Accessing Biodiversity Data for Desk Studies

Paula Lightfoot
Data Access Officer, NBN Trust

The National Biodiversity Network is a partnership of organisations committed to developing tools and standards for the collection, collation and exchange of the UK's wildlife information and to improving public access to it. The NBN Gateway is a powerful resource, providing access to an ever increasing amount of data on the distribution of species, habitats and protected sites. While use of the Gateway is free, the information shared is owned by the data providers and its use is governed by Terms and Conditions and may be restricted by access controls. These necessary restrictions can impede use of the Gateway by ecological consultants as a source of data for desk studies, but innovative use of new technology by local record centres is ensuring that consultants and their clients benefit from full access to the biodiversity data shared through the Network.

Since its foundation in 2000, the NBN partnership has been particularly successful at improving access to wildlife records. The NBN Gateway now facilitates access to over 67 million species records including over 14.5 million records of protected and BAP species, as well as 94 geographic datasets comprising habitat and site boundaries that can be used to contextualise and filter species records. These data are supplied, administered and regularly updated by over 130 data providers, who include local record centres, national recording schemes and Government agencies.

Building on the achievements of the past decade, the NBN Trust has launched a strategy for the development of the Network over the next 10 years. This strategy focuses on increasing the use made of the NBN and its data at a national and local level for operational nature conservation delivery, strategic assessment of biodiversity trends and threats, regulatory control and spatial planning[1].

The sharing of data through the NBN Gateway is based on mutual trust and underpinned by the NBN Data Exchange Principles, which state that biodiversity data should be made available to support not-for-profit decision-making, education, research and other public benefit purposes. However, although many species records are collected by highly dedicated volunteer recorders, these records are not 'free' because considerable investment is required to maintain the infrastructure that supports biological recording effort and makes this valuable data resource available for wider use. The Data Exchange Principles therefore also acknowledge that data users should contribute financially or in kind to sustaining the provision of biodiversity data, and that data providers should arrange resourcing to cover their operational costs and ensure that charges for commercial use are realistic and do not prevent the use of biodiversity data.

Local records centres play a vital role in the NBN by supporting and guiding local biological recording effort, managing and quality controlling species and habitat records and ensuring that biodiversity data are used to inform local decision-making. Local record centres are run on a not-for-profit basis and rely on income from data provision to maintain the services that they offer to data users and data providers. Most data providers are not under any obligation to share data via the Gateway and if they believe that doing so could result in environmental damage or undermine their ability to fund their operations, they are likely to withhold or withdraw data.

For this reason, it is a fundamental feature of the NBN that data providers retain ownership and control of their data. The NBN Gateway Data Access Controls and Terms and Conditions have been crucial to developing the Network and encouraging data sharing over the last 10 years. Their role in sustaining data provision is likely to become even more important in the future, as new technologies facilitate

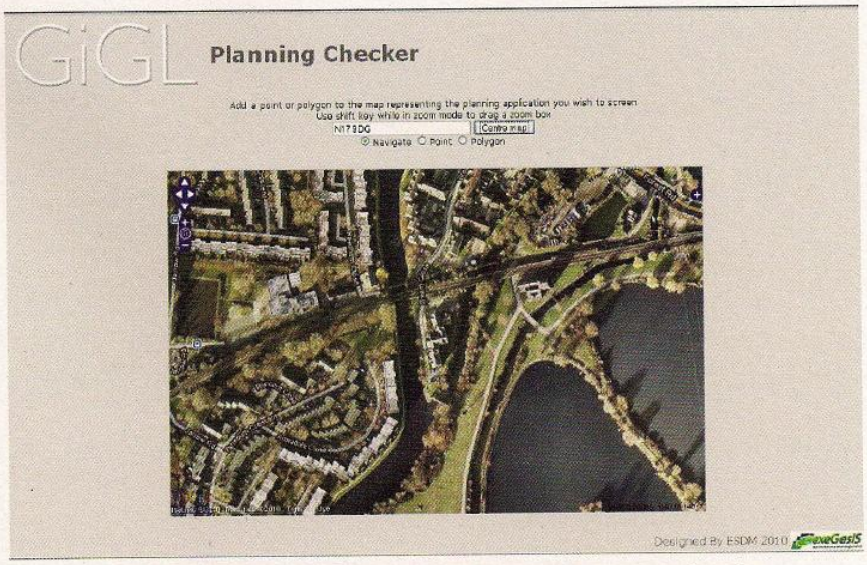

Figure 1. GiGL's planning portal which enables users to screen planning applications against biodiversity information held in GiGL's database and the NBN Gateway

innovative data use for non-profit and commercial purposes, in accordance with the NBN Trust's strategic aim to increase the use of biodiversity data.

Unfortunately, from a consultant's point of view, the Data Access Controls and Terms and Conditions mean that the NBN Gateway is not as useful a resource as it could be. Key points for environmental consultants to note regarding use of data from the NBN Gateway include:

- You cannot use data from the NBN Gateway for commercial purposes, such as in a desk study for a client, without first obtaining written permission from all the data providers.
- You must credit all data providers if you use data from the NBN Gateway in any printed or electronic document, such as a survey report for a client.
- The majority of species records on the Gateway are available to the public at 'blurred' resolution. For example, a record captured at 100 m resolution might be shown at 10 km resolution, which is not precise enough to support development control decisions and might not be sufficient to demonstrate the requirement for a survey. Users can apply to each data provider for access to their data at higher resolution.
- Important attribute data, such as the number of individuals recorded or the habitat in which they were found, might not be made publicly available on the Gateway. Again, users can apply to each data provider for access to this information.
- The NBN Gateway does not provide access to all the available species records for a given area, so it is not acceptable to reference a Gateway data search in a report as evidence for absence of a species.
- Although the NBN Gateway is updated every month, many data providers update their datasets on the Gateway only once a year or less frequently.

Using the NBN Gateway at public access level as the sole source of evidence in a desk study therefore not only contravenes the Terms and Conditions unless written permission has been obtained, it is not ecologically sound practice and could expose your client to litigation. The NBN Trust is making every effort to clarify the Terms and Conditions and to raise awareness of the implications of the Data Access Controls. Improved

Figure 2. RECORD's Data Portal, showing species records from the NBN Gateway as red points and those from RECORD's database as yellow points

'signposting' and *caveats* for data users have been added to the Gateway, while guidance and case studies on commercial use of Gateway data are available on the new NBN website. The NBN Trust and ALERC (Association of Local Environmental Record Centres) are working to develop a training course on biodiversity data access and use for inclusion in IEEM's Continuing Professional Development programme in winter 2012-13.

But if the Terms and Conditions are adhered to, can the Gateway ever be more than just a 'reconnaissance tool' for consultants? Yes! The good news is that key user groups have developed decision-making tools 'powered by NBN' which use NBN Web Services to stream live data from the Gateway into their systems so that the records can be applied to particular uses[2]. The following examples illustrate the innovative use of Web Services by local record centres to enhance the data services they provide to clients.

Data Searches

*The **North and East Yorkshire Ecological Data Centre (NEYEDC)** has already implemented the technology to incorporate Gateway data into their standard data search product. This service has been developed in partnership with the **Yorkshire and Humber Environmental Data Network (YHEDN)**. They are now working on incorporating this functionality into their automated MapInfo-based data search tool for use by data centre staff.*

A key factor in this process is putting appropriate administrative systems in place to ensure that NEYEDC has documented permission from the relevant NBN contributors, and copyright holders of the source data, to pass the queried data on to third parties for use in commercial practices.

***RECORD**, the Local Biological Records Centre serving Cheshire, Halton, Warrington and Wirral, also use NBN Web Services in a data portal which enables users to interrogate their database alongside data from the Gateway. The inclusion of Gateway-derived data contextualises and complements the RECORD dataset, creating a true 'one-stop-shop' for biodiversity data in the Cheshire region. RECORD staff provide users with a log-in account, which enables them to access the data and to view statistics on their account usage and search history. Users can define a search area by entering a grid reference and adding a buffer if required, or they can search the entire dataset for a single species or for a group of species, such as bats, invasive non-native species or species*

of conservation concern. The search results can be filtered by date range to ensure that only recent records are captured. The data are provided in tabulated form, showing RECORD data and Gateway-derived data in separate tables. The user can view one or all of the records on an interactive map, with the points colour-coded to show which data source they originate from. RECORD continue to develop and improve their portal in response to user feedback. The next big development will be to enable online verification by local experts, ensuring that RECORD hold the highest standard of data possible.

In neighbouring Liverpool, **Merseyside BioBank** have carried out considerable work over the last 18 months to improve the quality of the data services that they provide to consultants, including standardising their search procedures and where possible automating them. They now have a high quality product that integrates the habitat, species and second tier sites data that they hold; their next step is to integrate data from sources other than those that they manage and curate locally, most notably species data from the NBN Gateway. They aim to do this by incorporating NBN Web Services into their own data request tools which are written in VB.Net. Merseyside BioBank have secured permission from a number of major data providers to use their data in this way and will continue to seek permission from others. Having successfully tested their ability to use Web Services during a recent project for the collation of marine data, Merseyside BioBank are now pressing ahead with the development work to incorporate Gateway data into all data searches and aim to complete this by Spring 2012.

Local Wildlife Sites Data Management and Reporting

Yorkshire and Humber Environmental Data Network is working in conjunction with statutory agencies, local record centres and local sites partnerships to facilitate the standardisation of key aspects of the second tier site systems.

Second Site is a flexible database framework developed by the YHEDN to manage data on second tier sites and can be customised or extended to manage many other types of spatial and ecological data. Second Site will be made available free to download 'as is' without support. If there is sufficient demand, YHEDN will look into putting appropriate support mechanisms in place.

NBN Gateway species data can be queried from within Second Site, allowing designating authorities to assess sites according to all widely available data. This will allow users to produce citations based on the point in time when the site was designated as well as reports based on current information. This should help to provide a picture of the condition of the site over time.

Planning Application Screening

Working in partnership with Natural England, ***GiGL (Greenspace Information for Greater London)*** developed a tool to enable Local Authority planners and ecologists to screen planning applications for biodiversity interests, highlighting those which require further ecological surveys. The tool is based on the Association of Local Government Ecologists' guidelines for screening planning applications for biodiversity and geodiversity conservation. It uses NBN Web Services to access data from the Gateway alongside data from GiGL's in-house database, ensuring that all applications are screened against the best available information on species, habitats and local wildlife sites. The tool uses this information to provide the user with case-specific guidance on their statutory duties and signposting to further relevant advice or survey requirements.

The NBN Gateway development team recently released a suite of Web Mapping Services (WMS) which enable local record centres to bring NBN Gateway data directly into their GIS for analysis alongside information from their own database. Both Web Services and WMS allow users to benefit from any improved access agreements they have negotiated with the data providers, enabling them to view and use more detailed and higher resolution records than are available to the general public. This is an important point, because negotiating with local and national data providers for authorisation to access and use their records and maintaining documented policies and procedures for data use are key areas of local record centres' work.

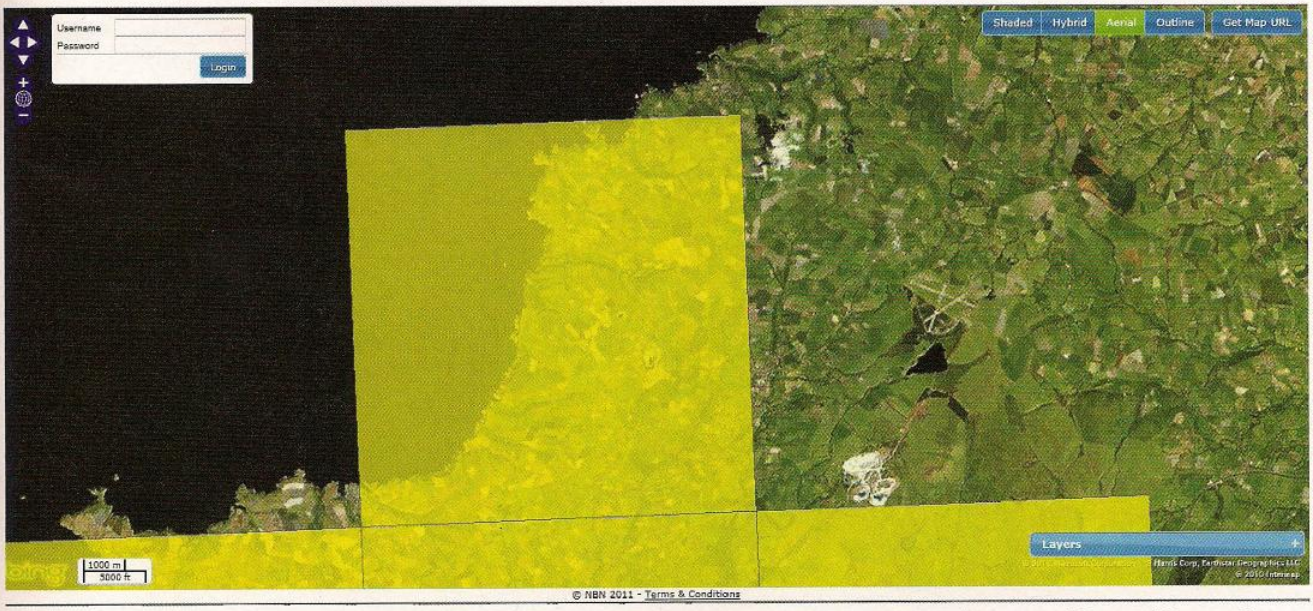

Figure 3. Record of European adder* Vipera berus *supplied to the NBN Gateway by the Environmental Record Centre for Cornwall and the Isles of Scilly (www.erccis.org.uk). The record is shown on the NBN Gateway Interactive Map at the public access level of a 10 km square.

Figure 4. The same adder record from Figure 3 shown at full resolution on the NBN Gateway interactive map. In order to see the record at this level of resolution, the data user would need to apply to the data provider (ERCCIS) for better access.

The case studies above are just a few examples of how local record centres are pioneering the use of NBN Web Services to ensure that local decisions about land use change and land management are based on the most complete, up-to-date and precise biodiversity data available. In the past, these types of solutions were often developed in isolation. Now, thanks to ALERC, technical innovations are being shared more widely throughout the local record centre community.

Defra recently issued a new contract for the development of the NBN over the next three years to 2014. It is a priority under this contract to improve data exchange between local and national data managers via the Gateway and to help local record centres use Web Services to incorporate Gateway data into data searches for clients, alongside species, habitat and site data from their own database. As well as providing a more standardised and comprehensive data service to consultants, the use of Web Services can also help local record centres to fulfil important criteria under the new ALERC accreditation system, which states that local record centres 'need to demonstrate that they can generate comprehensive data products and services to meet user needs... the innovative use of Web Services and similar arrangements will be encouraged'[3].

The NBN is still a relatively new concept and the relationships, business models and technologies within it are evolving rapidly. Ecological consultants have a key role to play in the NBN as data users and, increasingly, as data providers. We appreciate that more needs to be done to facilitate consultants' engagement in this data sharing matrix, and the NBN Trust is working with IEEM and ALERC to achieve this.

The NBN vision is to make all biological records freely and easily available to everyone and the partnership is striving to achieve a funding model that could make this possible. In the meantime, existing business models must not be undermined as this could jeopardise the very future of the NBN. Local record centres are an integral part of the National Biodiversity Network; they represent the local delivery of the NBN vision[4]. The NBN Gateway is not a substitute for the data services provided by local record centres, but it can enhance these services ensuring that ecological consultants benefit fully from the achievements of the NBN and helping to achieve the NBN's strategic objective of increasing the use of biodiversity data.

References

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Author

As Data Access Officer for the NBN Trust, **Paula Lightfoot** provides best practice advice on policy, standards and tools to help organisations throughout the UK to share and use biodiversity information.

Correspondence:
p.lightfoot@nbn.org.uk