

**NATIONAL FEDERATION
FOR
BIOLOGICAL RECORDING**

NEWSLETTER 42

July 2011



**The future of biological recording?
Report from the 2011 NFBR conference included**

NFBR Honorary Officers and Council Members following 2011 AGM

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NATIONAL FEDERATION FOR BIOLOGICAL RECORDING

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Note from the Editor

This summer's newsletter brings together some of the presentations from our spring conference, The Future of Biological Recording. I hope it will give those members who couldn't make it an insight into some useful material, and be a reminder for those of us that did attend.

I have also included an article on Mayfly recording, which narrowly missed inclusion last time; and for those newer members to NFBR, Paul Harding has provided an article on the origins of the Federation. A timely reminder of what has been achieved as we look to the future.

Thank you to everyone who has contributed to this newsletter. Articles are always welcome, so if you would like something included in the next edition, please contact me. The deadline for the next newsletter is **31st October 2011**.

The conference looked at many things including new technologies. So perhaps it is time to ask the question: "Is it time for NFBR to look at alternatives to a printed newsletter?"

This is my last year as newsletter editor as I finish my elected term at the next AGM. If anyone out there would be interested in taking it on or would like to propose an alternative, please talk to someone on the Council or you are welcome to contact me directly.

Carolyn Steele

Cover photograph: Young recorders, Dorset ©Rhiannon Rogers

Introduction to the NFBR Conference 2011

This year's conference tackled the ambitious topic of The Future for Biological Recording. To set the scene we began with several talks focussed on what has already been achieved, including presentations by Jim Munford (NBN Trust), Lucy Carter (OPAL), Gary Lewis (ALERC) and Alan McKirdy (Scottish Natural Heritage). We also had an interesting talk by Ian Garman (BBC Nature Web Team) who had worked alongside some of the national recording schemes, on engaging the public. The key messages coming from these talks seemed to be firstly the need for even greater precision and integration of effort; and secondly the problem of resources for the future.

On the second day we examined key themes including the drivers for biodiversity data collection, some of the problems facing biological recording and the increasing demand for high quality data.

Talks by John van Breda (Biodiverse IT) and Charles Roper (SBRC) looked at future technologies and the impact of new communication media. The final talk was given by Sarah Whild (University of Birmingham) on training for the next generation of biological recorders.

All of these underpinned the importance of a proposed new strategy for biological recording. Steve Whitbread presented the NFBR's own strategy vision paper **From Recording to Revelation**, along with the discussion paper **Joining the Dots**, introduced in our last newsletter (NFBR Newsletter 41). The strategy was formally adopted at the NFBR AGM to form the basis for our work in the next few years. Steve gave an outline of the thinking in the NFBR, primarily that there is a need for a more integrated approach to biological recording and data use in general, which ought to involve a gap analysis, as well as an integrated approach to a 'Biodiversity Information Strategy' for the country as a whole, taken forward by all those with a stake in the business, both public and private/voluntary sectors.



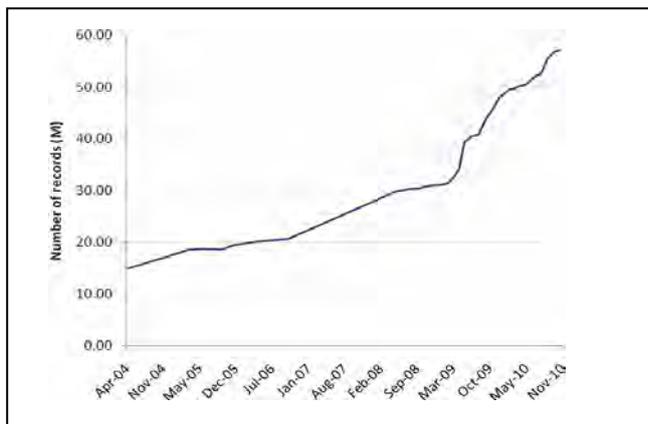
The NBN; a dream realised, or a continuing challenge?

Dr Jim Munford, Chief Executive NBN Trust

The National Biodiversity Network has been more successful than many dared to hope. The NBN, both locally and nationally, makes millions of biodiversity records available to users. Why after years of talking, thinking and reporting did the NBN come to life, and why has it succeeded?

The idea of a national network for sharing biological records is not new. In September 1984 the Biology Curators' Group hosted a seminar; Biological recording and the use of site based biological information. Its conclusions were followed up by the Linnean Society which published *Biological Survey: Need and Network* in 1988. This led to a meeting at the Royal Society in 1989 and the establishment of the Coordinating Committee for Biological Recording under the chairmanship of the late Sir John Burnett, later to be the NBN Trust's first chairman. The CCBR report scoped biological recording in the UK; it gave figures for the size of the resource, both records and recorders, identified the issues, and proposed a way forward – the NBN.

I suspect the NBN has been so successful because it was the right idea at the right time; the technology was available, the need was there, and support from recorders, who recognised that data should be shared to maximize use. What has been surprising is the rate at which the network has grown. This can be quantified by looking at the NBN Gateway metrics which paint a dramatic picture of the willingness of recorders to share their data, and how different organisations have engaged with this project.



For more than 150 years recorders in the UK have exchanged records, learnt from each other, worked to ensure the quality of the records, and to publish their results. Over that time, the mentoring of new recorders, the skills needed for accurate identification, the recording of the observations, and the companionship have barely changed. What has also happened is that the users of the data, particularly the public sector agencies, have hardened their view of what data they want to use, how they want it

delivered, and how they want to use it. These quite specific requirements translate into a series of challenges and questions for the future of biological recording in Britain.

But what do recorders want– do they want to engage with this emerging public agenda? My guess is that some of the smaller recording schemes cannot provide the systematic national coverage required, except perhaps for a targeted product such as an atlas. What might be the evolving role for LRCs? At a time of financial constraint can LRCs continue to offer a broad based data service? The Big Society agenda makes us think about the 'citizen science' approach – can we expect any quality recording from the general public?

The response to these new challenges is not likely to be homogeneous across the recording sector – does this mean we will see a two tier or even multi-tiered approach? How will the NFBR respond to that? Each one of the millions of records now available through the NBN represents someone's personal effort. No matter how the response to the new challenges is framed, let us not forget that recording in Great Britain is a volunteer based activity. Recorders have shown a remarkable resilience to change and challenges in the past. The torch has passed to you – good luck.

Supporting natural history groups through OPAL



Lucy Carter, Natural History Museum

The theme of this year's conference was 'the future of biological recording', and to achieve a bright and healthy future, we need a constant supply of new recorders. A key aim of OPAL (Open Air Laboratories) is to 'inspire a new generation of nature enthusiasts', and to this end we have been working closely with both local and national natural history groups. These groups have the longevity to support budding naturalists far beyond the lifetime of OPAL, so creating a legacy is a primary focus of our work.

OPAL was very keen from the start that natural history groups should benefit from the funding, outreach and publicity opportunities that the five-year programme offers. We began with a consultation exercise to establish what factors were limiting the work of natural history groups, and to scope potential opportunities. The results from this consultation can be found online at <http://www.opalexplornature.org/ConsultationReport>.

How is OPAL supporting natural history groups?

OPAL's work is wide ranging and couldn't all be squeezed into a short conference presentation, but a few key areas were highlighted:

OPAL Grants Scheme

Over the past two years, the OPAL Grants Scheme for natural history groups has distributed over £175,000 to 75 different projects run by natural history societies. Grants of between £500 and £5000 have been awarded for public events, publicity leaflets and banners, websites, identification workshops and equipment, field kit and much more.

Online resources

OPAL has created a number of online resources to support the work of natural history groups and to raise their profile with the wider public.

'How to...' guides cover topics including publicising your group, creating a low cost website, fundraising, and running public events.

Nature Societies Online is a directory of natural history groups that can be searched by location or subject area. This will be updated and made more user-friendly from late 2011 onwards.

The OPAL iSpot website allows users to upload photos of wildlife they have seen and a community of naturalists then help them to identify it. Members of a society who join this community can be badged with their organisation's logo, and 46 groups have signed up so far. We are currently investigating how records from iSpot may be passed on to national recording schemes. www.iSpot.org.uk

Indicia is new online recording software which is open source (free for anyone to use). Shortly an 'off the shelf' version will be available, and will allow any website to have an online recording facility – perfect for natural history groups.

Public events

The OPAL approach is very much about getting hands-on experience of nature, and creating opportunities where participants can learn from one another. OPAL has organised a huge number of public events attended by natural history groups. Particularly popular have been BioBlitzes – 24 hour races against the clock to find and record as much wildlife as possible, bringing professional scientists, amateur naturalists and the public together in an informal setting.

OPAL National Surveys

The six national citizen science surveys run by OPAL give people the opportunity to collect data that will be analysed by professional scientists and will feed in to genuine ongoing research projects. All of these surveys have been developed in collaboration with the recording community. The latest is Bugs Count, investigating how invertebrates are affected by the built environment. The survey launches in June 2011, and survey guides can be downloaded from www.opalexplornature.org/bugscount.

To find out more about OPAL and its work with natural history groups, please visit www.opalexplornature.org/NaturalHistorySocieties.

OPAL Bugs Count

Launched in June 2011, Bugs Count is the latest citizen science survey from OPAL (Open Air Laboratories).

Designed by the OPAL team at the Natural History Museum, Bugs Count is not only a fun way to discover more about invertebrates, but will also gather baseline information on habitat availability within the built environment. We know surprising little about how the way we design our towns, houses and gardens affects the variety and abundance of the invertebrates we find there. It has never been more important to find this out, and you can help by taking part in Bugs Count!

Importantly, the survey introduces beginners to biological recording, providing a simple and usable guide to separating the different invertebrate groups. How can you tell a fly from a bee or a wasp (without relying on the number of wings, which is a difficult feature for a beginner to spot)? The OPAL Pocket ID Guide shows you how. No prior knowledge of invertebrates is needed – anyone can take part.

The survey also involves collecting biological records for six species – the 2-spot Ladybird, Devil's Coach Horse, Green Shieldbug, Leopard Slug, Small Tortoiseshell and Tree Bumblebee. Working with national schemes and societies, OPAL is targeting these species to add dots to the distribution maps. Participants are encouraged to upload photos with their records for verification purposes.

On the OPAL website, participants can compare their results with the rest of the country and learn more about the fascinating world of invertebrates.

Survey packs are available to download from www.opalexplornature.org/bugscount, or you can request one by emailing bugscount@opalexplornature.org. All data gathered through OPAL is freely available and will be passed on to relevant recording schemes.

Vote for OPAL as Best Environment Project in the National Lottery Awards at <http://www.lotterygoodcauses.org.uk/awards/best-environment-project/114/>

Volunteering, data provision and the new Biodiversity Strategy for England

Mark Stevenson, Defra

Introduction

Information on the distribution, status and trends in species and habitats, based on biodiversity records, contributes to conservation and restoration of biodiversity by:

- Informing local and national decision making, for example in support of applications for permits for water abstraction or floodplain management;
- Targeting conservation action and investment, for example by identifying potentially invasive species for early intervention, containment or eradication;
- Providing data for reporting and assessment of trends in biodiversity, see Box 1;
- Supporting policy relevant research, see Box 2.

A great deal of the information about biodiversity used in the UK is gathered by volunteers and it is estimated that the equivalent annual cost of collecting the same information in-house or commercially is over £50m per annum.

Government investment in biodiversity recording in the voluntary sector

The UK Government, including the statutory agencies, invests considerable sums annually in supporting biodiversity recording in the voluntary sector. This includes support for national schemes and societies (directly and through investment in the Biological Records Centre at the Centre for Ecology and Hydrology, Wallingford), local record centres and data sharing infrastructure such as the National Biodiversity Network Gateway. Over the last three years, Defra has provided a £1.2m Fund for Local Biodiversity Recording. This aimed to improve the geographic coverage of and data availability from local record centres and to help the centres develop more efficient and effective management, improving their long-term viability. The Fund was successful in broadening the geographic scope of centre coverage (in Yorkshire, the North East and Essex), improving access to data management tools and increasing the engagement between local record centres and volunteers.

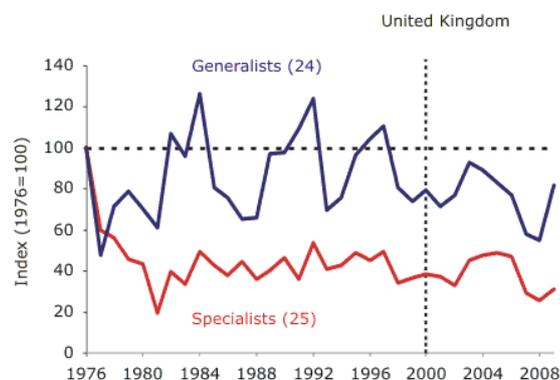
Future developments

In October 2010, the UK Government re-confirmed its commitment to biodiversity conservation at the Convention on Biological Diversity conference in Nagoya. The UK and

Box 1: Providing data for biodiversity reporting and assessment

The UK has used a set of eighteen indicators to report to the Convention on Biological Diversity (against targets to reduce the rate of biodiversity loss globally). The UK indicators on the status of wild birds, butterflies and bats are based almost entirely on data collected by volunteers. The indicator on the extent of non-native species also uses a combination of contracted and volunteer survey data.

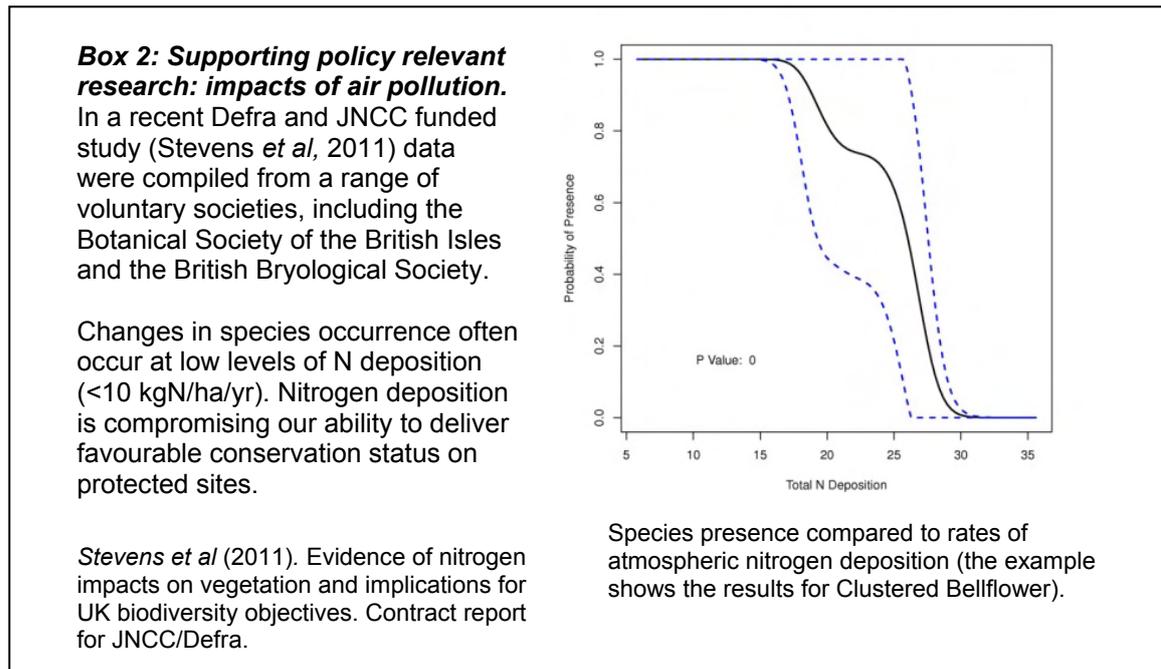
Populations of butterflies associated with semi-natural habitats (specialists) and found in the wider countryside (generalists), 1976 to 2009



Notes: Figures in brackets show the numbers included in each category.
Source: Butterfly Conservation, Centre for Ecology and Hydrology, Defra.

other parties agreed to continue to develop and publish indicators to assess progress with the new commitments.

In spring 2011, the UK Government published a Natural Environment White Paper and a new biodiversity strategy for England. The strategy will be the principle mechanism for implementing the international commitments made in Nagoya in England. The White Paper is likely to confirm how the Government will give greater power to civil society organisations. The work of the biological recording community in tracking changes in the distribution and



abundance of species is already seen as a prime example of how the big society ideals might translate to practical action.

In other words, although Defra and the agencies face shrinking budgets over the next three years, the demand for data is increasing. Voluntary organisations provide some of the best datasets of wildlife in the UK. The desire of Government to work in partnership with volunteers is therefore likely to grow.

Reference

Stevens C J, Smart S M, Henrys P, Maskell L C, Walker K J, Preston C D, Crowe A, Rowe E, Gowing, D J and Emmett B A. 2011. Evidence of nitrogen impacts on vegetation and implications for UK biodiversity objectives. Contract report for JNCC and Defra



Lepidoptera recording in the UK – on a wing and a prayer

Martin Warren and Richard Fox, Butterfly Conservation

Background to Lepidoptera recording

Butterflies and moths (Lepidoptera) are one of the most species-rich groups of insects, with around 2,500 species in the UK (c 60 butterflies and 2,500 moths). They are also one of the best recorded groups of animals and one of the few groups of insects where it is possible to achieve comprehensive national coverage. They are widely recognised as valuable indicators because they are highly sensitive to environmental change, popular and recognisable. They are also representative of insects, which are comparatively poorly recorded but constitute almost two-thirds of all species. The ongoing collection of data on the status and trends of butterflies and moths is thus vital to develop and assess overall conservation policies and targets in the UK, as well as the overall health of the environment. World-leading schemes on butterflies and moths

Over the last 20 years, Butterfly Conservation (BC) has organised two major distribution recording schemes to gather information on the status of Lepidoptera. These have become the biggest of their kind anywhere in the world. The Butterflies for the New Millennium (BNM) scheme was started in 1995 and has gathered 8 million records from around 10,000 recorders. The National Moth Recording Scheme (NMRS) was started in 2007 and has gathered 12 million records of larger moths (around 950 species) from around 3,000 recorders. Together, Butterfly Conservation's Lepidoptera records from these schemes provide almost 19 million records to the NBN Gateway, where they currently comprise one-third of all records.

Data flow model

Both schemes rely on a network of around 180 county recorders (c120 for moths and c. 60 for butterflies); volunteers with taxonomic expertise. They have a vital role in stimulating local recording, providing feedback, compiling computerised datasets and verifying records. Our data model is that these county recorders act as the focal point for recording, produce the master copy of the county dataset and then share the data with their Local Records Centre (LRC). This system works well in most areas, providing LRC's with high-quality data to use locally to inform decision making.

Volunteers are vital but funds are needed

The gathering of these records has required a large amount of investment of time and money, both on behalf of BC and the volunteer recorders and county co-ordinators. This voluntary effort (recorders and county co-ordinators) is calculated to be 100,000 person days per year, equivalent to £6.3 million pa. The promotion and co-ordination of these large schemes, and collation of validated data from multiple sources, requires substantial input by paid staff, equivalent to around £160K each year. This relatively modest investment releases £40 of voluntary effort for every £1.

Funding for the schemes is needed for:

- Promoting schemes, raising awareness and recruiting new recorders
- Co-ordination and support of volunteer network (c. 180 county recorders, 13,000+ recorders)
- Providing training and advice
- Database management (over 1.5 million records pa)
- Running websites
- Developing the schemes (eg online recording)
- Handling national data requests
- Liaison with researchers, users and funders

- Analysis, interpretation and scientific research
- Providing feedback to the public, recorders and policy makers

As BC has very limited resources of its own, most of this £160K has to be raised each year to maintain and add to this important dataset and to make it available. Over the last decade, funds have been raised from a wide variety of charitable trusts, public appeals, voluntary organisations, statutory agencies, and the Heritage Lottery Fund. The latter provided the biggest source of funding (over £800,000) to develop and run the NMRS from 2007-10. However, the problem with many of these sources is that they are time limited and virtually none allow repeat funding. Over the years we have thus exhausted all likely sources of significant funding from the private sector.

Data use

The data gathered under the two schemes has been put to a wide variety of uses, which fall into 3 main categories:

1. **Conservation**, e.g. identifying UK BAP priorities and Red Lists, producing national status reports on trends and rarity, targeting agri-environment schemes, targeting local site management, designing landscape scale projects, identifying European status etc.
2. **Planning**, e.g. via LRCs to produce impact assessments of developments, design mitigation packages, ensure sustainable development, assess impact of High Speed 2 train line etc.
3. **Research**, e.g. the BNM butterfly data has been used in over 50 major scientific papers on topics like climate change, metapopulation dynamics, habitat fragmentation and landscape scale conservation, habitat permeability, species profiling, autecological research etc.

Data requests and future funding

Having gathered such an important dataset, we are now getting an increasing number of requests to use the data at a national or regional level. However, few users are prepared to make financial contributions to the ongoing collection of data. The schemes have now reached a critical point, where the only viable way of maintaining them is from contributions from institutional users, notably the Government Conservation Agencies. However, while the case seems to have been accepted that LRCs require funding, the case for supporting national schemes has received less consideration and, thus far, less funding. This is despite the fact that national schemes supply two-thirds of all the data on the NBN Gateway and that many LRCs would receive far fewer records of many taxonomic groups without national schemes.

Funding comes with strings

Butterfly Conservation has recently received short-term contributions towards maintaining the national recording schemes from several Government agencies, but this has required lengthy negotiations and not all agencies contribute. In spite of this support and all this effort, the total is thus still insufficient to run the schemes.

The funding by Government agencies has also raised another thorny issue around data access. Each agency has its own terms and conditions of funding, and some require completely open public access to the data at capture resolution. This presents a conflict with the terms and conditions that have been agreed with the volunteer data providers, some of whom have serious and valid reservations about full and open access to their data. There are also tricky issues such as Freedom of Information Act and Environmental Information Regulations that are interpreted differently by different agencies.

The case for strategic support

Butterfly Conservation believes that the institutional users of biological data need to develop

a more consistent and strategic approach to the gathering of strategically important datasets such as those on Lepidoptera. Specifically, they need to recognise that sustainable long-term funding is needed. Clearly the statutory conservation and land use agencies (eg Forestry Commission, Environment Agency) are the main institutional users who have a fundamental business need for high quality biological data and should definitely contribute.

However, in these times of government cut-backs we may also need to look at additional and novel funding streams. As funding from Local Authorities is likely to decline due to cut-backs, we may need to consider novel approaches such as a levy on Planning Applications for recording to ensure sustainable development. We could also ask the volunteers themselves to pay for the schemes, but BC has never felt this was viable (and could provoke an adverse reaction amongst recorders who we have carefully nurtured over decades!).

Conclusion

We believe that the NBN and the NBN Gateway have been crucial developments in collating biological data and making it available to further conservation, planning and research. We have been very keen to make our large datasets available and supporting the NBN Gateway, but we have to find a way of ensuring sustainable funding. We therefore believe that far more thought needs to be given to how biological data are generated, how national schemes can be funded, and how we can ensure that the views and needs of volunteer recorders are respected and catered for.



New technologies and the future for biological recording

John van Breda, Biodiverse IT

This presentation primarily gave an opportunity to look at some emerging and new IT technologies and how they may affect biological recording and how biological recorders may make best use of advanced in technology.

Biological recording has been remarkable for its resistance to change. Field notebooks look virtually identical to those used 100 years ago and many of the tools of the trade remain the same, such as nets, quadrats, magnifying glasses and microscopes. Recent years have seen a gradual adoption of modern gadgetry such as GPS and digital cameras but they are by no means ubiquitous and paper based recording is still commonplace. Although records may be kept on paper, over the last 30 years we have seen a gradual move towards first spreadsheets, then biological recording software and recently online recording. However, this apparent progress will only pay dividends if we adopt a strategy of open cooperation and interoperability between tools. What good is the digitising of records into a database only for the database to become defunct with the records not easily transferable to more recent technology? This is little better than paper based recording.

There has been a recent explosion in the availability of technology relevant to biological recording. Until a few years ago, it was considered unfeasible to develop complex applications within the context of a web browser. However many advances in web technology mean this is no longer the case; browser based applications can provide a rich interactive user experience similar to that of a desktop application. Other technologies that may be of relevance to the biological recording community include NoSQL databases which support the huge datasets required by organisations such as Google and Amazon and may in future support the huge datasets of occurrences held by organisations such as the NBN and GBIF. RDF (Resource Description Format) and ontologies written using OWL (Web Ontology Language) provide ways of allowing the semantic information within data to be shared across the boundaries between software applications. These technologies are already the basis for many biodiversity data standards being developed by Biodiversity Information Standards (TDWG) and provide the basis by which different projects can freely exchange information.

Many modern mobile phones can act as a camera, audio recorder, field notebook, identification guide, map, research tool and more. Imagine a phone which could accept dictated species names and convert them to text; the phone would know who you are, where you are, when it was and what you have seen. These are the 4 basic elements of a biological record. It could even attach a photo and access online weather services to augment the record with further information then submit the record for immediate peer review and verification. Whilst this sounds futuristic, the limiting factor at this point in time is not the technology itself which is all readily available, but the integration of the technology into a seamless tool. Therefore one challenge facing the biological recording community in its approach to technology is not so much pioneering new technologies, but a challenge of pioneering the unification of existing technologies.

Of course there are limitations to what these new technologies can achieve, with broadband and 3G network access still being limited in rural areas. Only 18% of protected areas in the UK are covered by 3G access, a situation set to remain with the installation of 4G networks prioritising areas of high population density, and furthermore GPS reception is unreliable in places where clear access to the sky is not available. Therefore it is essential that we design tools which operate with or without connectivity, for example by caching records for later submission when a connection is regained, or by allowing occurrence grid references to be set by clicking on a cached map image when GPS is unavailable.

The simplification of the biological recording process may lower the barrier to participation and whilst this is generally beneficial, it may lead to a lowering of data quality as well. Therefore it is essential that records are tagged properly with metadata describing their source and quality and furthermore, that we continue to develop verification tools to help manage this aspect as effectively as possible.

Looking at some specific areas where technology can help with biological recording leads to some interesting possibilities. Identification is a critical aspect of recording, both in terms of data quality and the difficulties which many potential recorders will find off-putting. In fact, some species are simply impossible to differentiate without dissection. Electronic keys such as those appearing on the ISpot website are helpful and a great example of collaboration across the community. Keys are not a new idea, but modern technology improves the ease with which they can be accessed especially by novice recorders. Computerisation has also led to the development of new approaches such as probability based bayesian keys. Visual recognition was introduced as a concept during the 1970s and recently projects such as Leafsnap leaf identification (<http://leafsnap.com/>) are leading to the possibility of visual identification using applications on mobile devices. Neither visual recognition nor keys help with difficult species requiring dissection. The Barcode of Life is a project that catalogs small sections of diagnostic DNA sequence for each species. With the rapid advances in DNA technology it is not inconceivable that DNA sequence based identification will be possible in the field.

It is clear that biological recording is generally operated with limited funds and resources. It is also clear that technological developments will continue apace and whilst there are gains to be had by innovating new technologies, limited funds and resources make this difficult and bigger gains can be made by integrating existing technologies in new ways. In order to do this successfully, we need to ensure that our products are developed in open and collaborative ways with clearly defined standards for interoperability between them. Only then will the discipline of biological recording keep apace with technological change.



Biological Recorders...the next generation

Sarah Whild, University of Birmingham and BSBI Training and Education Committee

There is undoubtedly a new generation of biological recorders waiting to become conversant with their taxonomic group and to start submitting records. In spite of the dearth of whole organism biologists in most university Biological Sciences departments, there are undergraduates who feel inspired by field work and aspire to become field biologists. But do we need a new generation of recorders? The average meeting of most recording schemes and societies is dominated by silver-haired biologists but is this a problem? As long as there are always a few younger recorders, then it isn't necessarily an issue.

A quick 'age poll' at the 2010 BSBI Recorders' conference (below) shows that there is a reasonable distribution of ages.

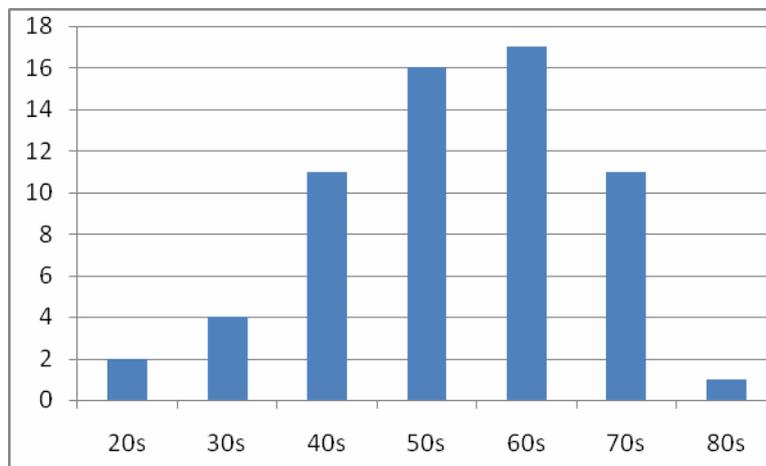


Figure 1. Ages (in decades) of BSBI delegates at the 2010 Recorders' Conference

So where does our next generation come from?

Most recorders fall into two camps – either 'born' naturalists (often working in a different field and often with no science qualifications) or 'made' naturalists – often a graduate with a biology/ecology/geography degree who wants to do field work, then realizing that they need to get 'skilled up' in terms of identification.

However, there is a danger that we may be taking our next generation of recorders for granted. With the decline (or more accurately the complete lack) of taught taxonomy in undergraduate biosciences degrees, we need to be more proactive in seeking them out and making sure that they know how to find us. A quick scan of Facebook revealed eleven recording schemes had well established pages with plenty of fans, while another eleven had no presence at all. The NBN was well-represented but NFBR didn't appear to have a page (hopefully rectified by now!). Charles Roper articulated the value of social networking to recorders of all ages and it is important that we do not dismiss these tools. The social aspect of recording in terms of networking and just meeting up with like-minded biologists is an important part of recording activities and whilst it may not be the primary driver, it should be appreciated when organizing events and encouraging new recorders.

Once we have located and encouraged our new generation, how can we let them know what skills they require to be a useful recorder and to make themselves marketable if they are starting a career in field biology? A basic skills toolkit could include skills in not just identification but also recording, community analysis, voucher preparation, data entry and data analysis.

But how do they know when they are good enough to complete these various tasks? Some

recording schemes have started to tackle this; some Diptera such as hoverflies are graded with difficulty of identification. Whilst vascular plants are much more complex to grade by species, ID skills are becoming quantifiable now, through the BSBI's Field Identification Skills Certificates (FISCs). This one day exercise consisting of two lab tests and a field test allows the grading of a botanist on a level of 1 – 5. The levels are defined on the Botanical Field Skills Pyramid and there are a further two levels which are national experts but it is not always practical to test for these within the confines of a FISC.

We know roughly what a level 4 or 5 botanist should be capable of, but how do they improve? This has been the focus of the next stage of the BSBI's Training and Education Committee's work. An A4 booklet entitled *So You Want to Know Your Plants* is aimed at undergraduates and graduates plus anyone aspiring to become a better field botanist. This details each level of the skills pyramid including what you can do with confidence at each level and perhaps more importantly how to progress from one level of the skills pyramid to the next. This includes guides to the sort of training course to attend, the books or ID guides that a botanist at each level should own and how to tackle different habitat groups and plant families.

In addition to ID skills there are three aspects of recording that are essential for any biological recorder:

- Recording a monad or site thoroughly
- Recording rare species in detail
- Recording samples

Knowing when each of these three techniques is appropriate is just as important. General recording skills that should be developed include using a GPS and a digital camera, being aware of schemes and societies (and most importantly being a member of the relevant scheme), knowing how to take a voucher specimen and prepare it properly to send to a referee and how to submit records to county recorders.

Lack of resources can inhibit the development of new recorders and one way of providing a 'ladder of improvement' for new recorders is to have a range of ID guides available. Moth ID guides are an excellent demonstration of this, from free leaflets from Butterfly Conservation FSC fold-out guide to day flying moths, Manley's British Moths, Townsend and Lewington, Skinner, through to the Illustrated Guide to Selected Difficult Species.

To summarize, there doesn't seem to be a national shortage of recorders – at the moment - but we do need to ensure that we encourage and facilitate new recorders and it is vital that the schemes and societies remain at the forefront of this. The key activities are:

- Running training sessions not just in taxonomic or habitat groups but in aspects of recording for new recorders
- Facilitating a three stage process of 'skilling up' via a skills pyramid, testing the skills levels and providing a guide to how to progress through those levels
- Developing the role of mentors for new recorders

Acknowledgements are due to the BSBI T&E committee for the details of *So You Want to Learn Your Plants* and also to Marc Taylor, county moth recorder for Wiltshire who provided the gen on moth ID guides to an ignorant botanist.



Using Mayfly data

Craig Macadam

Introduction

The recording of mayfly species has had a long history. The first written record of a mayfly is in one of the oldest written texts – the Epic of Gilgamesh, which describes the life of Gilgamesh, a Babylonian ruler from around 2,700BC. The Epic was written in around 2,000BC on clay tablets, one of which describes the briefness of Gilgamesh's life: 'Ever the river has risen and brought us the flood, the mayfly floating on the water. On the face of the sun its countenance gazes, then all of a sudden nothing is there.' The passage refers to the briefness of the adult mayfly's life and how our own lives are just as brief. Whilst we don't know what species this passage referred to it is remarkable that we have a mayfly record from over 4,000 years ago!

Today there are around 3,050 species known from throughout the world. In the UK we have 51 species, although two of these *Heptagenia longicauda* and *Arthroplea congener* are thought to no longer occur here. The Ephemeroptera Recording Scheme was established in 2000 to promote the study and recording of mayflies throughout the UK. To date, the scheme dataset has around 185,000 records, the majority of which are of larvae. The dataset is available on the NBN Gateway.

The Scheme collaborates closely with the Trichoptera Recording Scheme and Plecoptera Recording Scheme under the banner of the 'Riverfly Recording Schemes'. Together the scheme organisers act as 'champions' for the three groups. Recent activity has included producing identification guides for each group in partnership with the Field Studies Council (FSC); providing training opportunities with the FSC, Freshwater Biological Association, and others; encouraging recording of riverflies as a whole and individual species; and undertaking research and conservation using the scheme datasets.

Targetting future survey effort

One of the main uses for the Ephemeroptera Recording Scheme dataset is to target future survey effort. A good example of this is our recent surveys for the Yellow mayfly (*Potamanthus luteus*). This species was once known from the River Thames, Usk and Wye however it is now only found in the River Wye and has recently suffered a huge decline in population size. It has long been thought that this species should also be found in the River Severn, considering its size and that it shares a watershed with the Wye. Adults of the Yellow mayfly are thought to be able to fly up to 12 kilometres and the emergence of a record of *Potamanthus* from the River Teme close to the Welsh border raised the tantalising possibility of a population being present in the Severn catchment. A visit to the site was undertaken in late summer 2010 and despite river conditions being difficult, *Potamanthus luteus* was recorded from the River Teme. Hopefully future survey work will find this species in other watercourses in the Severn catchment.

For anglers, the March brown (*Rhithrogena germanica*) is one of the most iconic mayfly species. The species is however in decline and under threat across Europe and the UK may now be a stronghold for this species. The over-winter development and early flight period of this species make it particularly vulnerable to environmental changes in these critical periods. The recording scheme wants to find out more about the distribution of this species in the UK so it is asking people to report sightings of March brown hatches. A postcard has been produced to help with identifying this species and also to allow you to send in your records.

Investigating flight periods

It is thought that the flight periods of adult mayflies are changing, perhaps as a result of climate change. The Ephemeroptera Recording Scheme is using a number of methods to provide evidence of these changes. We have used Malaise traps to collect specimens of mayflies (and other riverflies) from the banks of the River Test

in Hampshire. Malaise traps have the benefit of collecting all day long, all year long, however they collect indiscriminately and it's important that a suitable outlet for identification of the (considerable) by-catch is available. The flight information which can be gathered from such a trap is very useful, although one issue is that it relates to a single site. To address this issue the recording scheme is also running a survey of adult mayflies. This survey relies on people collecting and sending specimens of adult mayflies collected from their local area. In the first two years nearly 30 people were involved with over 1000 specimens identified from as far afield as Dorset and north-west Scotland. Adult mayflies were collected in all months of the year and the flight period data is continuing to be analysed. The survey is still running and information on getting involved can be found on the Ephemeroptera Recording Scheme website (www.ephemeroptera.org.uk).

The final flight period survey that the scheme is running concerns the Yellow May dun (*Heptagenia sulphurea*). This bright yellow mayfly emerges, as its name suggests, in May, however individuals also emerge throughout the summer until September. There is anecdotal evidence that the number of individuals emerging in May is reducing and the 'summer' emergers are growing in number. We'd like people to report when and where they see this species and you can report your sightings at www.brc.ac.uk/mayfly/recording.php.

Climate change research

The Upland summer mayfly (*Ameletus inopinatus*) is the only arctic-alpine mayfly species recorded from the UK. It was first found in the UK in 1899 at the mouth of the Dall Burn where it runs into Loch Rannoch. Records received from SEPA during 2010 revealed that this species is still present at this site over 100 years later.

As its name suggests, The Upland summer mayfly is typically found at high altitudes (over 300 metres) in clean, fast-flowing streams. It's thought that it is

restricted to these upland sites by water temperature and that a rise in temperature in upland streams might cause the range of this species to contract. In 2010 Louis Kitchen (Riverfly Partnership), Willie Yeomans (Clyde River Foundation) and Craig Macadam (Ephemeroptera Recording Scheme) were fortunate to receive the Freshwater Biological Association's Hugh Carey Gilson Award for their project 'Is the Upland summer mayfly (*Ameletus inopinatus*) in hot water?'. One of the main activities of this project is to revisit sites that *Ameletus* has been recorded at previously to see whether it has 'retreated' upstream. Throughout 2010 we also investigated whether there have been changes in the flight period and tried to establish the temperature tolerances of the larvae.



The origins of the National Federation for Biological Recording

Paul T. Harding ¹

NFBR has existed for 25 years and 2011 marks its Silver Jubilee!

NFBR grew from a perceived need to represent the interests of all the sectors involved with biological recording in the United Kingdom. The early NFBR strap-line “NFBR – a new force in the environment” – was perhaps a bit ambitious, but we have punched above our weight for most of the last 25 years. This is why and how NFBR came to be set up.

Key players

Inevitably, the key players include local records centres (LRCs) and the Biological Records Centre (BRC) at Monks Wood (part of the Natural Environment Research Council (NERC)). During the 1970s a new generation of natural history curators was recruited to many provincial museums, possibly due to increased awareness of “nature conservation” following European Conservation Year in 1970. Some curators had attended a post-graduate course at Leicester University at which they were taught by Geoff Stansfield. BRC had been set up in 1964, headed of Franklyn Perring, and spent most of the next 15 years establishing its role more widely among the natural history community in the UK. More than 35 national recording schemes (NSSs) were operating in association with BRC by 1979, most of which were organised voluntarily by national societies or by individual specialists.

Stansfield was a strong advocate for LRCs, and he and Perring promoted them as a natural development of the role of

¹ *Paul Harding was a founder member of NFBR, has served as its Secretary and Treasurer at various times and is still a co-opted member of Council. He was head of BRC at Monks Wood from 1982 until he retired in 2003. He was appointed MBE “for services to biological recording” in 2001.*

museums. They organised a conference in 1973 to discuss the role of LRCs, attended by 50 delegates, which examined the development of example LRCs and the potential use of data in nature conservation and planning (Stansfield, 1973). A resolution at the Museums Association Conference in 1977 proposed “that Environmental Records Centres should be established on a country-wide basis.....located in the appropriate museum service” (Lambley in Anon, 1985). Subsequently Perring collaborated with Stephen Flood (St Albans Museum) to produce a Handbook for LRCs (Flood & Perring, 1978). Perring left BRC at the end of 1978 to take up the post of General Secretary of the Royal Society for Nature Conservation (RSNC), the umbrella body for county wildlife trusts.

With hindsight, it is clear that all this was being built on sand, with little apparent consideration being given to:

- How the work of LRCs would be funded;
- How information at LRCs would be made available or be used;
- The mechanisms by which LRCs, and BRC and NSSs would establish and manage data flows.

Communication difficulties

Almost the only forum for LRCs to communicate among themselves in the 1970s and early 1980s was through the Newsletter of the Biology Curators’ Group (BCG). A survey by BCG and BRC showed that by 1980 there were at least 60 LRCs covering most English counties and parts of Wales and Scotland (Harding & Greenwood, 1981). The LRCs were heterogeneous, unregulated and owed no allegiance to any national focal point. Despite this, some simple common standards existed though the use of species recording cards (developed by BRC), and habitat recording cards (developed by RSNC). However, the deteriorating financial climate of the UK in the early 1980s meant that funding was declining for most museum-based LRCs. Under new government employment schemes, voluntary organisations, such as wildlife trusts, were able to recruit

unemployed graduates on funded employment schemes. A gradual shift of LRCs away from museums towards voluntary organisations was developing. At the same time, the demand for data was growing as a result of several governmental initiatives such as the Nature Conservation Review (1974) and the Wildlife and Countryside Act (1981).

The early 1980s saw increasing frustration between LRCs, NSSs and BRC because of their overlapping roles. The demand for mobility of data was growing at all levels. This was in a climate where information technology was beginning to become more widely available, initially to large institutions such as local government, universities and NERC, but soon after to wildlife trusts.

Starting to communicate

These and many other relevant issues were highlighted at a seminar hosted by the Biology Curators Group at Leicester in September 1984 (Anon, 1985). However, the most provocative input to the seminar was by Charles Copp (Bristol Museum), prompting a lively debate at the end of the meeting, which was not summarised in this publication.

Two of the conclusions of the 1984 seminar were that:

- 1) Steps should be taken to improve the financial situation and status of biological recording;
- 2) Interested parties should co-operate to reach agreed standards for recording storage and retrieval of data.

During the next year Eric Greenwood (Chairman of BCG) and I (now Head of BRC) attempted to move things forward.

First steps

Prompted by Trevor James, Greenwood approached the Linnean Society, through its then President Professor R.J. (Sam) Berry, with respect to 1. The Linnean set up a working party, chaired by Berry, which produced a seminal report in 1988 (Berry, 1988). The "Berry Report" led eventually to the establishment of the Co-ordinating Commission for Biological Recording – but that is another story!

I hosted a small ad hoc group of interested people (including Copp and his assistant Lawrence Way) to develop plans for the Biological Recording Forum. The Forum took place at Chelsea College, London over two days in April 1985 and was attended by 101 delegates (Copp & Harding, 1985). A Steering Committee for the formation of a National Federation for Biological Recording was set up by the Forum.

Steering towards NFBR

The Steering Committee, chaired by Copp, met for the first time in May 1985, and plans were begun for NFBR's inaugural conference in 1986. The Steering Committee included representatives from several LRCs, BRC, RSNC, the Nature Conservancy Council and the Museum Documentation Association (MDA). Andrew Roberts of MDA played an important role in the early years of NFBR.

NFBR exists!

The inaugural conference of NFBR, consisting of seminars and workshops, was held at Fitzwilliam College, Cambridge on 15-16 April 1986 (Harding & Roberts, 1986). The list of some 75 participants includes many who were, or became, the movers and shakers in many aspects of biological recording in the UK for the next decade or two – LRC managers and museum staff, national scheme organisers, and representatives of NCC, wildlife trusts, ecology units and planning departments. Under the respected and thoughtful chairmanship of Geoff Stansfield, NFBR and its newly elected Council set about building on these optimistic beginnings.

NFBR Objectives

The initial objectives of NFBR were defined in a Policy Statement dated 30 June 1986.

The NFBR aims to represent the concern of many scientists, conservationists and amateur naturalists in the UK that the importance of biological recording is not sufficiently recognized and that funding, communication and co-ordination are needed.

[NFBR] seeks to involve the many agencies and individuals active in biological recording and, in doing so, to help improve their effectiveness in gathering, managing and disseminating biological records.

The immediate aim of [NFBR] will be to improve awareness of the importance of biological recording in all organizations concerned with the environment and to raise funds to support its work.

Despite initiatives supported by NFBR in the last 25 years (e.g. the development of Recorder, the CCBR study, and the development of the National Biodiversity Network), most of these initial objectives are still broadly relevant. **So let's get on and Join the Dots.**

Acknowledgements

I am grateful to Trevor James for comments on a draft of this article.

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PUBLICATIONS REVIEW

Plant Galls

by Margaret Redfern, Collins New Naturalist Library. pages 562 Publisher's price: hard back £50 soft back £30.

ISBN 978-0-00-220144-5

As with all books in the New Naturalists series, this book is not a guide to the identification of plant galls. The new keys to plant galls are in press and will be published by the Field Studies Council later this year. What this book aims to do is to complete work featured in one chapter of Insect Natural History by A.D. Imms in the same series in 1947. Galls, of course, are not only caused by insects but as the reader will learn also by fungi, bacteria, viruses, nematodes etc. Not only are galls found on higher plants, but lichens, mosses and even seaweeds.

Dr Redfern has laid the book out by firstly discussing the nature of galls in general terms and then outlining not only the features of galls but the science and taxonomy behind each gall causer and how the gall causer starts the process. If there is one minor niggle to me as a reader it is the way the production team have laid out the biology text in boxes, with a light grey background. If one takes the heading Thrips, there are three lines of text about the galls on page 82, with a grey box on page 83 and four more lines of text, followed by three and a quarter more pages of boxed text before we reach the description, leaving that text quite disjointed. The book is very well illustrated with many fine diagrams and also many colour plates taken by members of the British Plant Gall Society.

However, the text is beautifully written. Each chapter was checked through by Tom Higgingbottom to ensure a non-specialist could understand the text, whilst Margaret's husband Robert, who is working on his own text for a volume on Snails, checked for scientific accuracy of this book. It is a very worthy book, which is allowing me to understand just what is behind the plant gall records I collect and a worthy advertisement to the British Plant Gall Society, which both Margaret and Tom Higgingbottom have supported since its inception in 1984.

John Newbould

National Federation for Biological Recording 24th Annual General Meeting

Draft Minutes

Held at Holiday Inn, Filton, Bristol on 8th April 2011

PRESENT: Trevor James (Chairman), John Newbould (Minutes), Paula Lightfoot, Mike Beard, Carolyn Steel, Alison Stewart, John van Breda, Paul Harding, Alan Stewart, Graham French, Helen Roy, David Slade, Sally Rankin, Sarah Whild, John Badmin, Tim Corner, Catherine Fiedler, Martin Harvey, Simon Wood, John Cornell, Steve Roe, Steve Whitbread, Eleanor Knott, Claudia Watts and Margaret Haggerty.

APOLOGIES: Mandy Rudd and Clare Langrick

1. **Minutes of 23rd AGM;** It was noted that the meeting was held on 16th April, 2010 not as per the agenda. The minutes were approved.
2. **Chairman's Report for 2010-11:** The Chairman circulated a two-page report, which was approved on a proposal by John Newbould, seconded by Paul Harding.

In summary the Chairman stated that NFBR is only as good as its active membership, which has marginally increased. However, there has not been an increase in active members, with the senior officers mainly retired and out of frontline active service. During the year Council has reviewed

and considered a strategy that it proposes should be the future direction biological recording should take. Steve Whitbread, who has pulled together the two documents in the conference packs, had mainly undertaken this work. The Chairman commented that now that ALERC is up and running the NFBR will re-focus.

In support of NFBR's stated objectives during 2010-2011:

1. We have brought together suppliers, managers and users of wildlife information at our Cumbria conference and our 2011 conference.
2. We provided a forum for discussion with our joint NBN seminar at the Natural History Museum on 18th June 2010 covering data flows, data quality and enhancing NBN.
3. We have promoted the importance of biological information and public participation with detailed comments on the White Paper on the Environment and by co-opting Lucy Carter of OPAL onto our Council.
4. We have represented the biological recording community through Paul Harding continuing as a trustee of the NBN Trust. We have also raised the issue of wildlife data mis-use through the NBN Trust and with IEEM – a matter initially raised by Mandy Rudd of GiGL.

The Chairman then returned to the NFBR strategy document, which outlines where biological recording stands and where NFBR believes future priorities should be. These priorities will not all be undertaken by NFBR but are proposals for other organisations to run with, in an integrated joined up manner.

3. **Annual Accounts and Treasurer's Report 2010:** John Newbould, who had been Treasurer for the first half of 2010, presented the accounts on behalf of Clare Langrick. Essentially subscription income was marginally down as a number of members were behind with subscriptions. These members were chased up in early 2011 with some success. The conference made a surplus of £417, Council travel expenditure is up reflecting many employers are unwilling to pay for trips to London and Newsletter costs are down as the second 2010 copy was posted in January 2011. It was proposed by Claudia Watts (GiGL) and seconded by John van Breda that the accounts be approved.
4. **Election of Council for 2011-12:** Members received a summary of the position. In essence: Darwyn Sumner has served five years as Secretary and by the constitution stands down. Lizzy Peat is unable to continue as minutes secretary and stands down. Simon Pickles is standing down. Council therefore proposed the following:
 - Trevor James agreed to stand as Chairman
 - John Newbould nominated as Secretary
 - Clare Langrick will continue as Membership Secretary & Treasurer
 - Carolyn Steele will continue as Newsletter Editor
 - Steve Whitbread will continue as Vice Chairman
 - David Slade will continue to manage the website.
 - The following will continue as Council members: John Badmin, Martin Hicks, Helen Roy, Mandy Rudd, Graham Walley, Craig Slawson.
 - The following are new members nominated for Council: Alan Stewart, Catherine Fiedler, Martin Harvey.
 - The following are co-opted onto Council: John van Breda, Richard Fox, Lucy Carter (OPAL), Gary Lewis (ALERC), Paul Harding, Damian McFerran (CEDaR), Patrick Milne-Holme (BRISC) and Clare Brown (NatSCA).

Following Council's proposal, Tim Corner seconded the motion and the new Council was elected unanimously. The Chairman, on behalf of NFBR, thanked retiring officers for their contribution.

5. **Election of Independent Examiner:** Steve Whitbread proposed and John Newbould seconded the re-appointment of Shirley Bell, which was unanimously agreed. The Chairman reported that her work is done without charge.
6. **NFBR Strategy Document:** It was proposed by the Chairman and seconded by John van Breda that this strategy be formally adopted as a statement of NFBR's objectives for the next 5 years, which was done with special thanks to Steve Whitbread for the considerable work he has done in its preparation.

NFBR Annual Accounts: Income and Expenditure
Income and Expenditure for the year ending 31 December 2010

	Note	2010	2009
		£	£
Income			
Subscriptions		1,116	2,002
Conference & AGM	1	1,560	3,450
Leaflet donation	2	-	200
Miscellaneous Income		-	-
Bank Interest		1	4
Total Income		2,677	5,656
Expenditure			
Conference	1	1,223	3,594
New leaflets	2	-	790
Administration		49	93
Website Costs		5	-
Newsletter Costs		-	580
Council Meeting Travel Costs		375	873
Contribution to NBN		-	340
Event insurance		-	-
Total Expenditure		1,652	6,270
Surplus (loss) of Income over Expenditure		£ 1,025	-£ 614.00

Balance Sheet at 31 December 2010

Current Assets			
High Interest Bank a/c		6,965	6,964
Current a/c		2,018	994
Sundry Debtors		-	-
		8,983	7,958
Current Liabilities			
Creditors		-	-
Subscriptions in advance		-	-
Net Current Assets		8,983	7,958
Represented by			
Capital brought forward		7,958	
Surplus (loss) for the year		1,025	
		8,983	

Notes

Conference surplus(loss)	1	337
Net cost of leaflets	2	-
Membership		160

Claire Langrick (Treasurer)
 John Newbould (Treasurer)
 S. A. Bell (Independent Examiner)

Approved by Council January 26th, 2011