

Commentary and Recommendations from the Biodiversity Science Group Sub-Group on Petition PE1229:

“..to urge the Scottish Government to establish integrated local and national structures for collecting, analysing and sharing biological data to inform decision-making processes to benefit biodiversity.”

The Biodiversity Science Group (BSG) was asked by the Environment Minister to consider the issues associated with Petition PE1229, and make observations and recommendations for future action to be provided to the Petitions Committee. A sub-group of BSG met with the petitioners, National Biodiversity Network (NBN) and SNH staff, and other interested parties in a forum meeting on 22 January 2010. We have considered the information provided in advance, on the day, and in a number of subsequent submissions in collating this short report.

We list our recommendations first; then follow them with a brief analysis of the issues which led us to these recommendations:

Recommendations

1. All parties concerned with the collection and use of biological data in Scotland should support and contribute through the National Biodiversity Network (NBN) Gateway as the prime (only) UK data repository.
2. Scottish Government should become the key subscriber / contributor to the NBN on behalf of the Scottish public sector, to maximise access to, benefit from and use of information provided through the NBN Gateway. Key parties within this will include SG DG Environment, SNH, SEPA, other CAMERAS¹ partners, SG planners, as well as FCS and Local Authorities.
3. The NBN and SNH should encourage all National Schemes and Societies (NSS) to join the NBN process and provide data for the NBN Gateway, which will ultimately benefit the conservation of the species concerned.
4. Full involvement with and contribution of data to the NBN should be a requirement of any financial support from SG or SNH to any NSS.
5. SNH / SG should also consider the need to support some NSS at a UK level; especially the smaller societies with limited numbers of experts who work at a UK level, but provide a key Scottish resource.
6. The Scottish Government, SNH and others should establish a **Scottish Environmental Information Forum** (SEIF), whose membership should be cross-sectoral and whose role should be to develop a strategic approach (by consensus) to the collection, collation and sharing of biological data across Scotland. This forum must work in close partnership with the NBN to provide maximum mutual benefit. The forum should develop an Action Plan with a clear schedule for implementation. The provision of modest funding for secretariat functions from SG would ensure that this work develops at a reasonable pace and is properly co-ordinated.
7. SNH and/or SEIF should review the means by which data for key and priority Scottish species are provided to the NBN and made available to organisations that need them. This review will highlight any gaps in data submissions and should provide recommendations for strengthening the datasets available for key Scottish species.

¹ The SG Co-ordinated Agenda for Marine, Environment and Rural Affairs Science

8. If a Scottish Renewable Energy Environmental Data Centre is to be developed as an SG – industry partnership, every effort should be made to ensure it is fully integrated as one of the “nodes” of the NBN and contributes its data to the process.
9. All Local Records Centres (LRCs) and Centres for Biological Recording should be encouraged to contribute their data to the NBN Gateway; this should be a specific condition and requirement of any ongoing or new SNH or SG funding.
10. SEIF should review the role, funding and coverage of LRCs and other local options for biological data management across Scotland as part of the process to ensure that the necessary structures are in place to collect and disseminate biological information across Scotland.
11. In the light of this review, SG and SNH should consider establishing a fund for LRCs similar to those developed by Defra and the Welsh Assembly Government. This could provide a proportion of the establishment funding for agreed new LRCs or data hubs for the medium term, to provide a degree of security to their establishment, and, potentially, ongoing contributions to the running and management of LRCs.
12. SNH should review its current funding of LRCs based on area requirements and species priorities. In the longer term, funding from both SG and SNH should be transparent, strategic and prioritised to ensure the best value for money from funding of LRCs.
13. All parties involved in biological data management in Scotland should work to agree on either a common GIS platform, or common inter-operability standards and GIS data standards.
14. SG should ensure that all their relevant staff are aware of, and have the necessary access to, biological data (through the NBN Gateway) in their decision-making. We believe the NBN would be keen to help with the establishment of platforms for specific uses of NBN data.
15. SG should work with Scottish Local Authorities (LAs) (through CoSLA?) to develop a parallel relationship with NBN to the Scottish National agreement proposed in recommendation 2.
16. SG and SNH should work to engage Local Authorities, perhaps through the SEIF, in reviewing how they meet their biological data needs for the implementation of local BAPs, their biodiversity duty and the Single Outcome Agreements. This may lead to the establishment of new LRCs or data hubs, changes in management or prioritising of the work of existing LRCs to help to meet their needs.
17. LAs (through CoSLA?) should have an active role as partners in the SEIF; and should make their data needs and priorities clear to LRCs and the NBN. The agreement of these needs and priorities would seem to be a prerequisite for LA involvement in funding their relevant LRCs.
18. SEIF should investigate the means and possibilities of enabling the addition of developers’ data to NBN. This will be a complex and difficult issue to address, for a wide range of reasons, but unless it is addressed, much valuable data collected by developers and consultants as part of the environmental assessment process will be lost to public use. One approach to tackling this issue might be through the connections provided by the Institute of Ecology and Environmental Managers (the ‘industry body’ for many environmental consultants), or other professional institutes.

I. Rationale for the presentation of this review

We have examined the issue of biological data collection, collation and management across and for Scotland, and for the purposes of this report, consider it simplest to approach the issue first from the UK perspective, working through the Scottish perspective and on to the local level. These sections reflect the way we might “*establish integrated structures*” and “*collect, analyse and share data*”. We consider separately the needs of public sector end-users in a fourth section; this considers more how we might “*inform decision-making processes*”.

In a brief review and report it is not possible to provide definitive solutions to a complex series of issues and problems. We do however make a number of suggestions and recommendations to establish a more strategic approach to the collection, collation, management and dissemination of biological data across Scotland to benefit our natural heritage, and would be happy to engage in further discussions on these proposals and recommendations.

II. The UK perspective

The National Biodiversity Network (NBN) is the key body for biodiversity (species) data at a UK level. In the last five years the NBN has proved itself to be the prime (only) repository for centralised storage and sharing of UK biological records across all animal and plant groups.

The prime means of disseminating this information is through the NBN Gateway and website. This is an effective way of searching for species information across the UK, and is available to all at <http://data.nbn.org.uk/>

This provides rapid access to organised and standardised data. There are now 50 million biological records on the NBN. Over 6.7 million of these are Scottish records.

Most of the major National Societies and Schemes (NSS) now contribute data to NBN; the major data holdings at Jan 2010 (data from NBN) were:

Butterfly Conservation	11.8 Million records
Botanical Society of the British Isles	10.7 M
Royal Society for the Protection of Birds	2.7 M
British Trust for Ornithology	2.1 M
British Bryological Society	1.8 M
British Mycological Society	1.1 M
British Lichen Society	0.8 M
Dragonfly Recording Network	0.7 M
Spider Recording Scheme	0.5 M
Hoverfly Recording Scheme	0.5 M
Bees, Wasps and Ants Recording Society	0.4 M
Conchological Society	0.3 M
Scottish Ornithologists' Club	0.3 M
Marine Biological Association	0.2 M
Riverfly Recording Schemes	0.2 M
Marine Conservation Society	0.2 M
The Bat Conservation Trust	0.04 M

The NBN and Scottish Natural Heritage (SNH) should continue to encourage all NSS to join the NBN partnership and contribute all available data to it.

NSS have a key role in data collection, collation and verification (expert checking that a record is likely to be correctly identified) at a national (and local) level.

Their experts are likely to be the best-placed to verify records of key or critical species.

Their experts may be best placed to provide a UK-level analysis of species distributions, records, coverage and gaps.

NSS can provide national expert training for critical groups. For example, the British Lichen Society has run a Lichen Apprentice Scheme (funded by SNH) to improve both data quantity and quality. This can be (and is) done at UK, Scottish or local levels, and in liaison with Local Record Centres and others. However, many NSS have major resource issues trying to successfully fulfil this role.

There is a degree of defensiveness in some organisations and individuals about data ownership, and a degree of concern about the possible release of sensitive data which might lead to harm to rare or threatened species. RSPB appears to have satisfied itself over these issues and has become a major data contributor to NBN. NBN (and SNH) should continue to work to encourage others to follow this route.

The NBN has established sound protocols about data validation and verification. They are also working on removing the blockages to effective data flows between suppliers and users.

The NBN has established sound protocols and is a co-ordinated source of advice, standards and tools for species data capture, management and sharing.

The NBN has provided advisory materials for Local Record Centres on how to run a record centre, data quality checking and validation and verification.

SNH has provided funding contributions to help with the establishment of NBN for many years, and has provided staff on secondment, including the NBN Chief Executive. SNH funding for NBN staff and operations runs at ca £80,000 per annum.

Now the NBN is running well and holds large volumes of data, it is developing relationships with major customers for those data, such as Defra, and building platforms for data use (NBN demonstrated to us examples for use by planners and agricultural advisers). It has had informal discussions with SG with a view to developing similar customer arrangements across the Scottish public sector, perhaps through the CAMERAS² grouping. We return to the value of this for SG in Section V.

Recommendations

1. All parties concerned with the collection and use of biological data in Scotland should support and contribute to the National Biodiversity Network (NBN) Gateway as the prime (only) UK data repository.
2. Scottish Government should become the key subscriber / contributor to the NBN on behalf of the Scottish public sector, to maximise access to, benefit from and use of information provided through the NBN Gateway. Key parties within this will include SG DG Environment, SNH, SEPA, other CAMERAS partners, SG planners, as well as FCS and Local Authorities.
3. The NBN and SNH should encourage all National Schemes and Societies (NSS) to join the NBN process and provide data for the NBN Gateway, which will ultimately benefit the conservation of the species concerned.
4. Full involvement with and contribution of data to the NBN should be a requirement of any financial support from SG or SNH to any NSS.
5. SNH / SG should also consider the need to support some NSS at a UK level; especially the smaller societies with limited numbers of experts who work at a UK level, but provide a key Scottish resource.

² The SG Co-ordinated Agenda for Marine, Environment and Rural Affairs Science

III. The Scottish perspective

There is no structure or organisation at a Scottish level which operates or provides data in any way like the NBN.

In our view there is no need for a Scottish NBN. To establish a separate Scottish data handling and provision system would be a very expensive route towards major duplication of effort, and NBN has the real potential to supply all Scottish needs at this level.

The NBN is endorsed by the Scottish Biodiversity Strategy as a key data source for Scottish priority species.

SG and SNH should require their own staff, and encourage all Scottish environmental agencies, institutes and NGOs, to contribute their data, and data collected on their behalf, to NBN, just as recommended for NSS above. SG and SNH should lead the way in this to encourage partners to do likewise.

There are two Scotland-wide biodiversity data collection groupings with rather different roles and functions.

Biological Recording in Scotland (BRISC) is a Scotland-wide association for biological recorders, but does not draw in the wider user community. To quote the BRISC website:

“BRISC encourages and supports every aspect of recording wildlife and wildlife habitats in Scotland, through local record centres, recording groups and individual recorders. It promotes the adoption of high standards and good practice in biological recording and encourages the contribution and exchange of data for the purpose of conservation, education, research, planning and general information. It supports all National Recording Schemes in Scotland and is committed to working towards a National Biodiversity Network.”

The Scottish Environmental Data Managers' Forum is a (new) grouping of a small number of professional data managers in Scotland, and serves as a technical information exchange and forum, but does not draw in the wider user community.

However, we believe there is a gap in Scotland's management of biological recording. There is no strategic grouping to co-ordinate the development and activities of biological recording, and data provision, management and use.

In Wales, the recent establishment of the Welsh Environmental Information Forum (WEIF) has provided a strategic focus for data providers and users, and has helped to develop a co-ordinated approach to operational matters - prioritising and implementing solutions. The forum will directly affect how Welsh data providers and users work together to improve data collection, management and flow.

The development of a strategic view could be useful across a range of areas. This could include agreement on common platforms for data sharing; or suggestions for regional groupings to best meet data management needs and demands. It should also address data collation and provision; for example by reviewing the means by which data for Scottish priority species are provided to and available from NBN. Some will be provided by National Schemes and Societies and some by LRCs. Such a review will highlight any gaps in data provision and strengthen the case for a fully-functioning network of data providers.

There have been recent discussions between industry interests, SG and SNH about the development of a Scottish Renewable Energy Environmental Data Centre; this could provide access to a large volume of data collected by the renewable energy sector, which is not currently readily available to third parties.

SNH has particular requirements for data as regards the development of a Surveillance Strategy to meet the needs of reporting for the European Habitats and Birds Directives. These include assessments of the status of protected species and habitats in the wider countryside, and of the incidental kill and capture of protected species. These needs provide an example of one focus for the prioritisation of record assimilation and collection.

Recommendations

6. The Scottish Government, SNH and others should establish a **Scottish Environmental Information Forum** (SEIF), whose membership should be cross-sectoral and whose role should be to develop a strategic approach (by consensus) to the collection, collation and sharing of biological data across Scotland. This forum must work in close partnership with the NBN to provide maximum mutual benefit. The forum should develop an Action Plan with a clear schedule for implementation. The provision of modest funding for secretariat functions from SG would ensure that this work develops at a reasonable pace and is properly co-ordinated.
7. SNH and/or SEIF should review the means by which data for key and priority Scottish species are provided to the NBN and made available to organisations that need them. This review will highlight any gaps in data submissions and should provide recommendations for strengthening the datasets available for key Scottish species.
8. If a Scottish Renewable Energy Environmental Data Centre is to be developed as an SG – industry partnership, every effort should be made to ensure it is fully integrated as one of the “nodes” of the NBN and contributes its data to the process.

IV. The Local Perspective

a. Local Records Centres

The Local Record Centre (LRC) network is nowhere near complete in Scotland.

Based on BRISC classifications, the most recent assessment of Scottish LRCs (January 2010) is that there are:

Four fully-functioning LRCs: Lothian and Borders Wildlife Information Centre (TWIC), Fife Nature Records Centre (FNRC), North-East Scotland Biological Records Centre (NESBReC) and Dumfries and Galloway Environmental Resources Centre (DGERC).

Three part-functioning LRCs: Shetland, Orkney and Glasgow.

And two LRCs planned or under discussion: Central and Ayrshire.

There are eight ‘Centres for Biological Recording’; Arran, Falkirk, Islay, Dundee, Perth, Renfrewshire (including East Renfrewshire and Inverclyde) Skye, Highland. With the notable exception of Highland and Islay these appear to be repositories of data of varying age with little current activity.

There are four areas of Scotland with no biological records facility: Western Isles, Clackmannan, and North and South Lanarkshire.

The result of this variation in coverage and capacity across Scotland means that the service provision available from LRCs to planners, developers and other parties is very variable, with no effective local service available across over half of Scotland’s land surface.

Some of the LRCs and centres have contributed substantially to NBN; others have not as yet done so. Major contributors to date are

Fife Nature	300,000 records
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Highland Biological Recording Group	116,000
North East Scotland Biological Records Centre	102,000
The Wildlife Information Centre (Lothian and Borders)	26,000

SNH and NBN need to continue to work to ensure that all LRCs are fully supportive of, and contribute their data to NBN.

It should be a condition of SNH grant aid to any existing or aspiring LRCs that they contribute fully to NBN in providing records. (This has been the case since 2008 and all future grants and renewals should require this). Records which are not contributed to NBN are not working fully towards biodiversity conservation.

b. Structures, groupings and funding arrangements

The four fully-functional LRCs operate in a range of ways. DGERC is hosted by Solway Heritage, and Fife NRC by the Fife Coast and Countryside Trust; both not-for-profit charitable environmental bodies. The Wildlife Information Centre (Lothians and Borders) is a not-for-profit charitable environmental company in its own right. NESBReC is a not-for profit partnership organisation. All employ staff to operate the centres, manage data and provide a range of information and services.

The remaining LRCs and centres for biological recording operate with part-time staff at best; managed through local museums, local authorities (including ranger services) and not-for-profit bodies.

The LRCs receive funds from a wide range of sources, and all the major ones rely on multiple funding sources. These include SNH, Local Authorities, National Heritage Lottery Funds, National Park Authorities, the National Trust for Scotland, other NGOs, Forestry Commission Scotland, Museums and private clients. SNH has also provided funds for Highland BRG, Glasgow, Orkney and Shetland.

SNH funding, paid or committed since 2006 for LRCs totals almost £475,000 to thirteen recipients, and the current funding provision for LRCs is ca £100,000 annually. This is allocated on the basis of bids received and cases made.

The Scottish National Parks are becoming players in the LRC process. The Cairngorms NPA has reached an agreement with NESBReC for collation of data across the Cairngorms. Loch Lomond and the Trossachs NPA is an active player in the ongoing bidding for a Stirling / LLTNPA Biodiversity Data Hub / LRC.

In recent years there has been an element of natural amalgamation of LRC areas. Borders has merged with Lothians, Cairngorms has aligned with NESBReC. We believe that this may continue, and suggest we could see a future network of around eight LRCs in Scotland.

Shetland; Orkney; Highlands and Western Isles; North–East Scotland; Fife and Forth; Lothian and Borders; Dumfries, Galloway and Ayrshire; Strathclyde and Lanarkshire might be reasonable groupings. We suggest this only as an ‘Aunt Sally’ for future strategic discussion (within SEIF?), and would welcome other proposals for more natural groupings.

We suggest that groupings should not be too large, as larger area LRCs may lose their ‘sense of place’ for the local recorders who provide much of the data.

Unless SG were to propose a central funding solution to a complete network of LRCs, we do not believe it is appropriate to impose a top-down structure for LRCs. Whether central funding is available or not, we suggest that SEIF provides a process of strategic review of Scottish needs and SNH and other local interests continue to discuss areas where LRCs or data hubs might be formed organically, as is currently happening in the Stirling/ LLTNPA area.

Resources are a major issue. Several recent reports suggest that a fully-functioning LRC would cost £100 - 150 k pa to run. We have no reason to disagree with these analyses.

There have been several recent needs and management analyses - Highland, Stirling and LLTNP, Glasgow and Clyde Valley have all undergone review processes. Some of the recommendations from these appear to propose complicated GIS systems, perhaps because the analysts involved were not familiar with both GIS solutions and biological recording needs.

Full access to NBN will not circumvent the need for effective GIS platforms, but these need not be excessively complex. To limit establishment and running costs, it may be beneficial to all parties in Scotland to agree on a common GIS platform, or at least common inter-operability standards or GIS data standards.

Online access to, and data compatibility with NBN is a key prerequisite for any LRC.

LRCs should prioritise their work on data collection and collation for key species and habitats. These are the species and habitats with legal and planning significance, such as those protected under the Birds and Habitats Directives, Scottish wildlife legislation, or the UK, Scottish and local Biodiversity Action Plans. DGERC notes this as a priority for its work in its newsletter for winter 08-09.

LRCs should collect data on all taxa where available. They should work with NSS to develop good validation and verification protocols, and ensure high standards of data quality.

LRCs and NSS should ensure there are good working relationships between them to avoid data duplication to NBN; they need to reach clear and common agreements on data flows.

LRCs should have both data assimilation and data dissemination functions. There is little point in collecting data that are not usefully employed. LRCs will not be valued by the conservation, business or planning communities if their data are not readily and widely available.

The collation, analysis and interpretation of data on key species and habitats is likely to be a key demand area from the user community, and this is one of the functions which will require GIS capacity, and GIS compatibility with LAs and others. LRCs should recognise this as a priority and aim to meet this demand. This is one key to their longer-term credibility and sustainability.

A key future role for LRCs will be as interpreters of (both local and NBN) data for the user community. This service should provide a partial income source for LRCs. Some of the Scottish and several LRCs in England have this as a key function and income stream.

Another key role of LRCs will be the handling of sensitive species information and allowing third party access to these data. LRCs will continue to need staff who understand species' sensitivities and will need an appropriate system for passing data to those who need to use them for the conservation of the species, or at least to avoid harm to the sensitive species. This can be a complicated decision process and requires both species and data expertise.

LRCs should not view NBN as a competitor; it is in their interest to contribute fully to NBN, and to use NBN data to supplement and complement data collected and provided by local recorders through the LRC.

LRCs can, and many do, provide real links to volunteers in the local recording community. They can encourage data collection, and can direct or guide priorities through local survey initiatives. They can provide training, and could provide funding or other resources to improve recording skills and capacity. They should ensure they co-ordinate with NSS to maximise the benefits from such training activities.

A number of other organisations and their staff have a local role to play in encouraging, assisting and managing biological recording. In some cases they help to run records centres. These include museums staff, local authority staff (LBAP Officers, rangers, ecologists, planners), SNH area staff and NGO staff.

c. *Links between LRCs and NSS*

We have highlighted the importance of LRCs, and made reference to the need for LRCs to work with NSS to ensure that data flow is effective. This is crucial; both LRCs and NSS play significant local roles, and there should be a co-ordinated effort to bring these two sectors closer together so that they can assist each other in data collection and data flow. NBN are working in this area but the Scottish community, perhaps through a Scottish forum, should play a strong role in developing these close working links.

Recommendations

9. All Local Records Centres (LRCs) and Centres for Biological Recording should be encouraged to contribute their data to NBN; this should be a specific condition and requirement of any ongoing or new SNH or SG funding.
10. SEIF should review the role, funding and coverage of LRCs and other local options for biological data management across Scotland as part of the process to ensure that the necessary structures are in place to collect and disseminate biological information across Scotland.
11. In the light of this review, SG and SNH should consider establishing a fund for LRCs similar to those developed by Defra and the Welsh Assembly Government. This could provide a proportion of the establishment funding for agreed new LRCs or data hubs for the medium term, to provide a degree of security to their establishment, and, potentially, ongoing contributions to the running and management of LRCs.
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13. All parties involved in biological data management in Scotland should work to agree on either a common GIS platform, or common inter-operability standards and GIS data standards.

V. The User / Decision-maker Perspective

Good biodiversity data are important / vital for good decision-making in several areas of Scottish Government. These include transport strategy and planning, development control issues and Public Local Inquiries, Electricity Act Section 36 and 37 electricity generation and transmission decisions, decisions on Scottish Rural Development Programme priorities and cases and other agri-environment issues, and fishery and aquaculture decisions. SG staff should be using NBN data to inform their decision-making, and SG should work with NBN to develop user-friendly platforms in the most important areas.

Both SNH and SEPA should and will be major users of biodiversity data in their roles as environmental advisers to SG. It is vital that they have good access to NBN and local data.

At a local level, the Scottish Local Authorities are the key players. Their roles and responsibilities in planning and Local Biodiversity Action Plans mean that to work effectively they have a key need for good quality biodiversity data. They also have responsibilities under the terms of the biodiversity duty which will require sound biodiversity information.

We note that these responsibilities are recognised by the Minister, who stated (March 2009) that *“data is fundamental to effective nature conservation”*, and *“all public bodies, including local authorities, have a statutory duty (and) the responsibility to ensure they have all the biological data necessary to inform decisions and plans”*. SG Landscape and Habitats Division (letter from Ian Hooper, July 2009) also recognises that *“local authorities will need to have the capacity to interpret data locally”* and we agree wholeheartedly with both of these comments.

Local authority needs are likely to be driven by their duties and responsibilities which are often related to specially protected and threatened species, through European and domestic legislation, UK BAP and Scottish BAP lists and LBAP species. If LRCs can provide and interpret information related to these areas, they are likely to be valued by local authorities in the long term.

Local authorities receive large volumes of biodiversity information from developers as part of the planning process. There is an issue, which needs to be addressed, of making such data available for further use. Developers' consultants, who in many cases are members of the Institute of Ecologists and Environmental Managers (IEEM) or other professional bodies may have a role to play in influencing developers to release their data to the NBN.

There may be merit in SG proposing a link through the Single Outcome Agreements as regards the biodiversity duty and development of biodiversity indicators, which imply a need for LAs to have access to and use biodiversity data.

LAs have played a key role in funding the four most active LRCs; it seems unlikely that a well-funded LRC will arise in the absence of LA contributions and involvement.

Recommendations

14. SG should ensure that all their relevant staff are aware of, and have the necessary access, to biological data (through the NBN Gateway) in their decision-making. We believe the NBN would be keen to help with the establishment of platforms for specific uses of NBN data.
15. SG should work with Scottish Local Authorities (LAs) (through CoSLA?) to develop a parallel relationship with NBN to the Scottish National agreement proposed in recommendation 2.
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