

JOINT NATURE CONSERVATION COMMITTEE

NATIONAL BIODIVERSITY NETWORK - FUTURE REQUIREMENTS

Paper by Steve Wilkinson

1. Background

- 1.1 The need for a national mechanism for accessing biodiversity data was first identified in a report commissioned by the Department of the Environment published in 1995, which suggested that over 60,000 individuals in the UK were actively involved in wildlife record collection but that the availability of these records was 'neither adequate nor efficient'.
- 1.2 In 1995, the UK Biodiversity Steering Group recommended establishing a co-operative network of biodiversity databases to improve the availability of biodiversity data; it recommended that the management of this network should fall to JNCC.
- 1.3 In addition, the UK Biodiversity Steering Group recognised that access to, and maximising use of, the available data was a critical part of meeting the commitments of the Convention on Biological Diversity, signed at the Earth Summit Rio de Janeiro in 1992.
- 1.4 In 1996, the Joint Committee confirmed the need for such a national network of biodiversity databases and took the decision to redevelop Recorder (biodiversity data software) in order to facilitate the management, and improve the quality of, biodiversity data across the network (this development is now virtually complete with the roll-out of Recorder 6).
- 1.5 In 2000, the NBN Trust was formed with original representatives from JNCC, English Nature, Countryside Council for Wales, Scottish Natural Heritage, Royal Society for the Protection of Birds, National Federation for Biological Recording, Environment Agency, the Marine Biological Association, Scottish Environmental Protection Agency, Freshwater Biological Agency and the British Ecological Society. Core funding for the Trust is provided through subscription from the partners. Specific partners also fund the acceleration of development work via specific partnership agreements. The Trust is currently reviewing its strategic priorities, particularly in respect of its stakeholders' needs.

- 1.6 The Trust partners also provide staff time and expertise to support the operation of the Trust, including:
- i. JNCC provides business management and financial control advice via its Managing Director who is a Trustee and is Treasurer of the Trust. JNCC also provides the top level management of technical and development functions and ensures an appropriate interface with other related initiatives and relevant Government policy, e.g. the Global Biodiversity Information Facility and the Marine Data and Information Partnership;
 - ii. the Centre for Ecology and Hydrology provides the technical development and related infrastructure, and manages engagement with biological recording community;
 - iii. the country agencies contribute data release and business analyses, and incorporate NBN within their suite of desktop tools;
 - iv. individual recorders, Record Centres and specialist recording Schemes and Societies are concerned with the collection and provision of biological data;
 - v. the Natural History Museum maintains the Species Dictionary that provides a key standard for recording;
 - vi. the Trust itself provides strategic direction, operational and relationship management, publicity and user support.
- 1.7 The NBN now has a mechanism that makes separately-owned sources of species observation data accessible in a standard electronic format, with documentation to explain how the data were created. Access is provided to these data under simple terms aimed at avoiding risk of damage to the environment, and ensuring proper acknowledgment of the data originators.
- 1.8 Data made available through this mechanism can be accessed by partners either through the Gateway website (www.SearchNBN.net) or through large volume extractions of the data. Work is currently underway to develop the Gateway to allow the data and products to be embedded within other systems, such as GIS's or websites.
- 1.9 Currently, there are now some 20 million species records from 150 datasets contributed by 60 organisations potentially available through the NBN Gateway mechanism. This is a huge achievement in terms of the mobilisation of environmental data within agreed standards, and exposes the future potential of NBN for business and public use.

- 1.10 However, there are a number of factors which are constraining the use of the NBN as the information source of first choice. These include:
- i. while 20 million records is a large number of records, it represents perhaps 20-25% of those potentially available in electronic format. Because they see it as potentially undermining their future role and funding, many potential data providers, including many Local Record Centres, are withholding data;
 - ii. for very similar reasons, many data providers are only allowing access to data at levels which are too large in scale to be of practical value for uses such as casework and site monitoring.
- 1.11 This paper sets out the future work required to enable the National Biodiversity Network to achieve its potential.

2. **Current issues**

- 2.1 Notwithstanding its 20 million records, the NBN has not yet reached critical content. Many more data exist and the fact that they are not available through the Gateway is one of the primary reasons that the actual use of the system by country agency staff is relatively low. In terms of JNCC's own work, we do not have access to enough of the biological recording effort as yet to enable us to carry out status and trend role fully effectively.
- 2.2 It is important to ensure that, as well as the initial mobilisation of the data, a mechanism of regular re-supply is established to ensure a steady flow of recent records, these being the most relevant to agency and JNCC requirements.
- 2.3 The agencies and JNCC also need to review the requirements for access to, and delivery of, habitat data and particularly the role that the NBN and Gateway will play in this. The development of the functionality around this is likely to be relatively expensive, but the ability to integrate habitat data with species data is a requirement particularly for use at the local level.
- 2.4 The country agencies need to identify those data sources which are most critical to their business and invest in mobilising them. The Data Access Group¹ has been formed to provide a mechanism through which the partners can pool resources to deliver access against common priorities.
- 2.5 Previous work has indicated that a very large number of the records available are held at a local level, particularly within Local Records Centres. These organisations are often outside of direct agency control, generally having closer associations with local authorities. However, realistically, the country agencies are best placed to provide the leadership to help ensure these data are made available.

¹ The Data Access Group is an interagency group established to look at ensuring that the spend of public money across the voluntary recording sector is properly co-ordinated thus avoiding duplication of spend and ensuring best value from the money invested.

- 2.6 For those priority datasets which are mobilised, the agencies need separately to consider how they will ensure periodic updates and, in particular, what level of resource is available to support the ongoing operation of the providers. Some aspects of this can be supported through articulating priorities for the NBN Trust work programme, but undoubtedly this will not be enough. There are three options, not mutually exclusive, which can be pursued to address the on-going flow of data:
- i. establishing an ongoing financial contract with the data provider;
 - ii. investing in the data providers to improve efficiency - ensuring the providers have the relevant tools and skills to ensure they are operating efficiently will help reduce the core on-going running costs;
 - iii. help the data provider use the NBN facilities - working with the data provider to integrate the supply of data from the NBN into the provider's own procedures will help ensure that updating the central source is in the provider's own interest.
- 2.7 The NBN Trust can offer some technical assistance to the data providers in all the areas outlined above. However, it should be stressed that capacity in this area is currently very limited. Ensuring that the Trust is sufficiently resourced over the medium and longer-term to carry out its functions affectively is a significant issue.
- 2.8 The NBN has made access to, and use of, species data simple and cheap by standardising the format across 190 datasets and over 20 million species records so far. However, actually integrating this into agency GIS systems and web sites that their staff use requires some work within each agency. Each partner also needs to take responsibility for the integration of the data made available, into their own systems. This involves having a clear understanding of the information requirements of their staff, ensuring that systems are created that meet those needs, as well as actually investing in the creation of the systems themselves.

3. **Translating needs into action**

Data mobilisation

- 3.1 **Develop priorities for data** - each partner needs to take responsibility for looking across their own business priorities and identifying those which would be most likely to benefit from an increased flow of data through the NBN. As data acquisition is relatively costly, it will need to progress gradually and thus there will also be a need to identify those data sources where initial effort should be focused. This will be based on both the condition that the data are in (i.e. what the cost of mobilisation will be) as well as those which will be of most relevance. **Action: Country agencies and JNCC.**

- 3.2 **Review the requirement for habitat data** - the extent to which the business priorities of the partners rely on habitat data needs to be considered. This includes what the generic requirement is, how critical it is to partners and how other initiatives and developments already under way could contribute to delivering the requirement. The requirement needs to be carefully considered as any technical build in this area is likely to be relatively expensive. **Action: JNCC**
- 3.3 **Develop a strategy for data mobilisation** - once individual partners have identified their own priorities, consideration needs to be given to how those data will be delivered. In particular, it is important to ensure that, where multiple partners are investing in the same provider, the relevant investment from each is complementary and an interagency group has been formed to address this (Data Acquisition Group). Given that much of the available data is held locally, the country agencies in particular need to consider the strategy to address this. In essence, much of the digitisation here is paid for by other partners not represented within the NBN (e.g. local authorities) but there will be benefits to all if these data can also be mobilised through the NBN. The country agencies are probably still best placed to lead in this area, supported as necessary by the NBN Trust. **Action: Country agencies and JNCC through the Data Acquisition Group.**
- 3.4 **Develop the necessary infrastructure to support mobilisation** - many of the data providers do not have a strong technical background and it is, therefore, important to have the necessary tools and skills available to support them with their mobilisation of the data. This includes:
- i. complete consolidation of Recorder 6 - Recorder 6 has been designed to provide the necessary functionality to support record collation across the voluntary sector. However, the package needs additional consolidation before its use is widely promoted. This includes, for example the completion of the help and other documentation, rectifying remaining problems with the software, streamlining data exchange and ensuring the necessary skills and support are readily available. Overall responsibility for this rests with JNCC with some support from the country agencies. **Action: JNCC;**
 - ii. consolidate other standards and tools - The NBN Trust has developed a suite of standards and tools to support the mobilisation of data. This includes the NBN data exchange format and the associated validation routines as well as written guidance on making data available, all of which are now nearing completion. **Action: NBN Trust;**
 - iii. develop additional technical support capacity - Most data collators encounter some level of technical difficulty when mobilising their holdings, particularly problems with large scale data transformations and data checking. Currently the NBN Trust provides half a post per annum to support this requirement. However, even at the current level of demand this is not sufficient and there therefore needs to be an increase in resources to support the rising requirement in this area. The

NBN Trust needs to review the capacity in this area and make recommendations on how it could be expanded. **Action: NBN Trust;**

- iv. scale up the Gateway infrastructure - Currently the Gateway does not have the technical capacity to cope with a large increase in data volume and use. A review is currently under way to look at what needs to be done to scale it up to meet the anticipated demand. The outcome from this will be implemented through the Gateway Steering Group. **Action: Gateway Steering Group.**

3.5 **Mobilise priority data** - the mobilisation of data will usually involve some level of funding of the data provider to compensate them for the effort required to digitise, collate and check the data. This funding needs to be provided by the partners either through the funding of the Biological Record Centre, in the case of JNCC, or the direct funding of data providers themselves. Ensuring that good technical advice is available when establishing such contracts will be useful in determining their shape. For example, more investment in infrastructure or training may bring a disproportional benefit in terms of efficiency of the data provider, even though the provider themselves may not initially appreciate this. This function would also benefit from having the additional technical support capacity mentioned above. **Action: Country agencies and JNCC supported by the NBN Trust.**

3.6 **Review costs and options for delivering a regular flow of data** - the primary uses of the data available through the NBN primarily require access to recent records. Thus, when data are mobilised it is important to consider how the on-going mobilisation of the data will be delivered. Again, the technical resource from the NBN Trust could provide advice, particularly when considering the overall technical efficiency of the data collation activity. In addition, it may be possible to encourage the providers to update their data available through the NBN through helping them use the NBN facilities to integrate the data into their own systems. Supporting this would again require additional technical time being available. **Action: NBN Trust.**

3.7 **Develop a strategy for on-going support of data collation sector** - after the data are mobilised the longer term funding and other resources invested in the data collation sector need to be reviewed in order to help ensure that the data which are available remain as current as possible. Again this issue is probably best addressed through the Data Acquisition Group. **Action: Country agencies and JNCC.**

Improving accessibility

3.8 **Develop prototype applications with users** – the primary way users will access the data will be through some form of application on their computer. This could be pages on their internet site or integration with other more familiar systems such as GIS mapping or a spreadsheet. Developing these sorts of implementations is often expensive and prone to failure but one easy way of reducing these risks is through the development of prototype applications. These are non-functioning demonstrations that show the users how the final

application will look and work, and gives them a chance to make changes before the more expensive development phase begins. **Action: Country agencies.**

- 3.9 **Review technical capability of NBN** – once the users requirement has been agreed, the specification needs to be reviewed against the functionality provided by the Gateway in order to check that it can provide the right data in an appropriate format. In the event that changes are needed, these will be approved and prioritised through the NBN Gateway Steering Group, which includes representatives from each of the country agencies and JNCC. **Action: Gateway Steering Group.**
- 3.10 **Develop application for users, test and release** - once the NBN can deliver the data in the required format, the actual application the user will use can be built and released. There then needs to be a phase of training users and reviewing with them how well the system meets their needs. Depending on the results of this (and how successful the initial prototyping phase was), it may be necessary to further enhance the functions provided. The use of the application can be periodically reviewed in order to identify any further enhancements which could be made to improve its usability and functionality. **Action: Country agencies.**

Resourcing issues

- 3.11 **Ensuring the NBN Trust is adequately resourced** - the needs of the conservation community for services from the NBN Trust as detailed above are not capable of being supplied within the necessary timescales at current resource levels. There is an urgent need to negotiate sufficient and long-term resourcing arrangements for the Trust with Government. **Action: JNCC/Government**

4. **Next steps**

- 4.1 The following next steps are proposed to implement the action plan:
- i. embed the actions specified in section 3 above which relate to JNCC within our *Access to Information Programme*, adjusting the programme as necessary;
 - ii. ensure the actions specified in section 3 and the NBN strategic priorities currently under development are sufficiently aligned. The action plan would then be overseen by the NBN Trust, facilitated by JNCC where appropriate;
 - iii. JNCC will lead on a negotiation with Government over ways and means of ensuring the NBN Trust is sufficiently resourced over the longer-term.