

inpractice

Issue 105 | September 2019



Blue & Green Infrastructure

In this issue

Integrating
Green and Blue

Blue Infrastructure
in Green Networks

Green Infrastructure:
A Biodiversity or Public
Benefit Agenda?

The SBIF Review... Designing the Blueprint for a New Type of Green Infrastructure?

Claire Lacey CEnv MCIEEM

Scottish Oceans Institute, University of St Andrews

Keywords; biodiversity, biological records, data, data sharing,

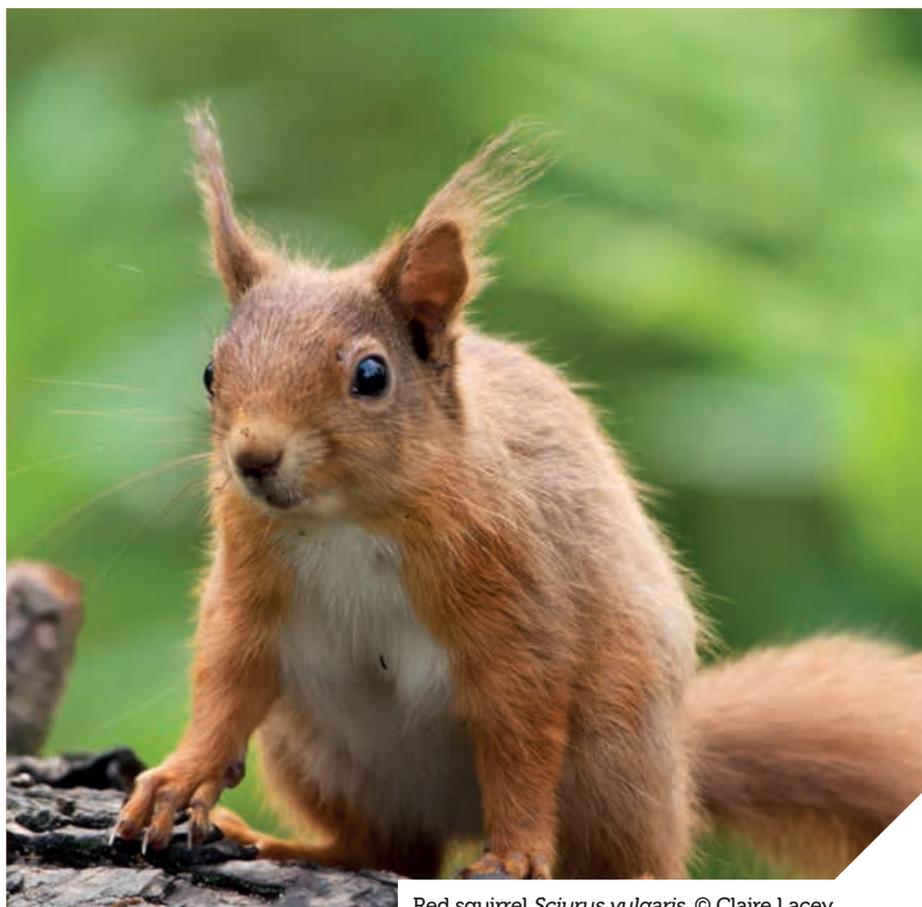
Following an extensive review, the Scottish Biodiversity Information Forum (SBIF) is working to create a blueprint for improving the biological recording infrastructure in Scotland. Think of this just like Green Infrastructure... but for your biodiversity data!

Introduction

As a self-confessed data-nerd, there is very little I find as pleasing as a database full of biological data. I work on marine mammals, so for me it's not uncommon for a single field trip to last 6 weeks, resulting in excess of 150,000 GPS records, 2,000 environmental records and 400 sightings records. That's without the acoustic data, the photographs and all the other incidental material collected to add context to the survey. Data storage is cheap, so I can record acoustic data for beaked whales collecting 500,000 samples a second and filling up hard drive after hard drive. But in the age of easy data storage and increased capacity, what happens to all these records once the project is completed? At a time when organisations like the European Commission are calling for science to become more open and adhere to FAIR (findable, accessible, interoperable and reusable) data management principles (Popkin 2019), do we have an obligation to contribute our biological data?

Data sharing

Historically, we ecologists are not the best at sharing data. We do not have a culture of cooperative curation and sharing that is



Red squirrel *Sciurus vulgaris*. © Claire Lacey.

fully established within our field (Hampton *et al.* 2013). Some of the reasons for this are – well – reasonable. In a world of increased demands on our time, increasing competition for work or funding, a need to fulfil the requirements of our employers, email, meetings, licence returns, Continuing Professional Development, etc., etc. – the time left over to compile data and submit it to the records office or database is limited. But the advantages of such initiatives should be obvious too.

With strains on our natural environment at a critical level, and daily news full of warnings about the loss of biodiversity and the impacts of anthropogenic activities and climate change, don't we have an obligation as professionals to share the data we have as widely as possible? Not that this is a new idea; it has been talked about since 1975. The preface to the BIOREC conference proceedings (BIOREC 1975) states that '*the demand for reliable biological information is escalating.*

Viewpoint: The SBIF Review... Designing the Blueprint for a New Type of Green Infrastructure? (contd)

It is, therefore, essential that a unified system for biological data accumulation, storage and retrieval facilities is adopted – which is a true today as it's ever been.

Scottish Biodiversity Information Forum

In 2009, the public petition from Biological Recording in Scotland (BRISC) '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', resulted in the formation of the Scottish Biodiversity Information Forum (SBIF). In 2010, Scottish Government tasked SBIF's cross-sectoral membership (comprising members from CIEEM, the recording community, National Park Authorities, National Museums of Scotland, Scottish Natural Heritage and Scottish Wildlife Trust, amongst others) 'to develop a strategic approach (by consensus) to the collection, collation and sharing of biological data across Scotland'. Where this differs from previous approaches, however, is in the depth of the review that SBIF have completed, and the scale of the vision for the new infrastructure.

The SBIF 'Review of Biological Recording Infrastructure in Scotland' was conducted from 2016-2018 and has been characterised throughout by a sense of partnership and a shared vision for a resilient and inclusive information infrastructure (Wilson *et al.* 2018a). Opinions were collected from interviews with people from 42 different organisations ranging from academia to commercial; Local Record Centres to Statutory Agencies (Wilson *et al.* 2018b). A questionnaire (circulated to all Scottish CIEEM members, as well as others from a similar breadth of sectors) received 290 responses (Wilson *et al.* 2018c), and four workshops were attended by 39 organisations (see Annex 1, Wilson *et al.* 2018a). This massive consultation effort is what makes SBIF stand out from other attempts to set up a data-sharing initiative, and hopefully will prove the key to its success. The review itself makes 24 recommendations (Figure 1) including a central data repository that all record centres and other data providers will feed in to, data access through a single online data verification

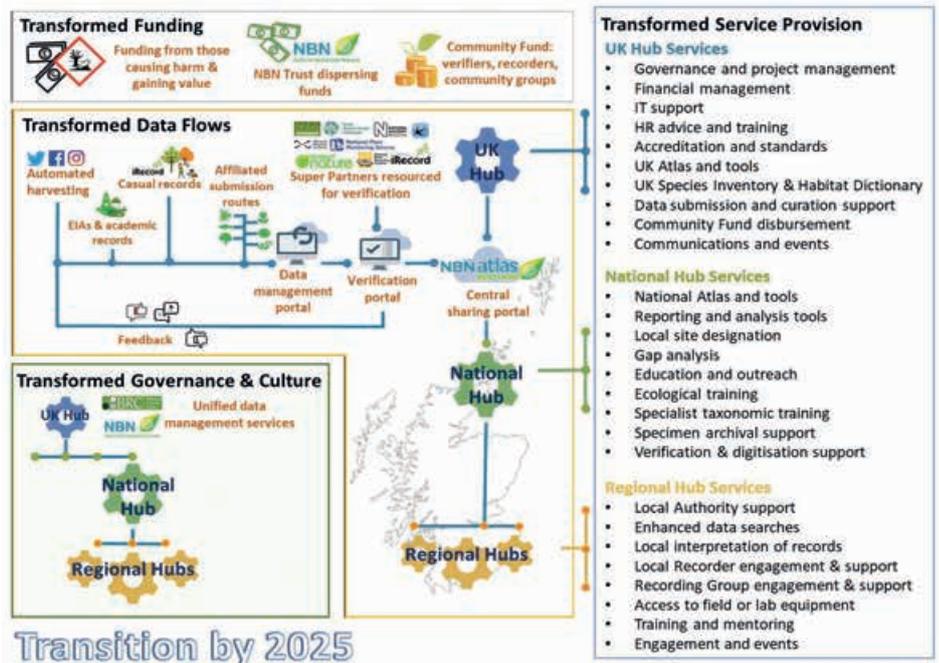


Figure 1. The recommendations of the SBIF review. See Wilson *et al.* (2018a) for these in full. © SBIF.

portal (Figure 2). Recommendations also include simplifying the system and improving and standardising the data provision services that are available.

As the gatekeepers to a huge resource of biological and environmental data, buy-in from the professional ecological community is critical. Not only will this improve access

to data for our own work, but it will also improve the situation for planners, regulators and many other people who rely on an up-to-date repository of full and accurate biological data.

Take the renewables industry where we are now looking at repowering windfarms in Scotland as they come to the end of

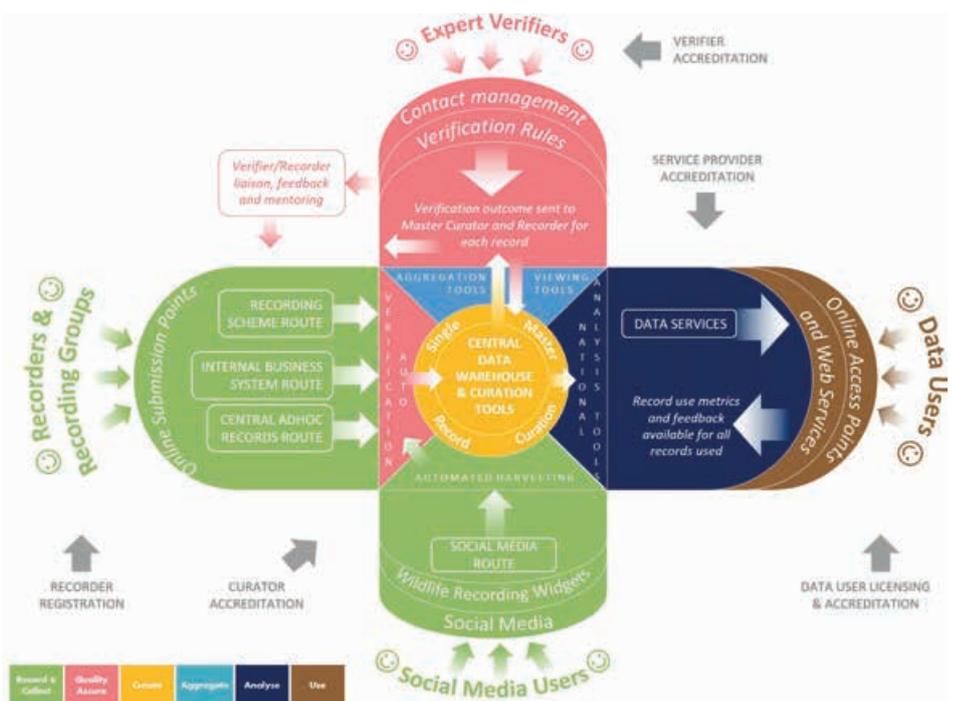


Figure 2. Schematic of the potential data flow model outlined in the SBIF review. Taken from Wilson *et al.* (2018a) with permission. © SBIF.

their 20-year lifespan. We still don't have answers to many of the environmental questions surrounding these structures because it is often not possible to collect enough data from a single site. Imagine how different planning, consenting and mitigation could be if we had a robust, verified dataset containing both *ad hoc* records and those from site-specific commissioned surveys collected as part of the consenting process, as well as all the monitoring data undertaken on site, both as part of the planning conditions but also from wider monitoring initiatives. Now scale up these advantages across all the other industries that require input from us as ecological and environmental consultants and you start to see the potential that the new SBIF infrastructure could have.

Moving forward

SBIF isn't trying to reinvent the wheel. This work is very much a collaboration with the National Biodiversity Network (NBN) Trust with data freely shared by both SBIF and NBN (see Judge *et al.* 2018 for more information on the NBN Trust). In addition, over the coming months the NBN Trust will be working with their data providers and stakeholders across the UK to explore how they can provide more robust services for environmental consultants and other commercial data users.

SBIF are keen to get feedback from professional ecologists, particularly suggestions for what we need this new

infrastructure to deliver for us and how this can best be achieved. When you deal with archival of large data sets and short deadlines, it's just not practical to add records one at a time. There are other considerations too – effort data, environmental and weather data, the all-important meta-data. This is our opportunity to influence how this recording infrastructure is set up to make sure it is useful for everyone.

As CIEEM Members we have committed to a set of professional obligations in our Members Code of Conduct. This includes '*the requirement to share, wherever possible, data and other relevant information and to otherwise work to protect and enhance the natural environment*'. I know that this isn't always possible – there can be issues regarding data ownership when surveys are conducted on behalf of a commercial client – but these are not insurmountable challenges. A contract clause stating that data would be contributed unless expressly-requested-otherwise by the client has been used successfully. Contribution of data can be discussed with clients prior to collection, and buffer periods can be used in cases of commercial sensitivity. I'm not saying it will be easy; it will require an industry-wide change of mindset – but that doesn't mean we shouldn't try. Let's not file this under 'too hard' – let's take this opportunity to change our culture of data sharing and make a difference.

Further information

Information about the SBIF Review and downloadable versions of the report can be found at <https://nbn.org.uk/about-us/where-we-are/in-scotland/the-sbif-review/>.

Please contact the author at scotland@cieem.net or SBIF development officer Rachel Tierney at rtierney@scottishwildlifetrust.org.uk if you have questions or would like to comment or send feedback. The CIEEM Scotland Committee will be running a series of events to discuss this further with members based in Scotland.

The SBIF review was recently voted Best Practice Stakeholder Engagement Winner at the 2019 CIEEM Awards.

About the Author



Claire Lacey is Convenor of the CIEEM Scotland Geographic section and Vice Convenor of the Marine and Coastal SIG, and is also a member of the SBIF Advisory Group. Claire works at the University of St Andrews where she conducts long-term monitoring projects for cetaceans in European waters.

Contact Claire at:
cl20@st-andrews.ac.uk

References

BIOREC (1975). *Conference Report BIOREC 75 Biological Recording in Scotland*. Ed. Adam Ritchie. Dundee Museum, Dundee. Available at https://nbn.org.uk/wp-content/uploads/2017/07/1975_BioRec75-Biological-Recording-in-Scotland-Conference-report-Dundee-Museum-April-1975_RICHIE.pdf. Accessed 6 July 2019.

Hampton, S.E., Strasser, C.A., Tewksbury, J.J., Gram, W.K., Budden, A.E., Batcheller, A.L., Duke, C.S. and Porter, J.H. (2013). Big data and the future of ecology. *Frontiers in Ecology and the Environment*, **11**: 156-162. Available at <https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1890/120103>. Accessed 6 July 2019.

Judge, J., Henshall, M. and Ratcliffe, S. (2018). Accessible UK wildlife data for all – the NBN Atlas. *In Practice – Bulletin of the Chartered Institute of Ecology and Environmental Management*, **102**: 41-42.

Popkin, G. (2019). Data sharing and how it can benefit your scientific career. *Nature*, **569**: 445-447.

Wilson, E., Edwards, L., Judge, J., Johnston, C., Stroud, R., McLeod, C. and Bamforth, L. (2018a). *A Review of the Biological Recording Infrastructure in Scotland by the Scottish Biodiversity Information Forum: Enabling Scotland to be a global leader for biodiversity*. Scottish Biodiversity Information Forum Commissioned Report No. 1. Available at <https://nbn.org.uk/wp-content/uploads/2018/11/SBIF-Review-Final-Report-and-Recommendations.pdf>. Accessed 6 July 2019.

Wilson, E., Edwards, L., Johnston, C., Stroud, R., McLeod, C. and Bamforth, L. (2018b). *A Review of the Biological Recording Infrastructure in Scotland by the Scottish Biodiversity Information Forum: Interview Findings*. Scottish Biodiversity Information Forum Commissioned Report No. 2. Available at <https://nbn.org.uk/wp-content/uploads/2018/12/Results-of-the-SBIF-Review-Interviews-November-2018-FINAL.pdf>. Accessed 6 July 2019.

Wilson, E., Edwards, L., Johnston, C., Stroud, R., McLeod, C. and Bamforth, L. (2018c). *A Review of the Biological Recording Infrastructure in Scotland by the Scottish Biodiversity Information Forum: Questionnaire Findings*. Scottish Biodiversity Information Forum Commissioned Report No. 3. Available at <https://nbn.org.uk/wp-content/uploads/2018/12/Results-of-the-SBIF-Review-Questionnaire-November-2018-FINAL.pdf>. Accessed 6 July 2019.