.



Muntjac deer
Muntiacus reevesi
© Norma Chapman



Zebra mussel
Dreissena polymorpha
© USGS



American skunk cabbage
Lysichiton americanus
© Non Native Species Secretariat

Western conifer seed bug
Leptoglossus occidentalis
© Tristan Bantock



- Student research evaluating the impacts of macro-ecological changes on bee populations
- Student project exploring the historical changes in the community composition of fish in the River Don Catchment.
- Collaborative research by Universities in the UK, Colombia and Australia to predict the impact of climate change on nearly 50,000 globally widespread and common species and evaluate whether this impact can be mitigated. (Warren et al, 2013 'Quantifying the benefit of early climate change mitigation in avoiding biodiversity loss' Nature Climate Change)
- Study by researchers in the UK, USA and Canada which used a range of different models to explore the potential impact of climate change on marine species in the North Sea by 2050. (Jones, M.C. et al.,

2013. Predicting the Impact of Climate Change on Threatened Species in UK Waters. PloS one, 8(1), p.e54216.)

- Risk assessment of Rift Valley Fever showing vectors' distribution in relation to the location of British airports and incidence of selected species traits with respect to environmental quality.

Further case studies on using the data for such purposes are available on the NBN website. Take a look and do get in touch if you want to share your story or want help with accessing or using data.



Citrus longhorn beetle
Anoplophora chinensis © Food and Environment Research Agency

Sharing your data



New data is constantly being added to the NBN Gateway, and you can contribute to this valuable resource.

If you have already gathered a set of wildlife records through field work as part of your research, you could share this data directly with the NBN Gateway and we will be pleased to help you do this. If you do not have time to format and manage the data on the NBN Gateway yourself, you could pass the records to another organisation to do this on your behalf. If your dataset focuses on a particular species or group of species, you should send the data to the appropriate national recording scheme (http://www.brc.ac.uk/recording_schemes.asp). If your dataset focuses on a particular geographic area, you should send the data to the appropriate local environmental records centre (<http://www.alerc.org.uk/find-an-lrc.html>).

If you are just about to start gathering wildlife records through field work for your research, you should consider using iRecord to store and manage the records

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(www.brc.ac.uk/iRecord). iRecord is free to use, and support is available for new users via a forum. Standard features include photo upload, position fixing via an interactive map, secure data storage, verification by experts and a number of summary reports and maps of your data. A variety of data entry forms are already available, and new forms can easily be created for specific survey methodologies, for example to gather and manage data collected as part of undergraduate/postgraduate projects or UK field trips

If you are interested in sharing data, please do get in touch for help and advice.



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Can I trust data from the NBN Gateway?

Datasets are supplied by organisations with considerable expertise in taxonomy and data management. Nevertheless, if using data for research you have to read the metadata for relevant datasets, which explains the methodology, survey effort and level of confidence in the data.

NBN Record Cleaner is a free tool that has been developed to help improve the quality of wildlife records. Using verification rules developed

by national experts, it enables data managers to check large volumes of data to highlight any records that are outside the geographic or temporal range of that species, as well as records of species that are inherently difficult to identify. This aids the process of data cleaning and assures the quality of any datasets that are passed on to others, including the NBN Gateway. More information on NBN Record Cleaner can be found on the website.

It is also possible to view absence records on the NBN Gateway, which can be critical

when the data is used for research purposes.

The bigger picture

For research and modelling purposes, it is often necessary to view species distribution data in a global context. With data providers' permission, the NBN exports UK data to GBIF (Global Biodiversity Information Facility), OBIS (Ocean Biogeographic Information System) and its European node EurOBIS. This opens up opportunities for scientific use of the data on an international scale.

NBN Gateway

By using this site you are agreeing to be bound by the [NBN Gateway Terms & Conditions](#) and our [Privacy Policy](#)

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[Back to previous page](#) • DATASET METADATA

Information (metadata) for the dataset "GiGL professional survey records (Historic)"

Dataset Provider
[Greenspace Information for Greater London](#)

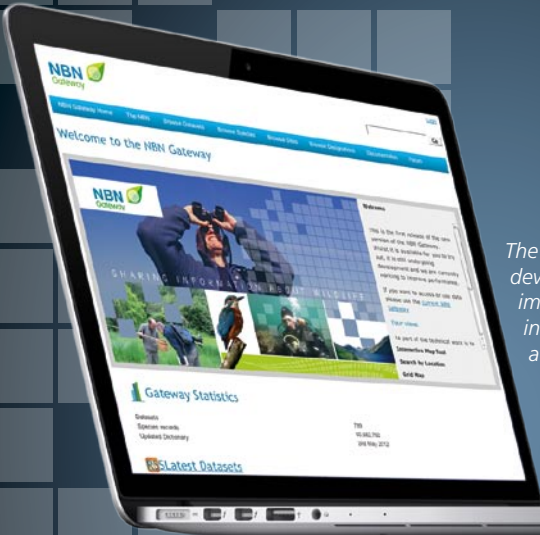
Dataset Details

Description	This is a collated dataset of all species records held by GiGL originating from surveys undertaken either in a professional capacity or by recognised experts more than 10 years ago. It includes data collected as part of the Greater London Authority habitat survey, by professional ecological consultants or by London Natural History Society recorders.
Date loaded onto NBN Gateway	03/11/2011
Purpose of data capture	The reasons for running the original surveys will have varied greatly: from environmental impact assessment/ informing a planning application to monitoring species population change, to inform the process of designating Sites of Importance for Nature Conservation, to building a picture of the distribution of a particular taxonomic group across London and to informing the case for the designation of a World Heritage Area.
Methods of data capture	This is a collated dataset and exact data capture methodology varies between original constituent surveys. The principal commonality is that the surveys were undertaken or the data collated either in a professional capacity or by recognised experts. The majority of records are based on direct observation but some, such as those collected as part of a London Wildlife Trust Water Vole survey, might have involved trapping, whilst bat records will sometimes have been remotely sensed using a bat detector. Many of the plant records have come from surveys conducted according to the GLA habitat survey methodology (Open Space and Habitat Recording for Greater London), which can be found as an appendix in Connecting with London's nature, the Mayor's Biodiversity Strategy (2002). The dataset also includes records from surveys undertaken by ecological consultancies (often collected to inform a planning application). Some records (particularly historic records) will have come from literature sources. A major part of the dataset comprises plant, fungi and dragonfly records from London Natural History Society, which were collated as part of a NBN/Defra funded project.
Geographical Coverage	Records missing key information (who, what, when, where) or that were clearly erroneous were omitted prior to upload to the GiGL database. Records are from the Greater London area (which comprises the 33 London boroughs)

Want to find out more?

The information provided here is only introductory. If you would like to find out more, please visit the NBN website, where you can find out all about the Network and search the NBN Gateway.

You can also sign up to receive NBN eNews so that you are kept up to date with the latest news and developments from across the Network. You can also contact us at support@nbn.org.uk



The NBN Gateway is under ongoing development. This includes some improvements which are mentioned in this leaflet, but not all may be available immediately.

Updated information is provided on an ongoing basis and the NBN website should be referred to for all the latest developments.

Website information

NBN – www.nbn.org.uk

NBN Gateway – <http://data.nbn.org.uk>

iRecord - <http://www.brc.ac.uk/iRecord/>

NBN Record Cleaner - <http://www.nbn.org.uk/Tools-Resources/Recording-Resources/NBN-Record-Cleaner.aspx>

Use data - <http://www.nbn.org.uk/Use-Data/Using-Maps-or-Data/Using-and-referencing-data-from-the-Gateway.aspx>

GBIF – www.gbif.org

Front cover image *Odontocercus albicorne* © Sharon Flint



NBN Trust

