A free event hosted by the Inner Forth Landscape Initiative



From Source to Resource

A conference on making biological records count

Saturday 10 February, 09:30 - 15:30

Morning Session

Supported by Buglife Scotland, Stirling Council and The Wildlife Information Centre



From Source to Resource



Dr Mark Eaton

Principal Conservation Scientist RSPB Centre for Conservation Science

The State of Nature: past, present and future









The State of Nature report is a collaboration between the 25 UK conservation and research organisations listed below:



State of Nature: what is it?

- A single authoritative statement on the state of nature, in order to:
- Provide a clear, unified message on the state of the UK's nature
- To promote the activities of partners to monitor and conserve nature



State of Nature: what is it?

Objective, *not subjective*:

- Based on best available data & expertise
- Focus on species
- Covering all taxonomic groups
- Containing cross-cutting themes
- Not campaigning in tone
- Country-relevant



UKBMS



ONLINE ATLAS OF THE BRITISH & IRISH FLORA



BRC Biological Records Centre

Home Recording Research Resources Links Staff Contact

Recording Schemes	Key themes	
otanical schemes	Recording Schemes	
Flowering plants & ferns	Atlases	
Botanical Society of Britain and Ireland	Datasets	
Fungi	Red Listing and Indicat	
Association of British Fungus Groups	Climate Change Ecolog	
British Mycological Society	Invasion Biology	
Lichens	Changing Habitats	
British Lichen Society	Air Pollution	
Mosses & liverworts	Insect-Plant Interact	
British Bryological Society	Technology	
Seaweeds	Citizen Science	
British Phycological Society	History of Recording	
Slime moulds	Developing BRC	
Slime Mould Recording Scheme	Partnerships	
Stoneworts		
Botanical Society of Britain and Ireland		

Vertebrate schemes

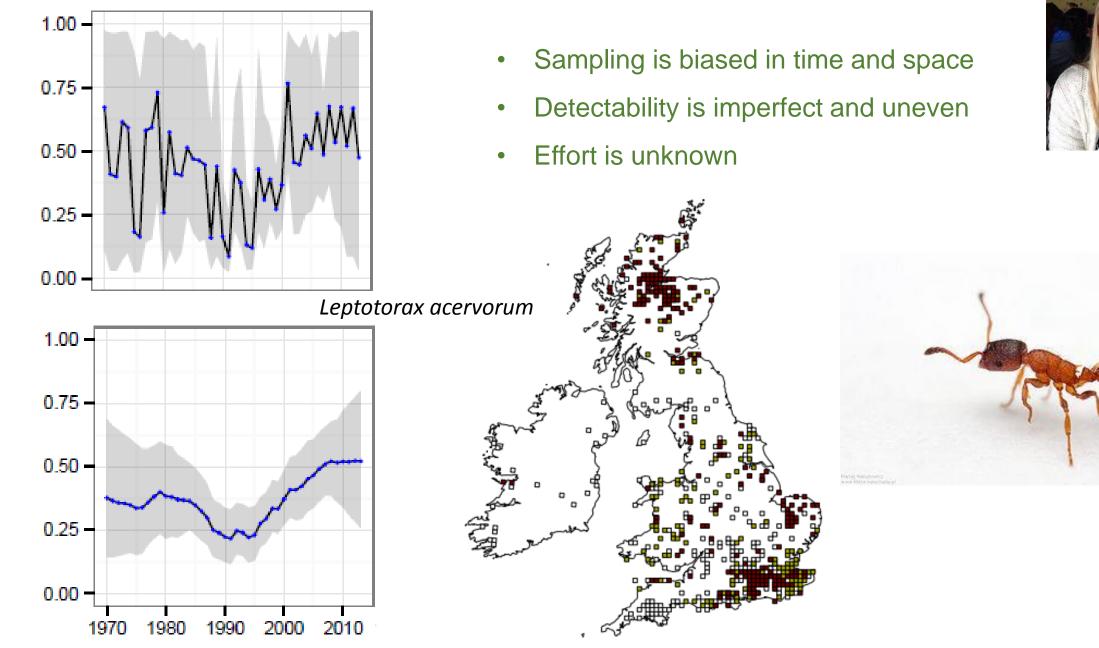
Amphibians & reptiles	
National Amphibian & Reptile Recording Scheme	
Birds	
British Trust for Ornithology	
Freshwater fish	
Freshwater Fish Recording Scheme	
Mammals	
Mammal Society	
National Bat Moniotoring Programme	

Invertebrate schemes

Coleoptera (aquatic speci	es) / Aquatic beetles
Coleoptera: Buprestida glow-worm and allies	Entharidae, Drilidae, Lampyridae and Lycidae / Soldier and jewel beetles,
Coleoptera: Carabidae	und beetles
Coleoptera: Cerambyci	Longhorn beetles
Coleoptera: Chrysomeli	t Bruchidae / Leaf-and seed-beetles
Coleoptera: Coccinellic	Ladybirds
Coleoptera: Cryptopha	Atomariinae / Atomariine beetles

Coleoptera: Dermestidae (and Derodontidae) / Hide, larder and carpet beetles

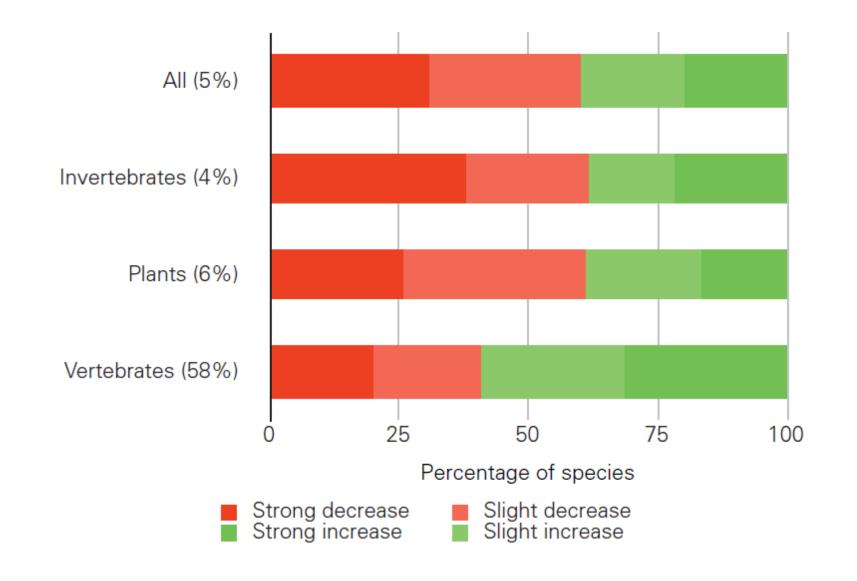




Species trends

We have quantitative assessments of the population or distribution trends of 3,148 species. Of these, 60% of species have declined over the last 50 years and 31% have declined strongly.'



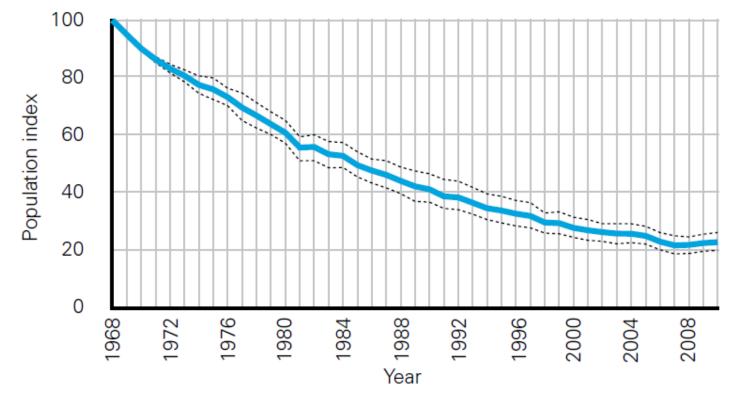




Watchlist Indicator

'A new Watchlist Indicator has been developed to measure how conservation priority species are faring, based on 155 species for which we have suitable data. This group contains many of our most threatened and vulnerable species, and the indicator shows that their overall numbers have declined by 77% in the last 40 years, with little sign of recovery.'





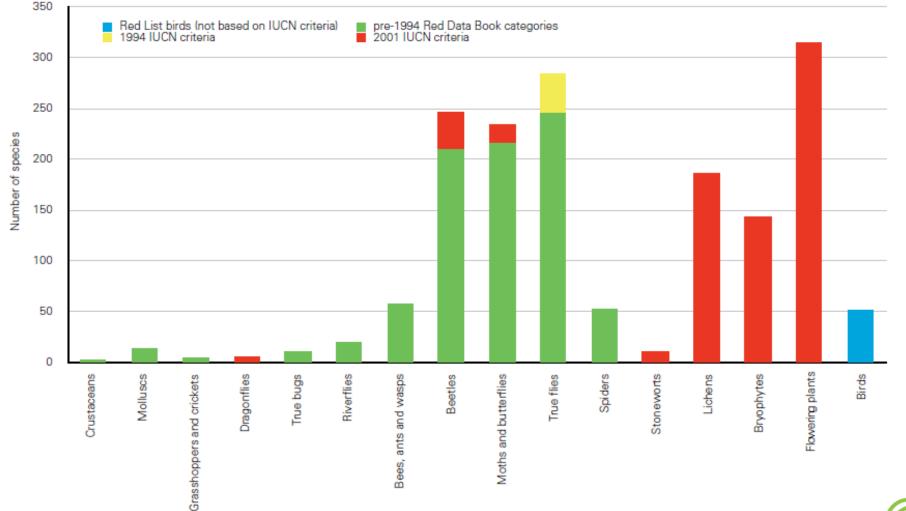
- The indicator starts at 100; a rise to 200 would show that, on average, the populations of indicator species have doubled, whereas if it dropped to 50 they would have halved.
- Dotted lines show the 95% confidence limits, which were generated by bootstrapping the species level trends.



National Red Lists

'Of more than 6,000 species that have been assessed using modern Red List criteria, more than one in ten are thought to be under threat of extinction in the UK. A further 885 species are listed as threatened using older Red List criteria or alternative methods to classify threat.'







SETTING THE SCENE

LOWLAND SEMI-NATU

Setting the he State of Natur the fortunes of t

This time frame: to focus on what is hap was also dictated by th of wildlife in the UK did

Where possible, we have the 1960s, but for man trends over a much she that many of the most landscape and wildlife our study period, so it changes in the context

Historical changes such and the 17th century d a huge impact on our v about these ancient ev the last two centuries, is better and the report to flourish. During this the loss and modificati the corresponding loss These are some of the

- The area of lowland by 97 % between th 64,000 sq km. A hu were affected, inclu cuckoo bee (Nomac
 - The area of coppice 1900 to 19702, wit such as fritillary but (Chellosia semifas bee (Osmia pilicori that once carpeted



The state (and heath

he amount of lov semi-natural gras ⊥ declined by 97% the 1930s and 1984, w heathland has shrunk ir 80% since 1800¹⁴, with continuing through the 1990s4. In Derbyshire, a



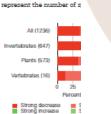
80-91% of semi-natura was lost between 1984 Loss of habitat on this : corresponding national species strongly associa heathland, including the warbler, silver-studded smooth snake, mottled lobelia and small red da on grassland there were

bush cricket), green-wir field gentian, amongst The burnt orchid, a calca specialist, has been lost f and many of the special and limestone maintain existence over much of today. Several species a

these habitats have bee including the short-hair and starry breck lichen. 65% of the semi-natura

heathland species for w data have declined (see

Figure 9 The proportion of lowland grassland and heathland s are increasing or decreasi taxonomic group, measur population size or range of of up to 50 years. The valu



24

Why is low and heathl gricultural impr

including ploug ∠ ⊥re-seeding and was the major cause of species loss on grasslar 1990s4. Heathland was by urban development, extraction and afforest Recent declines in the r

Example



Both under and over-gra

load to loss structural ar

Example Small isolated sites lose populations far more quickly than large, connected sites. Sand lizards and other reptiles are declining in the Wealden Heaths because

the sites are

fragmented. Example ******



STATE OF NATURE 2013

38

Increased grazi Understandin affecting the sta potential imp ash dieback and the species

Anh tree

WOODLAND

Case study

Chalara dieback is a se ash trees caused by th fraxinea (more correct Hymenoscyphus pse which has caused wide to European ash tree p disease was unknown until the first cases we a tree nursery in Buckt early 2012. By Octobe confirmed in mature a currently underway to for the disease has spri

Ash trees are an impor of our native woodking they are a common her and the third most con broadleased woodlans 13% of trees. Across a they account for 5% of Important for fungl, in need deadwood, and e and bryophytes, althou are totally reliant on a ash trees, with their as and hollows, also prov nesting sites for many birds, as well as roosti Ash-dominated woodle

be rich in plants, as the than oak woods, and on lime rich soils.

At this stage, it is very a what Impact the disease woodland in the UK. W losses both directly, as and habitat loss, and in the loss of associated However, the increases duersity of deadwood be beneficial in some a



UK





SoN 2013: key messages

- A single voice
- Nature is amazing
- Pressures upon nature
- Loss of nature
- We can turn it around
- Power of partnership
- Value of volunteers

Burns et al (2013) The state of nature



The State of Nature 2016 report is a collaboration between the UK conservation and research organisations listed below:



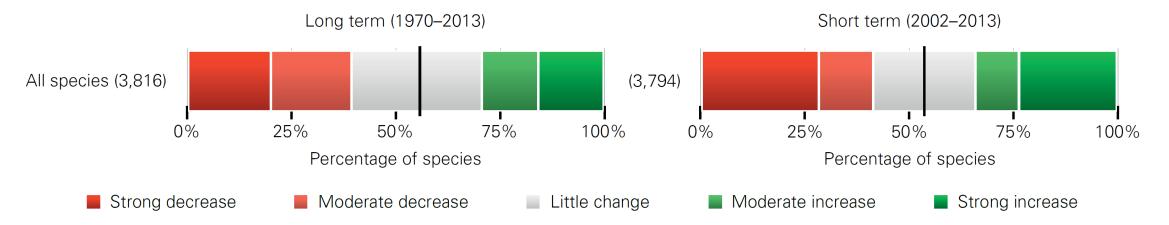
Species trends

'Between 1970 and 2013, 56% of species declined, with 40% showing strong or moderate declines. 44% of species increased, with 29% showing strong or moderate increases. Between 2002 and 2013, 53% of species declined and 47% increased.'

'These measures were based on quantitative trends for almost 4,000 terrestrial and freshwater species in the UK.'



Trends in the abundance and occupancy of freshwater and terrestrial species





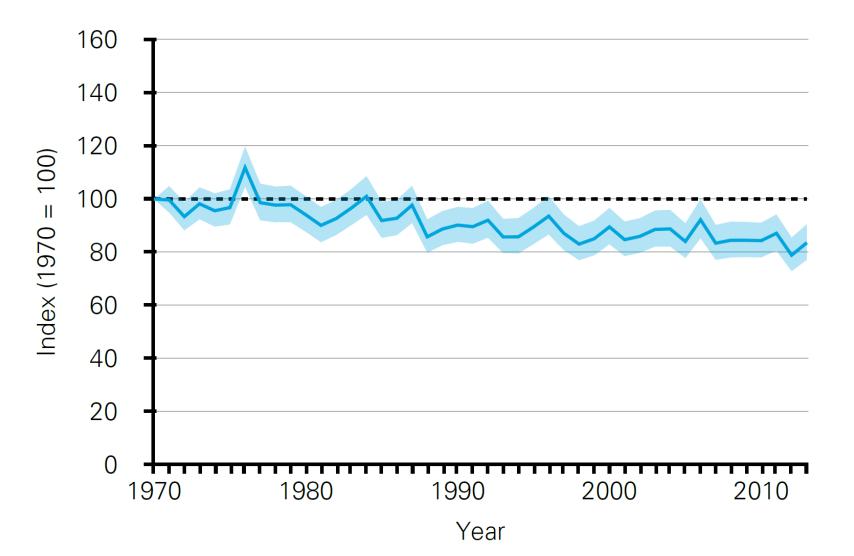
More species trends

'An index of species' status, based on abundance and occupancy data, has fallen by 16% since 1970. Between 2002 and 2013, the index fell by 3%.'

'There was no significant difference in the rate of change between the long and short term.'

'This is based on data for 2,501 terrestrial and freshwater species in the UK.'







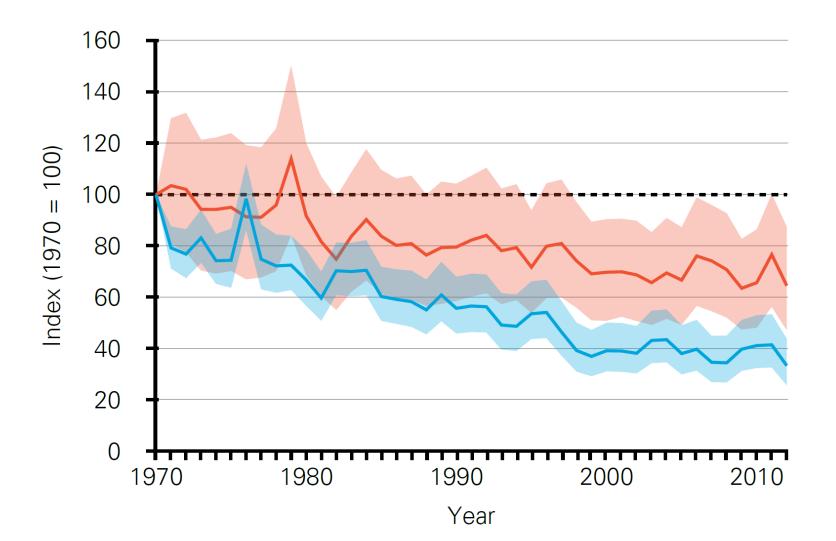


'An index describing the abundance of species of special conservation concern in the UK has fallen by 67% since 1970, and by 12% between 2002 and 2013.'

'The measure based on occupancy has fallen by 35% since 1970, and by 6% between 2002 and 2013.'

'These are based on trend information for 213 (abundance) and 111 (occupancy) priority species.'









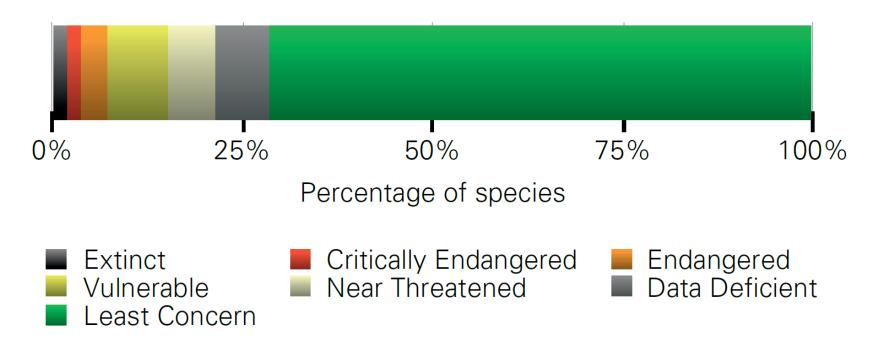


National Red Lists

'Of the nearly 8,000 species assessed using modern Red List criteria, 15% are extinct (2%) or threatened with extinction (13%) from Great Britain.'



All species (7,964)

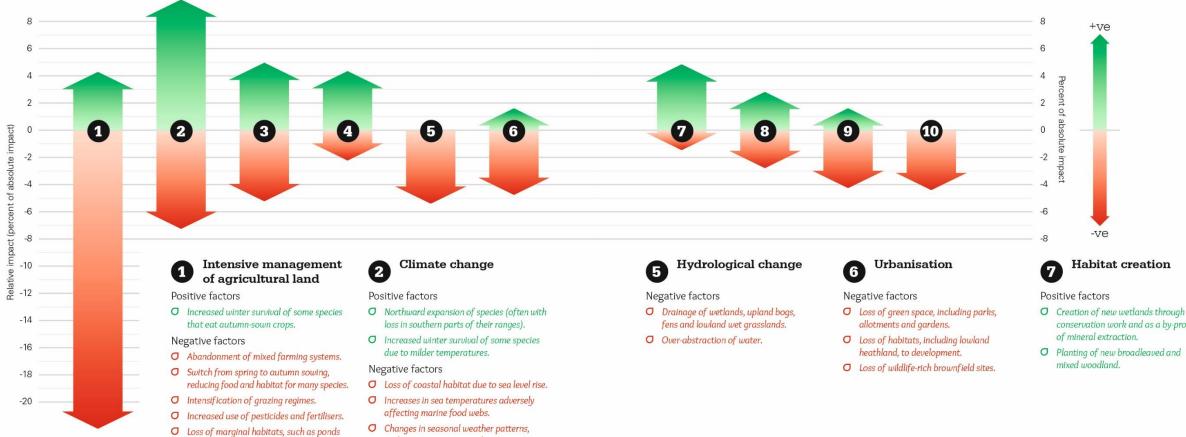






Burns et al (2016) PLoS ONE 11: e0151595

Why is nature changing in the UK?



The figure shows the most significant drivers of change in our nature. Green arrows show positive impacts; red arrows show negative impacts. For full details and further results, see tinyurl.com/j8rxyyl

Low-intensity (3 management of agricultural land

Positive factors

and hedgerows.

- **O** Introduction of wildlife-friendly farming through agri-environment schemes.
- Negative factors Abandonment and reduced grazing,
- leading to the loss of some habitats.

such as winter storms and wetter springs.

Increasing management of other habitats

Positive factors

 Conservation management, often by reinstating traditional methods.

Negative factors

O Increased grazing pressure.

Positive factors Increased habitat area for species using coniferous plantations and woodland edges.

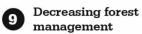
8

Negative factors

forest area

O Loss of the habitat that plantations replace, particularly lowland heaths and upland habitats.

Increasing plantation



Negative factors

O Cessation of traditional management practices, such as coppicing, leading to the loss of varied age structure and open habitats within woodland.

Decreasing management 10 of other habitats

Negative factors

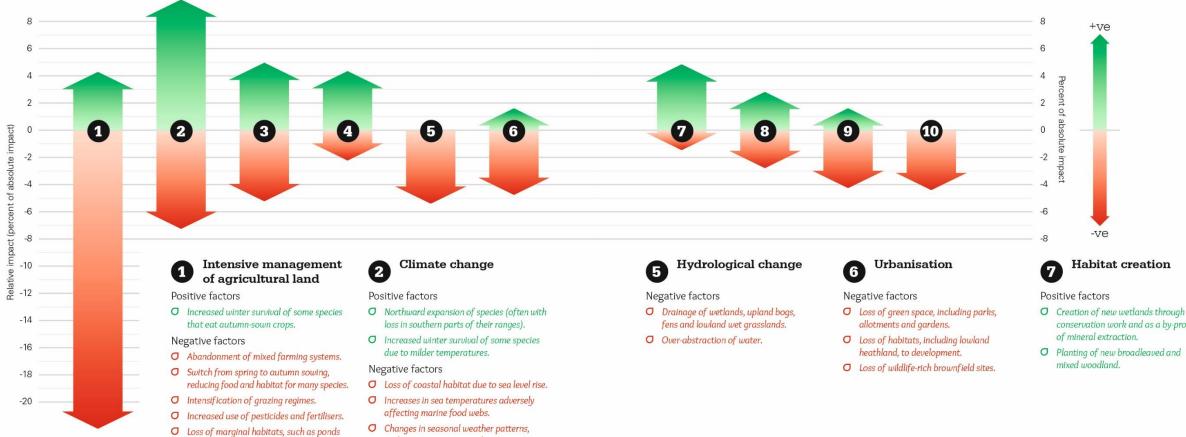
O Abandonment of traditional management, including grazing, burning and cutting, which is crucial for the maintenance of habitats such as heathland and grassland.

conservation work and as a by-product



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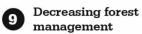
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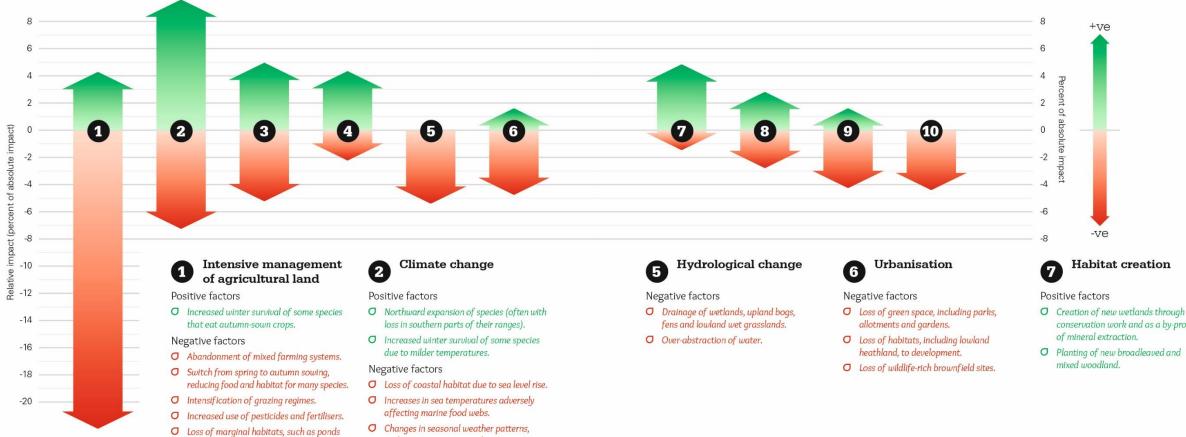
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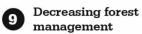
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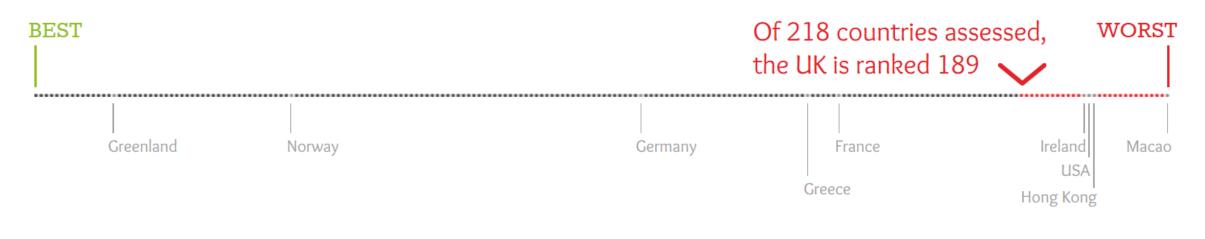
conservation work and as a by-product













This means that nature is faring worse in the UK than in most other countries.



Newbold et al (2016) Science 353: 288-291

State of



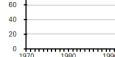


Figure 9

An index of species' status based on ab for 762 farmland species

abundance and occupancy of i year; a statistically significant to that from 1970 to 2002 (t= -(

WOODLAND

round 75% of the UK's lands on enclosed farmland, which λ grasslands. This enclosed fa and other uncropped areas.



The state of farr

Strong decrease M Mo

The percentage of species in each trend between declining species on the left ar

Looking at the long-term trend Among these, 34% showed str strong or moderate increases.

Looking in more detail, the inc fallen by 0.56% per year; a stati drop of 20% in total, over the l short-term period, the index d The short-term decline is not s

Over the long term, our separa distributional change in vascu pictured) shows a decline of 7 species), whereas over the sho a 2% increase (based on 285 s

Why is woodlan

T t was relatively easy to pick out t major drivers of change in wood wildlife from our UK-wide reviews both changes in the extent of wood cover, and in the intensity and type of woodland management, have ha substantial effects on the UK's wild

ATT A THE DAY AND A STREET OF

UK Cro

The increase in total forest cover during our study period, through th planting of both broadleaved and coniferous forest, has had a balance impact overall. Some non-woodland species have lost habitat to trees, while other woodland specialists ha benefitted, particularly from recent planting of native woodland. Howe our review also demonstrated that the management of forest is equally important, as many species favour

particular management regimes. Decreasing forest management ha

had a substantial negative impact o woodland species. In the middle of 20th century, 50% of our broadleav woodland was coppice or shrub⁶, bu with the abandonment of tradition management methods, such as coppicing, that figure is now below

Many woodland species rely on ope woodland habitats, with access to sunlight, a varied understorey, and the mosaic of different habitats produced by the rotation of coppici throughout a woodland. The target reinstatement of coppicing within nature reserves, and through grant schemes, has been successful in maintaining populations of some species, although many still suffer as a result of the limited and fragmented nature of their habitat. In addition, management often has

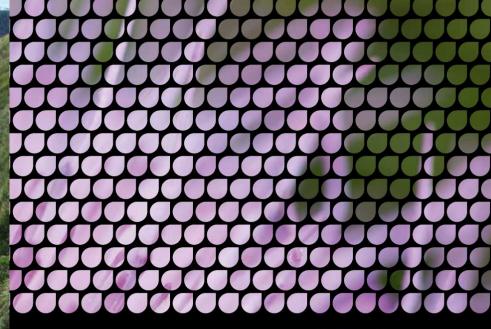
contend with the adverse impacts o grazing from increasing populations of both native and non-native deer.

Increases in other forest managen practices have also influenced wood

wildlife. For example, a decline in the availability of standing dead wood l led to a loss of breeding and roostin sites for bats, as well as habitat for host of specialised invertebrates.

UK Ov

- Over 32,000 native sp and it has been estin
- To date, 1.557 endem for) have been found status assessed.
- Some 13% of the nati with global extinctio
- A third of the world's in the OTs.



State of Nature 2016 Scotland





STATE OF NATURE 2016

30



SoN 2016: key messages

- A single voice
- Nature is amazing
- Pressures upon nature
- Loss of nature
- We can turn it around
- Power of partnership
- Value of volunteers

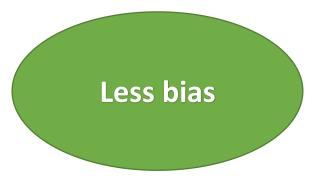


- Better metrics
- More understanding
- New ways of framing
- New ways of communicating



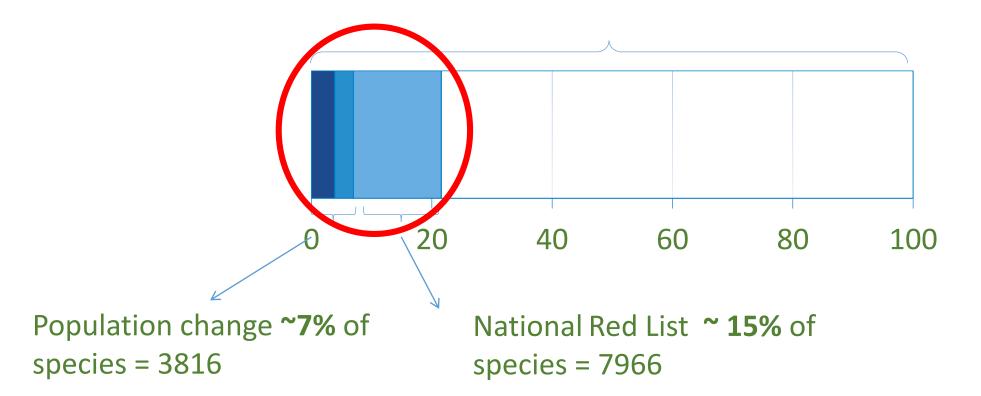
Spatial resolution





Species bias – does SoN scratch the surface?

the known knowns and the known unknowns

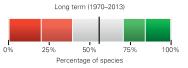


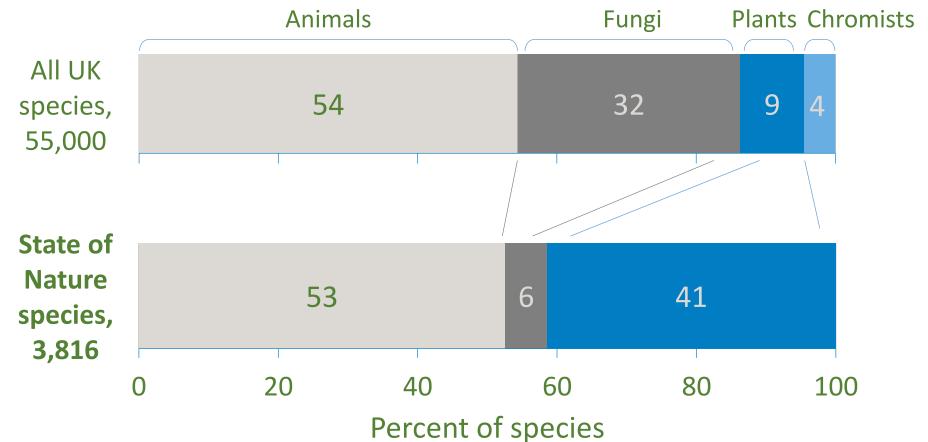
= Information available to the State of Nature



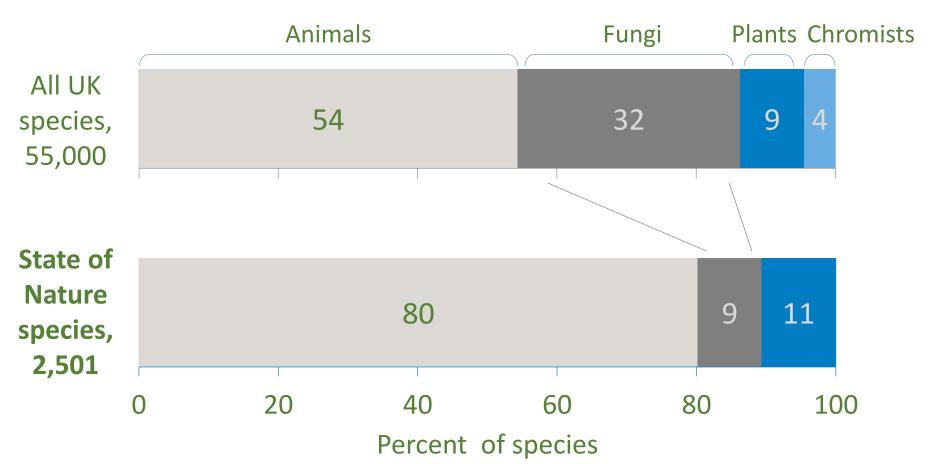


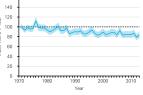
Taxonomic coverage of species - categorical change



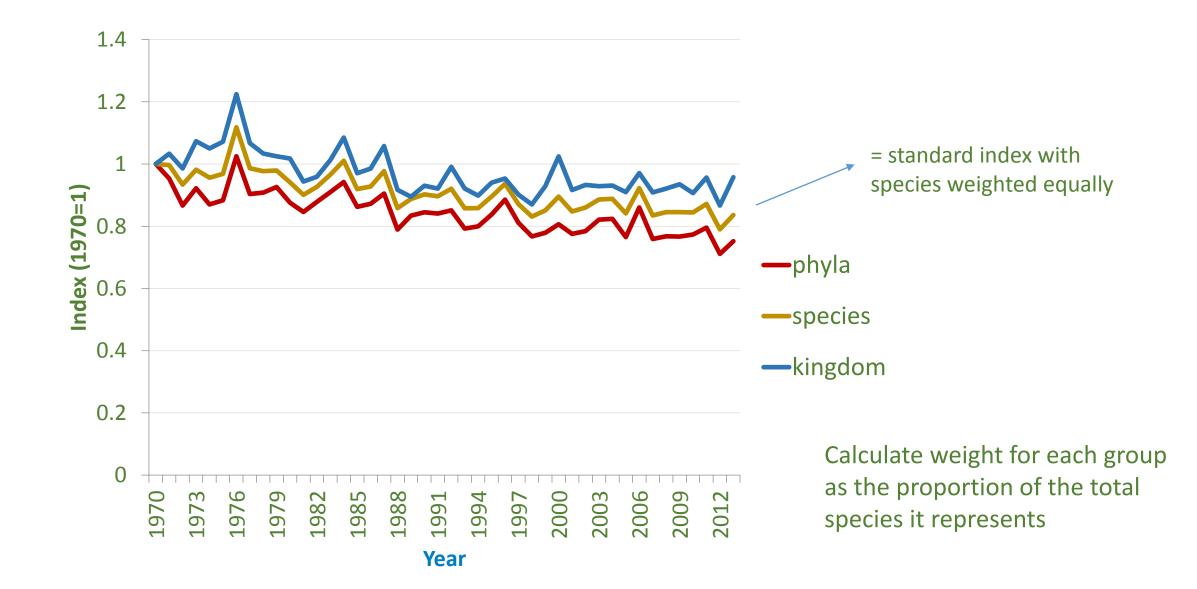


Taxonomic coverage of the population index

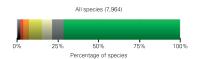


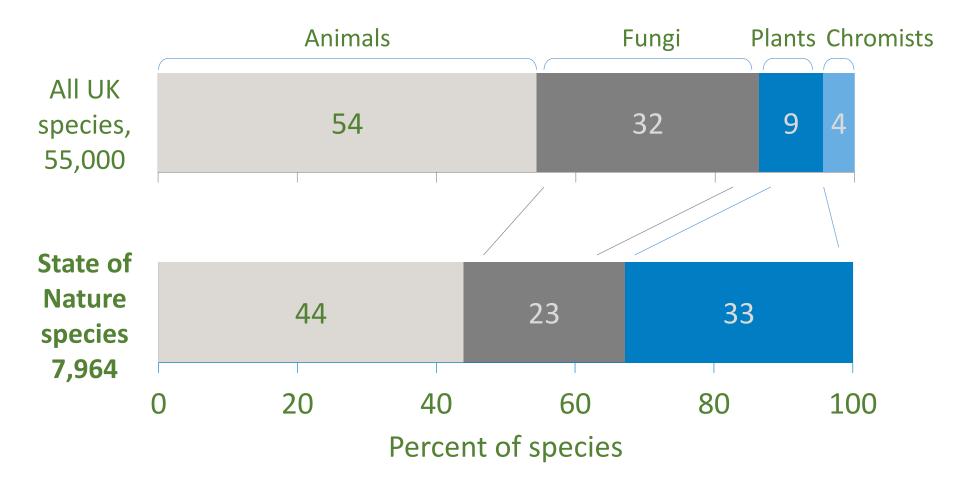


Correcting for taxonomic bias (up- & down-weighting)

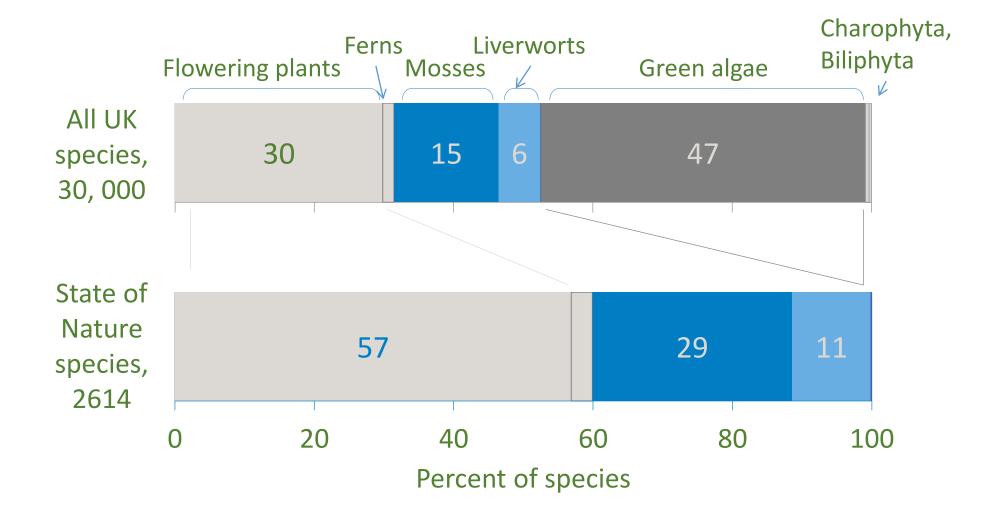


Taxonomic coverage of red list assessments





Taxonomic coverage of plant red list



- Better metrics
- More understanding
- New ways of framing
- New ways of communicating





Current drivers

Influence of those drivers

- Better metrics
- More understanding
- New ways of framing
- New ways of communicating





- Better metrics
- More understanding
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- New ways of communicating



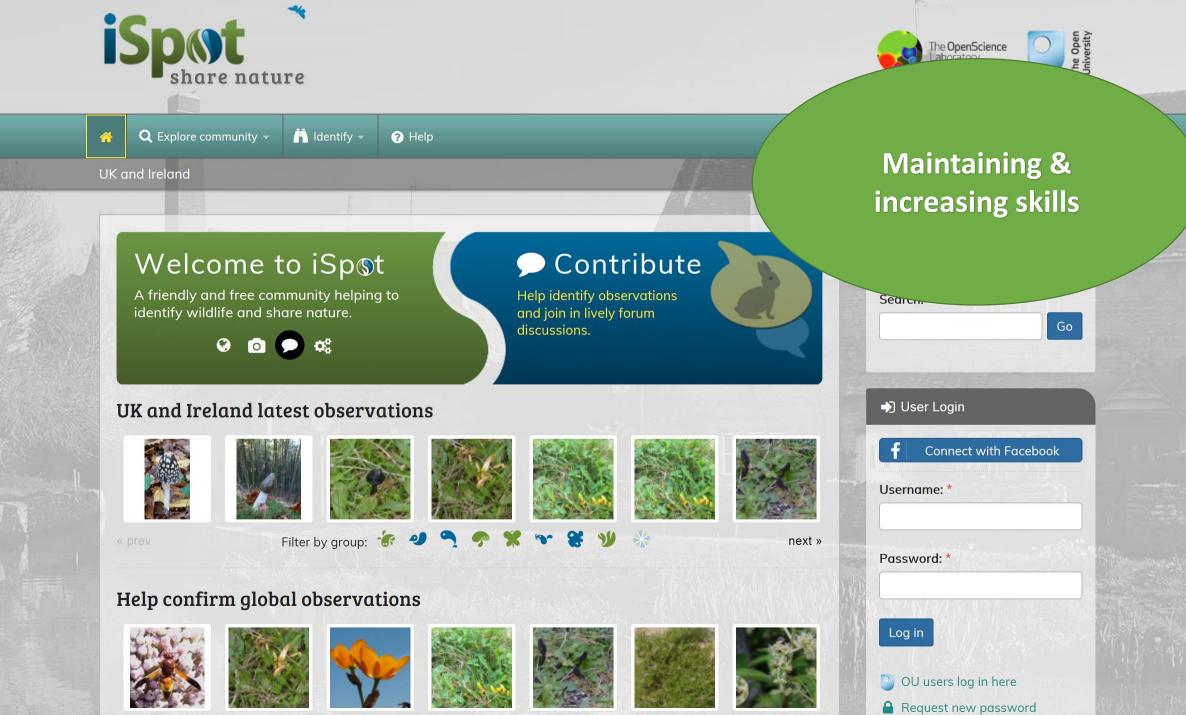
Different products?











Make the most of technological developments

Maximising data collection

Influencing recorder behaviour



Engaging & recruiting future generations

11

TRACTOCICCO CONTRACTOR DE LA CONTRACTOR

Engaging & recruiting future generations The State of Nature 2016 report is a collaboration between the UK conservation and research organisations listed below:





From Source to Resource



Dr Scott Shanks

Conservation Officer Buglife Scotland

Wildlife Recording – The Key to Conservation





Wildlife Recording- The Key to Conservation Dr Scott Shanks







- Long history of Biological Recording in the UK
- - originally fairly elitist and male-dominated!
- New technology has helped it become hugely popular! UK has best studied wildlife in the world!
- Biological Recording is for everyone!





Assessing Local Conservation Actions



• Monitoring can help assess impact of management e.g. Butterfly Transects



Circular transect at Mabie Forest, D&G

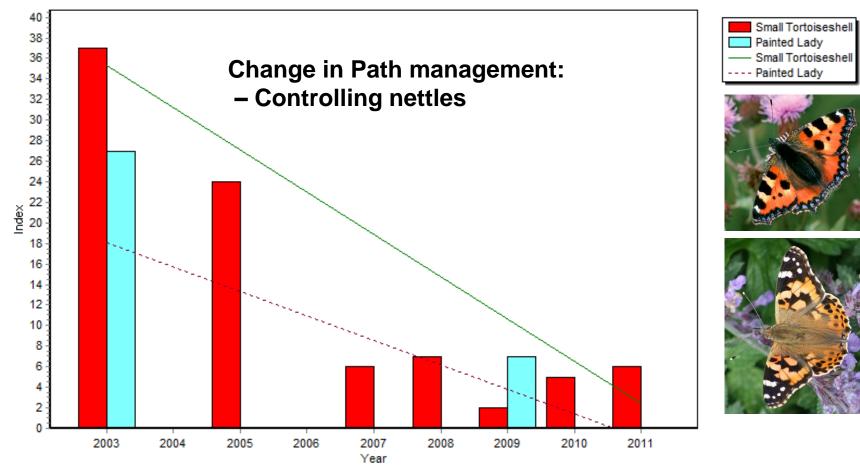




Assessing Local Conservation Actions



BMS Index



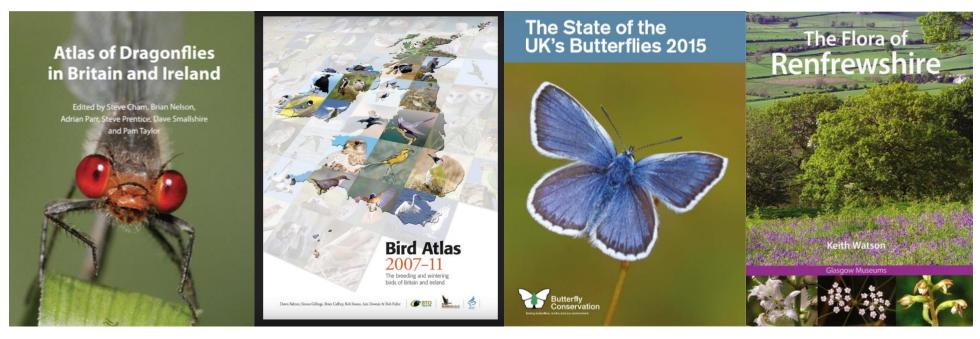
Species declines (Small Tortoiseshell) and arrival of migrant species (Painted Lady)



Distribution Atlases



- National and local Atlases focus effort and provide a basis for periodic review of the distribution of species within a taxonomic group.
- Rapid changing species ie. Butterflies every 5 years
- Printed atlases cover >10,000 species in UK

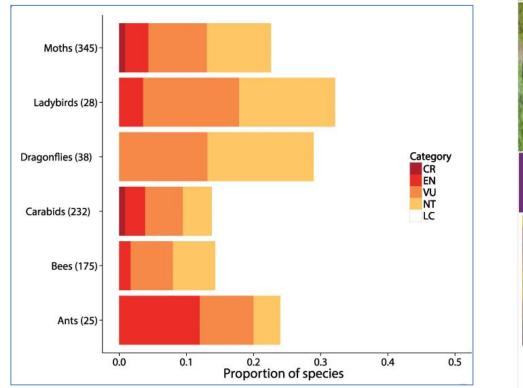




Red Listing and Indicators



• Records can be used to identify trends in distribution, abundance and key indicator species and groups.



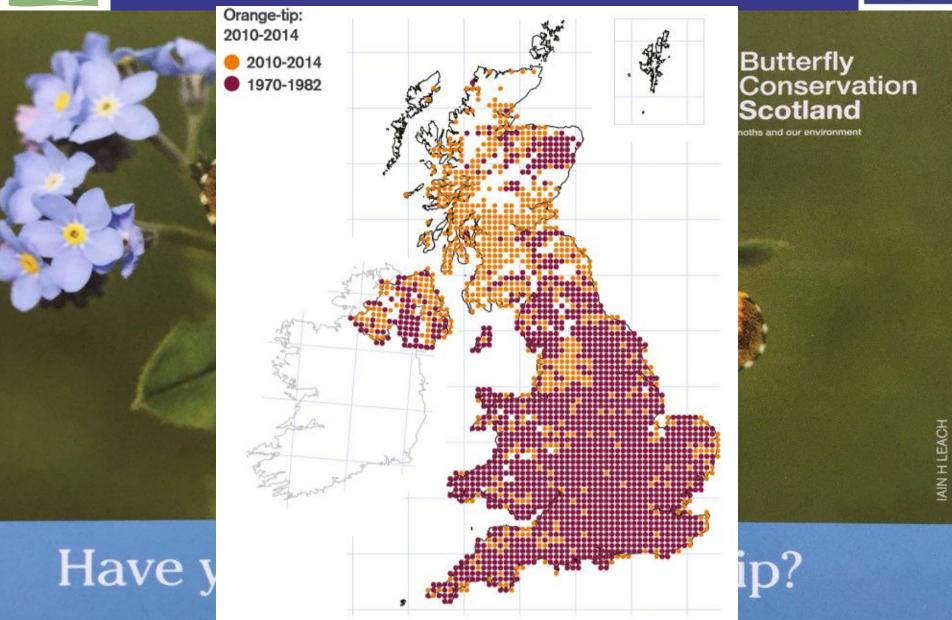
Provisional extinction risk assessment of 1026 species using biological records.





Monitoring Climate Change

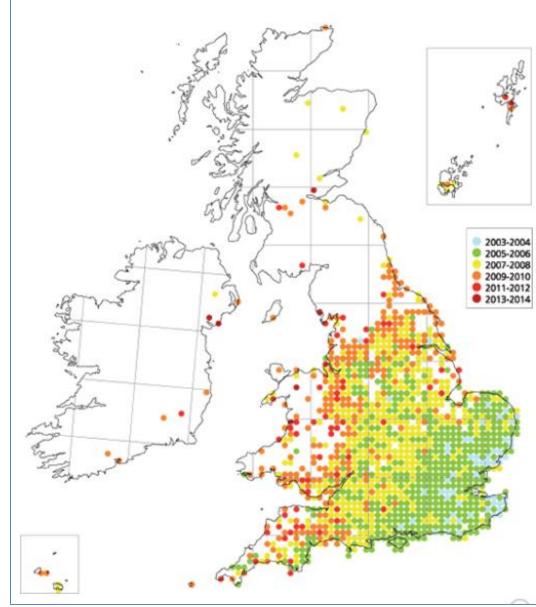






Monitoring Invasive Species











Monitoring Air & Water Quality







New Recording Technology



• Digital Photography, handheld GPS devices, Online guides, High-profile surveys, mobile phone apps





Forth Nature Counts Project



Aims:

- Promote Biological Recording in Inner Forth
- Generate as many verified records as possible
- Ensure records end up in the public domain to aid nature conservation throughout the Inner Forth.



Success: 13,508 records of 1,531 species! From Wild flowers to Jellyfish!



From Source to Resource



Natalie Harmsworth

Ecologist The Wildlife Information Centre

Record Verification: A Key Step in the Data Flow Pathway



Verification: A Key step in the data flow pathway

Natalie Harmsworth

The Wildlife Information Centre



What is it?

Assessing the **correctness** of a biological record



Why needed? An email from a recorder...



Dear natalie

i saw a raccoon? a cat-sized creature with horizontally striped black and white tail but longer legs than a cat. moving like a raccoon according to youtube videos i saw later. its face was in shadow in the trees at location grounds of astley ainsley hospital site at about 12 noon 14.9.16. so surprised i didnt think of photo[graphing] it.

thank you

Why important?



"Collect once, use many times"



Imgaes: Pond creation: http://www.restoringthelandscape.com/2012/01/design-and-construction-of-thriving.html Attribution-NonCommercial-NoDerivs 3.0 Unported (CC BY-NC-ND 3.0); Barn conversion: http://www.geograph.org.uk/photo/4801528 © Copyright Colin Grice Attribution-ShareAlike 2.0 Generic (CC BY-SA 2.0) license; Bryophytes Atlas: http://www.summerfieldbooks.com/asps/resources/big/4394-1.jpg

Who and how?

- Experts assess the correctness of records and assign them a *verification status*
- Automated checks



Sherlock Holmes played by Benedict Cumberbatch in BBC's Sherlock. Image source: http://fav.me/d4r1aif licensed under a Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 License.

Automated checks (NBN Record Cleaner)



Photo (c) Chris Cathrine

"Grid is outside known modern range of Salticus scenicus" (Zebra Spider)

"Identification only accepted from known recorders or else needs confirmation from vice-county recorder"

It does not mean your record is incorrect!

Verification is a balancing act!

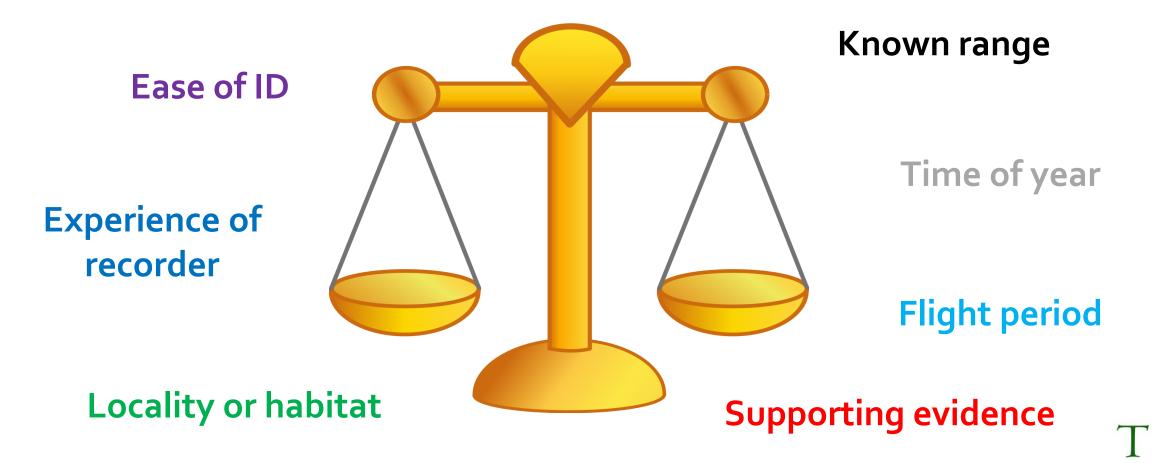


Image by 百楽兎 (Own work) [CC BY-SA 3.0 (https://creativecommons.org/licenses/by-sa/3.0) or GFDL (http://www.gnu.org/copyleft/fdl.html)], via Wikimedia Commons



"If in doubt leave it out!"

Image by https://leadershipfreak.files.wordpress.com/2010/03/question-marks.jpg licensed under a Creative Commons Attribution 3.0 Unported (CC BY 3.0) license

Thank you for listening!

Natalie Harmsworth natalie@wildlifeinformation.co.uk



A free event hosted by the Inner Forth Landscape Initiative



From Source to Resource

A conference on making biological records count

Saturday 10 February, 09:30 - 15:30

Afternoon Session

Supported by Buglife Scotland, Stirling Council and The Wildlife Information Centre



From Source to Resource



Ross Mcllwrath

TCV Natural Talent Trainee – peatlands and micro moths Butterfly Conservation Scotland

Micro-moths: An Under-recording Problem



Micro Moths:

An Under-Recording Problem.









TCV Natural Talent Trainee – Peatlands and Micro Moths, Butterfly Conservation.

Ross McIlwrath









Micro Moths!

Around 2500 species of moth in the UK. Over 1500 of them are Micros!











Micros are incredible diverse in their shape, size and ecology. Some species are larger than you'd think!





Macro Maps: The Emperor Moth.



@ Adrian Breeman

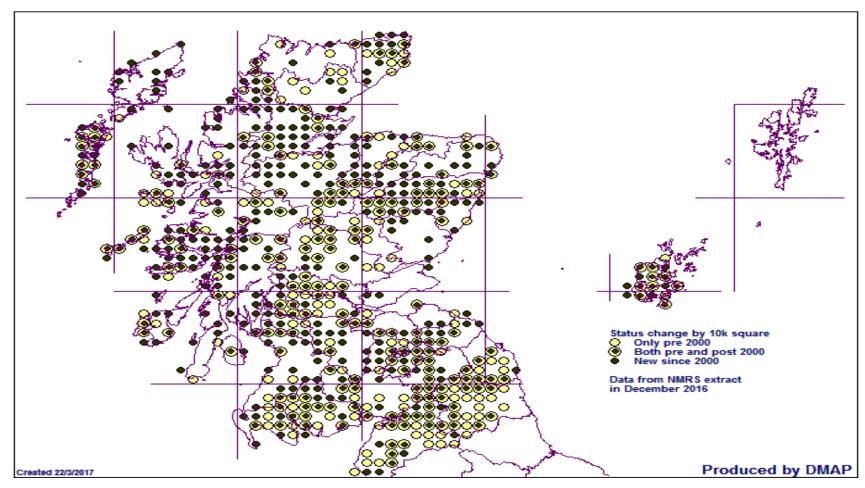




@ Julie Stoneman

Macro Maps: The Emperor Moth.

Emperor Moth

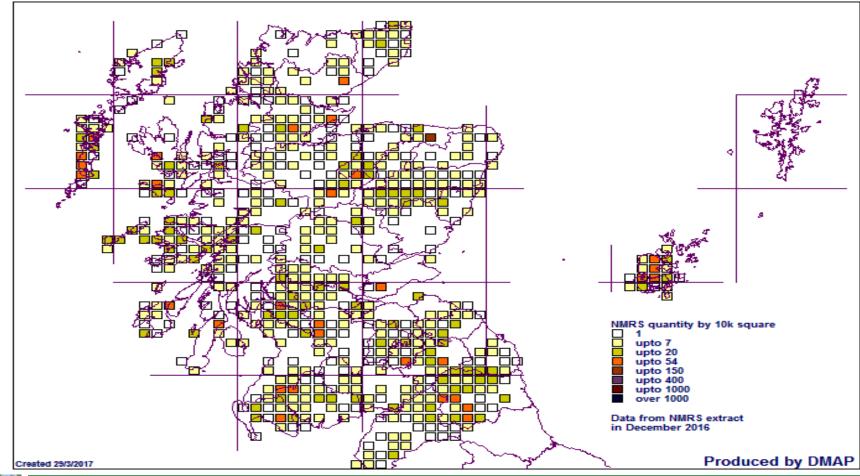






Macro Maps: The Emperor Moth.

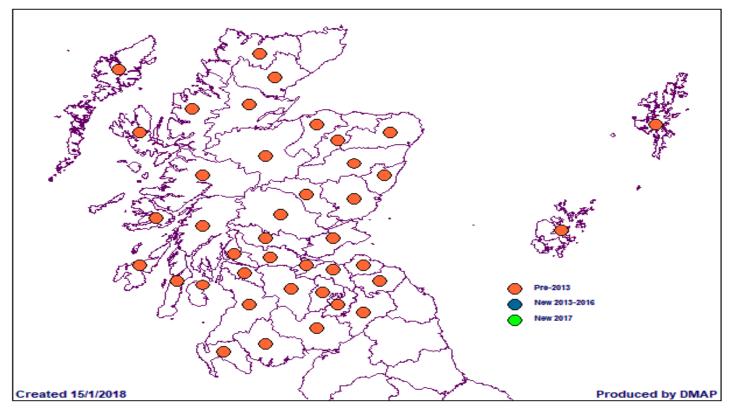
Emperor Moth







Agriphila tristella



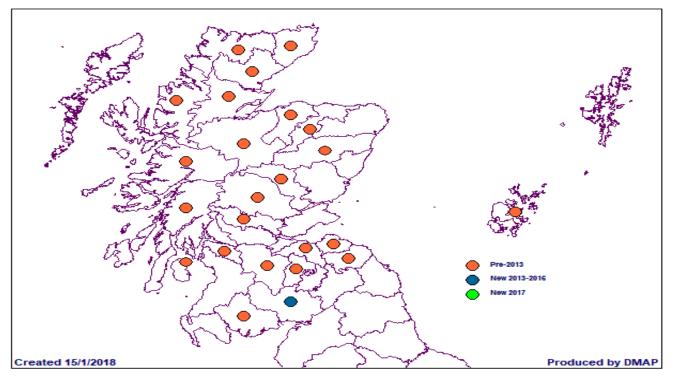






Prolita sexpunctella – p Nationally Scarce B

Prolita sexpunctella











HOME ABOUT SPECIES PUBLICAT		Search
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Gelechiid Recording Scheme

NEWS:

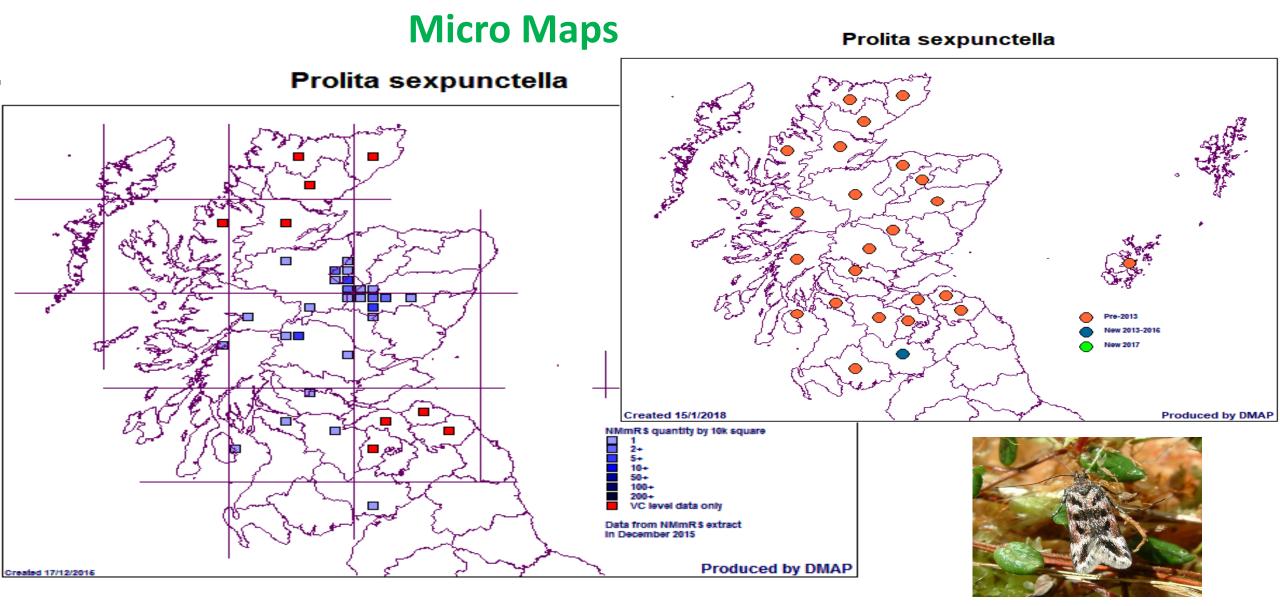
Anarsia innoxiella. A recently published paper has detailed the discovery of a new species looking very similar to Anarsia lineatella. Details can be found at the link provided here. Initial examination of recently light-trapped British material, which were thought to be A. lineatella, suggest many could well be referable to the new species, Anarsia innoxiella, which feeds on Acer sp.

Link - (http://nl.pensoft.net/articles.php?id=11184).

Provisional Distribution Maps - the species maps contain all verified data submitted to the GRS prior to March 2016. Data for the 2016 season onwards will now be sent via the National Moth Recording Scheme (NMRS). As this is the first year of the extended NMRS (now including validated micro-moth records) it will take a while for data to filter through and be checked. The next map refresh is now anticipated to be complete by early 2018.











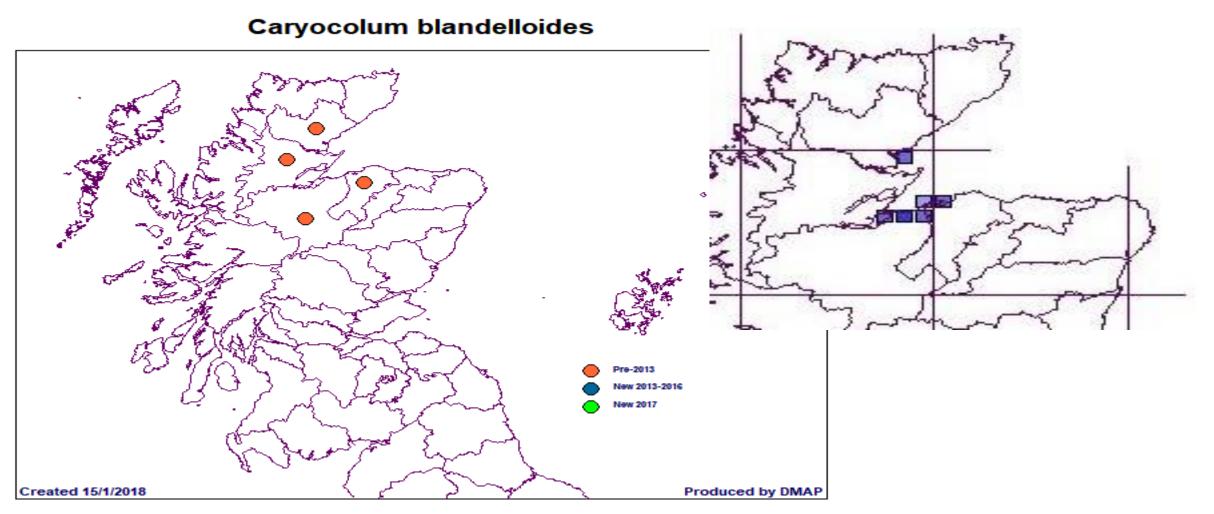
Caryocolum blandelloides- pRDB1





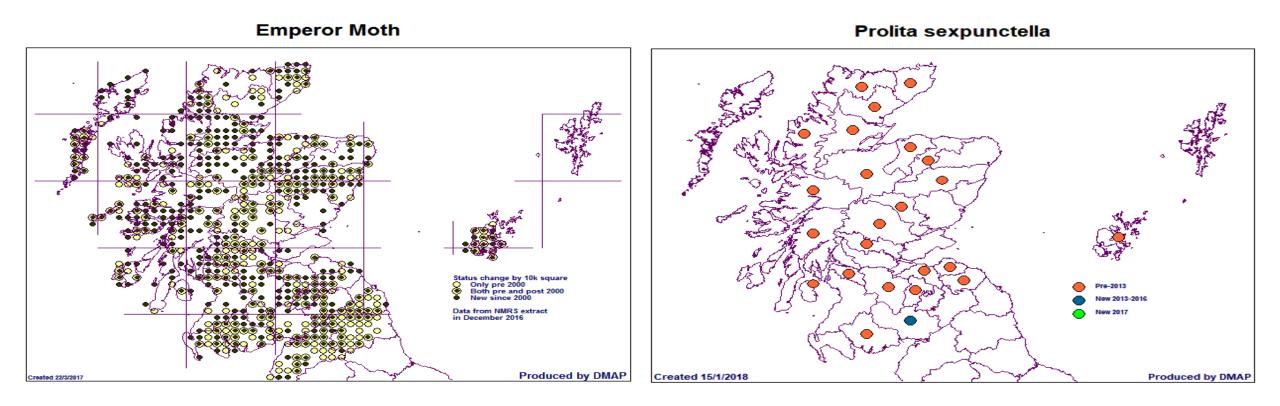










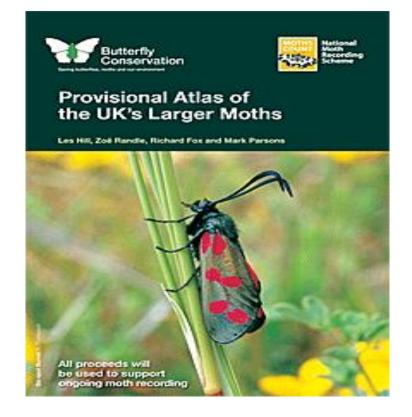






Upcoming Moth Atlas

- Next year the Macro moth UK Atlas will be published.
- A huge effort from volunteers over many years to get data accurate to 10 km squares.
- Micros moths were included into the scheme in 2016!
- Micros are still very under-recorded. Many are only historical records.
- I've had 5 New VC records verified and possibly up to 10 more to be verified!
- Need more micro moth data to produce a useful atlas.







Thank you for listening!



Workshops - Micro moths for beginners:

- Edinburgh Museum Collections, 13th March.
- Glasgow Museum Resource Centre, 22nd March.
- Stirling, Balallan House, 20th March.
- Inverness: FULLY BOOKED.



Follow me on twitter @rossmcil

TCV Natural Talent Blog.





Questions?





From Source to Resource



Ellen Wilson

Head of Conservation Data RSPB

Scottish Biodiversity Information Forum Review Update

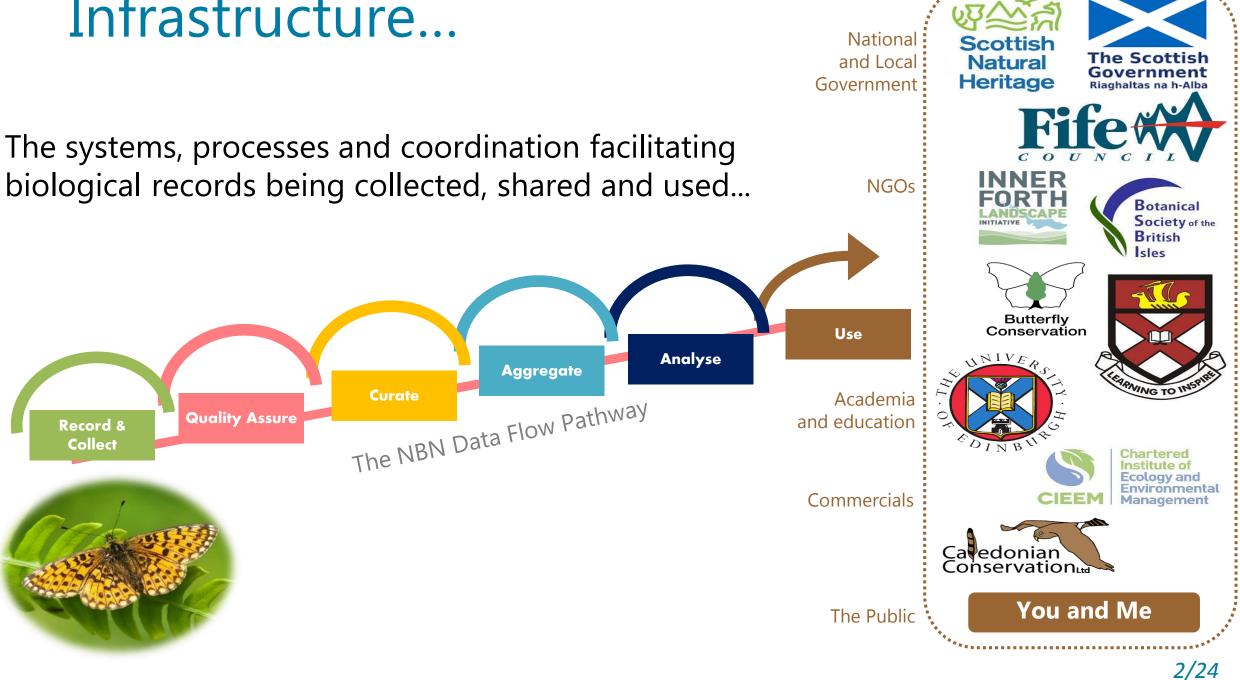


The SBIF Review of the Biological Recording Infrastructure in Scotland

SBIF Review Working Group: Ellen Wilson, Christine Johnston, Lindsay Bamforth, Colin McLeod, Rachel Stroud, Liz Edwards

> Scottish Biodiversity Information Forum 10th February 2018

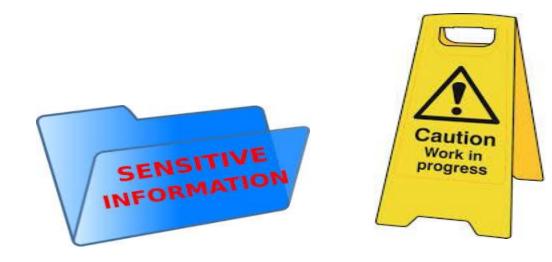




© Steve Knell

Overview

- 1. Why this Review is needed
- 2. How the Review is being done
- 3. Early findings
- 4. Early implications
- 5. Expected benefits
- 6. Next steps





09/01/2009

(For official use only) PUBLIC PETITION NO. PE1229

Should you wish to submit a public petition for consideration by the Public Petitions Committee please refer to the guidance leaflet <u>How to submit a public petition</u> and the Guidance Notes at the back of this form.

1. NAME OF PRINCIPAL PETITIONER

Craig Macadam, on behalf of Biological Recording in Scotland (BRISC)

2. TEXT OF PETITION

Calling on the Scottish Parliament to urge the Scottish Government to establish integrated local and national structures for collecting, analysing and sharing biological data to in the decision making processes to benefit biodiversity

3. ACTION TAKEN TO RESOL SUBMITTING THE PETITION

For a number of years BRISC has support a Scottish network of centres to collect, analyse we have had very limiter sympathetic, but no ce recording network or

We have made con Boyack, Ted Brockle, Harvie, Christopher Harvie, ADDITIONAL INFORM,

All nature conservation, wheth, the knowledge of where it is and h, entirely on data, collected over time by and volunteers. It is critical that all these efform

The purpose of this petition is to urge Scottish Ministers to help put in place a network of formal biological data-sharing partnerships all over Scotland. These partnerships would identify, collate, mobilise, and possibly gather the biological data required to inform land-management decision-making, by public as well as by private bodies, thus enabling them to exercise their duty to further the conservation of biodiversity as stipulated in the Nature Conservation (Scotland) Act 2004. In addition, these data sharing partnerships would make biodiversity information readily available to everyone

through the National Biodiversity Network.

At present, key biological data are not being used consistently to inform planning and development decisions, possibly due to inaccessibility, nonexistence, or simply by being ignored.

Wherever possible the network of data-sharing partnerships would involve existing local biological recording groups as well as public bodies. Such structures would support the continuing work of the large body of volunteer recorders and ensure greater availability of information to decision makers and an increased flow of data to the National Biodiversity Network.

A formal network of data-sharing partnerships would significantly enhance the delivery of local, Scottish and UK biodiversity action plan targets.

Calling on the Scottish Parliament 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

PETITION TO BE HOSTED ON THE

NO

gnatures on your petition). Please also provide at scussion on the petition,

CUSSION

purse. Whether due to lack of quality data, purse. Whether due to lack of quality data, may negligence, it is disappointing how few local

senous about taking nature conservation into account in their

decision making, in spite of the biodiversity duties imposed on them by the Scottish Biodiversity Strategy and the Nature Conservation (Scotland) Act 2004.

Ministear airson na h-Àrainneachd Minister for Environment and Climate Change Roisin Chonaigean BPA Roseanna Cunningham MSP

F/T: 0845 774 1741 E: Ecottish.ministersi#scotland.RSI.Rov.u8

Dr Ian Bainbridge Head of Science Scottish Natural Heritage Silvan House, 3rd Floor East 231 Corstorphine Road Edinburgh EH12 7AT

Ur faidhle/Your ref: Ar faidhle/Our ref: B4458277 14 December 2010

Dear D. Bainbidge

Thank you, and the members Biodiversity Science Sub-Group, comprehensive report on the issues raised in Public Petition P recording.

Attached to this letter is the Scottish Government's response t recommendations within that report. Given the nature of many appropriate that they are given detailed consideration by the be an agenda item at the upcoming CAMERAS board mer-

I look forward to hearing the outcome of those dise recommendations where appropriate.

ROSEANNA CUNNINGHAM



The Scottish Government Risgheltas ne h-Albe

14/12/2010

The Scottish Government, SNH and others should establish a Scottish Environmental Information Forum (SEIF)...

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

Taigh Naomh Anndrais, Rathad Regent, Dùn Èideann, EH1 3DG St Andrew's House, Regent Road, Edinburgh, EH1 3DG www.scotland.gov.uk



Why a Review is needed

- Petition for an effective infrastructure
- Many sectors and stakeholders
- Diverse needs, six key issues
 - 1. lack of certainty, direction and action on localising/nationalising/centralising services
 - 2. lack of alignment/degree of challenge between and within sectors
 - 3. Open Data principles challenge funding models
 - 4. complexity/low resilience/funding challenges
 - 5. patchy provision or duplication of services
 - 6. lack of easy access to all data
- Things could be much better
- Nature is under threat
- Time to be bold

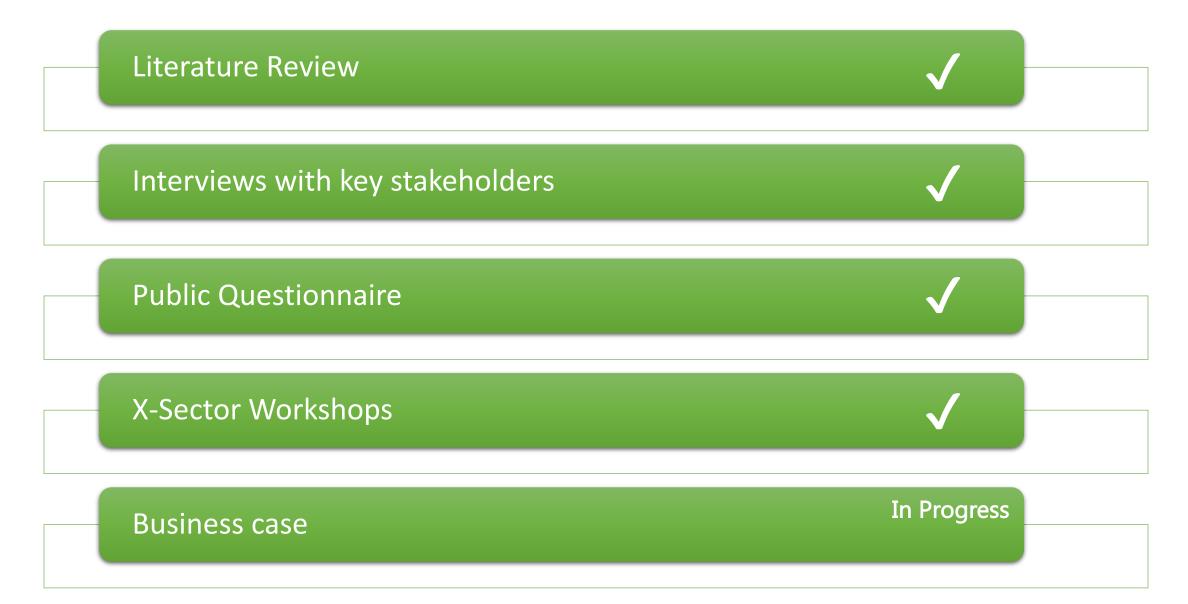
05/09/2016

The natural world is in serious trouble and it needs our help as

never before.



How the Review is being done



Literature review

- Reports_All Defra Funding_2001-2014
- 1968_Nature on the Grid_CAMPBELL
- 1973_BRC_A national data bank_Leaflet
- 1975, 1977 Guide to Biological Recording in Scotland
- 1975_Angus Wildlife Review
- 1975_Biological Recording in Scotland_Conference Report
- 1977_BRC Intructions for Recorders_HEATH AND SCOTT
- 1977_The development of the Biological Data Bank, West Yorkshire Region_LA
- 1978 _Handbook for Local Biological Record Centres_FLOOD & PERRING
- 1981_Survey of local and regional biological record centres. HARDING & GREE
- 1982_SurveyLocalRegionalBiolRecordsCentresAnalysisResults_GREENWOOD
- 1983_Survey_species_recording_schemes_local_biol_rec_centres_WHITELEY
- 1984_LRCs & environmental recording where do we go from here_COPP
- 1985_Biological Recording Forum-Biology Curators' Group Special Report No 0
- 1985_BRISC Biolink '85 Conference
- 1986_Biological Recording in a Changing Landscape_HARDING AND ROBERTS
- 1988_Biological_Survey_Need_&_Network_R.J.Berry
- 1990_Biological recording changes_ITEsymposium_PAUL HARDING
- 1992_Biological recording of changes in British Wildlife_HARDING
- 1993_Biological recording in the Highlands the first5yrs 1987-1991_EVANS
- 1995_Biological Recording In UK_Burnett&Copp
- 1996_Biodiversity Information on the Internet Cornucopia or Confusion_CARLI
- 1999_A Source Book for Biological Recording in Scotland_BRISC
- 1999 Lanarkshire Biological Information Survey MELLOR
- 2000_Generating data solutions through Local Record Centres. NBN

- 2001_Biological Recording in Highlands and Islands_SNH
- 2001_framework-biodiversity-in-highland_HIGHLAND BIODIVERSITY
- 2006_Biodiversity Data needs for Local Authorities and National Park Authorities_ALGE
- 2006_NBN Future Requriements_JNCC
- 2006-16_Strategic Buisness Plan_BRISC
- 2007_Biodiversity-Duty-guidance-for-local-authorities_Local Gov Information Unit
- 2007_Review of LERCs_NE (JustEcology)
- 2007_Running a Biological Recording Survey or Scheme_NBN
- 2009_Analysis of Biodiviersty Data Needs for SNH, SEPA, SG, LA
- 2010_ Obtaining the Benefits from Biological Recording_JNCC
- 2010_DataHub_LLTNPA, Stirling, Clacks and Falkirk area_ANDY FORD
- 2010_Highland Biodiversity Data Sharing Needs Analysis_WARNOCK
- 2010_InvolvingPeopleBioRecording_SNH
- 2010_Making Space for Nature _LORTON
- 2010_Recommendations from Biodiversity Science SubGroup on Petition PE1229
- 2010_Record Centre buisness model review_NE
- 2011_Towards Joing the Dots_NFBR
- 2011-12_ALGE Report on Impact of Spending Cuts_ALGE
- 2011-2015_Strategic_Plan_NFBR
- 2012_A change in funding directions. Implications for Bio Recording_ROGER MORRIS
- 2012_Evidence for the need for SBIF
- 2012_Local Records Centre Accredition Implementation_NE
- 2012_Promoting Biological Recording_BRITISH WILDLIFE
- 2013_Biodiveristy data should be published, cited, and peer reviewed_COSTELLO
- 2013_Report_on_Ecological_Competence_and_Capacity_ALGE
- 2015_SBIF Survey of CIEEM members_SBIF
- 2016_An independent review of the Scottish Planning System

1975: The present **financial situation** and attitudes to biology in Scotland is not encouraging. We must plan for a brighter future... This is **a time of change** - the very time to press a case and win it. The needs of the planners and the conservationists should be carefully analysed; the currently diverse and uncoordinated network of data banks should be unified and improved to cope with the increasing amount of biological information.

1988: A considerable amount of the **information is not easily available**, and so is not used by those who require it. If the nation is to profit from its reservoir of recording talent and have the ability to make planning and conservation decisions from a firm base, there must be a commitment to invest in the setting-up of an efficient network... A coordinated national recording network could operate at less or the same total costs at present spent on recording by a **multiplicity of bodies**. The proposed network could be self-financing if it could channel the information currently commissioned from a wide variety of people... A continuing supervisory body should be established to **oversee local records centres**.

1995: If a re-organisation for improved coordination and accuracy of biological recording is to be implemented the options necessary to support **a business case must be expressed clearly,** the necessity for change being spelt out rationally; defined in specific policies, after the potential roles of participants have been clarified and agreed by the recording community, <in a way> which can be readily understood by the public. Clear and far-sighted, authoritative **leadership will be essential**.

2016: LOCAL AUTHORITIES SHOULD PURSUE THE ESTABLISHMENT OF SHARED SERVICES. **Radical solutions need to be realised.** Shared services would be particularly helpful in specialist areas where it is unrealistic to expect all local authorities to maintain a high level of expertise in-house.

Interview Questions

- 1. What **roles** and responsibilities do you have?
- 2. What are your current **ways of working**?
- 3. What issues or **problems** do you have with these?
- 4. What is your **vision** of the future: what are you trying to achieve and what is needed to support this?

Interview Rich Pictures

- Along with other roles, we see the need for clear dataflows, perhaps with flagged unverified and verified data together in a central place though not everyone agrees
- It would help if we received records in a consistent format, but we don't want to put recorders off! iRecord is good as all the data are in one place, plus you can store photos with records
- We need funds to train recorders a little money could go far, and we often use our own cash currently. We also need long term sustainable funding!
- We need access to IT skills and support for data management then we would have more time for verification
- Can we move to a more 'open data' position - while still collaborating with partners and suppliers of data?

RECORDING SCHEME **OPERATORS**

- We encourage recorders to lodge their specimens with us to look after....EXCEPT we have little funding for expansion of collections. It would help if they were recognised as 'big data' then we could secure more fundina
- We are here if verifiers need a specimen for id purposes, and we know where specimens are - including in personal collections!
- > If only we could digitise specimens held in collections across the country and link with GBIF and NBN, then anyone could access them online!
- We love people to come and view our collections, it's an opportunity to increase awareness of the natural world – and we could offer more taxonomic skills training

- I need to ask recorders questions about their records I am happy to accommodate whatever is their preferred mechanism for this eg. email, through iRecord etc
- I do have a lot of records to get through so it would be very helpful if recorders could include photos with their records to speed up verification
- Lots of us use iRecord so we can see which records are waiting for our attention - it would be great if all records were in a central database!
- > We need more tools that automate the VERIFIED verification process – especially to filter RECORDS records based on an initial level of confidence
- > We need more verifiers! More help is needed with the increasing number of records that need verifying, especially for more obscure species groups. I am happy to teach id skills...

UNVERIFIED¹

RECORDS

VERIFIED

RECORDS

SPECIMENS



- I am happy with my note book and pencil in the field - I have a system and it works! BUT
- Many of us love to use recording Apps and would be lost without technology! We are all different so to an extent we should all be allowed to record how we want to - otherwise we won't do it!

RECORDS

TRAINING & EXPERTISE

I don't mind spending my own money as long as

valued. I just want to go out and record!

But please could someone clearly identify which

data should be sent where? How about just

one secure place for all the data to go, where

everyone can drop in and collect the data they

Sometimes I need to collect specimens and

access taxon experts to verify

need.....?

I feel I am playing a part and my contribution is

- We need long term sustainable funding!and to increase recording activityand taxonomic skills! We'll happily receive records via any channel - we don't want to deter recording !! BUT we would prefer recorders to enter data into iRecord, or a centralised system.....lack of standard policies and processes slows down the flow of data and duplicates data handling
- Like recorders, we struggle to determine the best route for dissemination of records to the appropriate organisations - dataflows need to be clearer
 - Sending our records to the national database can be challenging as we need to reformat them from our local databases which slows the process downBUT, once there it's great, we can use the data for our website, Atlas production etc
 - We are happy to share our data with LERCs, to add value and create data products, but we would like to move to an open data ethos so data are more widely available
 - BUT.....maybe some sectors who need access could fund. those who collect and verify?
 - We would like to spend more time educating and less time. processing data and chasing missing information! 11/24



COLLECTION CURATORS

RECORDING GROUP **OPERATORS**

RECORDS & TRAINING.

EVENTS

UNVERIFIED

RECORDS

BIOLOGICAL

RECORDING

COMMUNITY

Recorders, Recording Groups,

Verifiers, Collection Curators,

National Scheme Operators

REFERENCE

MATERIAL

& RECORDS

m

Interview Rich Pictures

- My biggest concern is how to continue to keep my business running in an open data world? For many, funding is so uncertain year to year
- We need simplified data flows, and it would be a huge time saver for us if there was a process to extract data from consultants reports into our database
- With more resources and a coordinated approach we could be delivering a consistent service across Scotland so no one is left out!
- Like others, we want increased verification capacity, consistent recording technologies and standard data formats!

NESBReC

- Perhaps having one central database which we can all contribute to, and access data from, of a known quality, would save a lot of time and resources......BUT
- I would potentially be giving up control of our inhouse local database and putting this in the hands of someone else

SERVICES_

DATA & SERVICE REQUESTS

- We need a shared vision and shared ownership of the future with clear roles and responsibilities so we are not competing for the same space any more.
- It's a joy to be a central hub for the community, for training courses and other events and we can support to NSS, amongst others, in data mobilisation, gap analysis, data validation, publishing newsletters, developing websites and hosting meetings.......SO
- If aspects of our roles are to change, supporting recorders and NSS would be something I really think service providers need to retain
- Assuming a sustainable source of income for all, could there be an automated online system through which data users can request and subsequently access data for an appropriate fee – to free up time for innovation and moving service provision businesses into new spaces?
- Consistent use of biodiversity records needs to be an integral part of screening planning applications - we need Scottish Government legislation to intervene
- Notwithstanding budget cuts, a simple online system for rapid screening of applications would be a good start!
- We all need specialist IT support increased sharing of skills and tools has been a real success for some - perhaps we could create a more formal 'shared services' model?
- We really value all of the effort that goes into the process of making data available for us to access and use
- Access to training courses and documentation to accompany new tools as they are developed is vital for me to grasp new systems and processes
- Clear roles and responsibilities for our infrastructure are needed and we must have more sustainable funding models - so I am happy to support change that delivers these

- I hope that as a funder I am going to be able to help us all realise a new shared vision, with clearer roles for all
- We need the funding process (those who are funded, and the funding conditions) to be simpler and more straightforward
- There need to be clear partnership agreements with KPIs – more time should be spent using funds than reporting on it!
- In return for funding I do expect project partners to make their data open in a standard format – and a new infrastructure model with buy-in from all should help
- I need to get maximum bang for my buck when I invest and I would like to see Service Providers embracing new technology and ways of working to reduce their reliance on income from National Government

- It's great that there are small grants available for local recorders from different funding sources and I would like to see more of this
- We should tell more success stories and celebrate our achievements
- We need to have automated verification tools and invest in shared tools and process to increase data flow
- We need to support the development and improvement of tools and databases - I would love to see all NSS's engage with new systems and process to mobilise their data eg iRecord and Indicia
- We need the planning process to enforce use of best available biological data and to invest in the recording infrastructure

_RESOURCES,

I really like the idea of an efficient

applications

country.

OUTCOMES & OUTPUTS

screening process for all planning

Access to data from a central repository

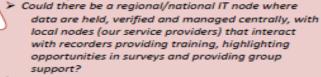
consistent level of service across the

would make life a lot easier ensuring a

Scottish Natural Heritage

Service Providers, Service Users, Funders

SERVICES



- This would be a really efficient system an aspiration we all want but cannot achieve with our current infrastructure
- We need to encourage, improve and facilitate networking and the transfer of knowledge and skills

stirling Council

12/24

Interview Rich Pictures

- A key part of our role is to collate data and make them available, so we need clear policies and agreements to prevent data misuse and ensure protection of sensitive species
- There is a need to be able to diaitise and share historic data, including museum specimens and paper records



- Data quality is very important to us so we need clear data management systems and processes and streamlined dataflows especially between us and verifiers
- We need more people trained in taxa identification!! But also verification processes that make use of technology would help empower the small numbers of hard working verifiers that do exist.
- Efficient, clear, and, ideally, live data flows would make our job easier - it is challenging to know whether we should share records to a national database, or whether they have already been provided by another data provider

QUALITY ASSURED DATA

UNVERIFIED RECORDS: VERIFICATION SERVICES

- There is a lot of duplication of effort because pathways are not clear! We spend considerable time reformatting data that we receive into a standard format that can be shared - everyone likes to do things differently but it would save a lot of time if we didn't have to do this
- What would really help is to find better ways to mobilise data using online recording..... to help data flow into a central data warehouse, where users could access and download their data holdings and see the quality of a record from a simple flag. This central database could service data requests too
- For all this to work we need a stable, centrally funded model for recording schemes so that collection, verification and management of data are paid for by those who use the data.
 - > We really appreciate all the effort that goes into collecting, checking, curating and sharing biological records
 - We recognise the need for the taxonomic skill deficit to be addressed, not only to ensure data can be collected and verified but also to ensure that we have individuals with the skills to interpret data
 - > We use data to support planning applications a more consistent screening process is needed, with better alignment of charging rates

DATA COMMUNITY Data Providers.

Data Developers. Data Users

INFORMED DATA OF DECISIONS KNOWN QUALITY



DATA DEVELOPERS

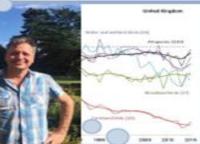
To maximise use of data, having a standard format to present the data makes life a lot easier.....BUT if I need to I am happy to collate data from a variety of formats to bring them together

> We need access to tools such as GIS software.

RAW DATA:

DATA PRODUCTS

DATA PRODUCTS



We all need access to raw data of known quality, this isn't just biological recording data, but also socioeconomic data and other datasets so we can bring data together > For me open data makes my life so much

easier as I have a huge pool of possible datasets to rapidly access and explore.

I should be showcasing and promoting case studies of how I use data to encourage others to do the same, while providing confidence to data providers that I'm responsible in my use of data

- My vision is to have reliable, easily accessible, high quality data with confidence of full coverage of the local area - legacy databases would have to be amalgamated into a secure, stable national database, but this would eliminate the need to gather data from various sources
- We need an agreed model for data flow that everyone uses and funding aligned with it

LERCs play an important role - offering interpretation services, finding local data which may not have been shared centrally yet, supporting recorders and engaging with the local community

We need a culture of open data to be adopted but the current funding models don't allow this - alternative funding streams are needed to ensure continuation of data sharing and other vital services!

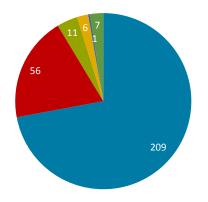
DATA

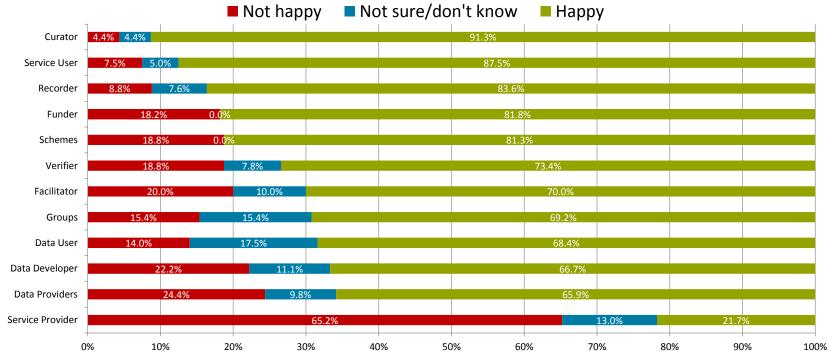
PROVIDERS

Questionnaire findings

■ Scotland ■ England ■ Wales ■ NI ■ UKOTs ■ Unknown

72% of responses from Scotland, 19% from England





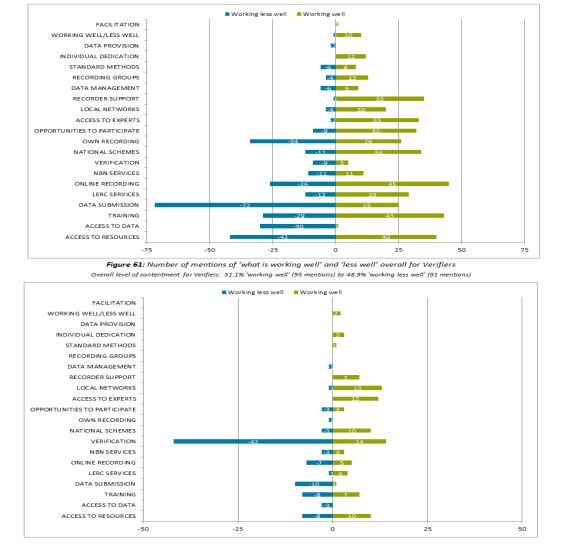
Service Providers are least happy about Open Data because of the need to cover costs...

Training, LERC services, national schemes and online recording working well; access to resources, access to data, data submission and verification working less well...

Overall level of contentment across all roles: 54.1% 'working well' (814 mentions) to 45.9% 'working less well' (692 mentions) Working less well Working well FACILITATION WORKING WELL/LESS WELL DATA PROVISION INDIVIDUAL DEDICATION STANDARD METHODS 12 14 RECORDING GROUPS DATA MANAGEMENT 10 RECORDER SUPPORT LOCAL NETWORKS ACCESS TO EXPERTS OPPORTUNITIES TO PARTICIPATE OWN RECORDING NATIONAL SCHEMES VERIFICATION N BN SERVICES ONLINE RECORDING LERC SERVICES DATA SUBMISSION TRAINING ACCESS TO DATA ACCESS TO RESOURCES -125 -100 -75 -50 -25 0 25 50 75 100

Figure 59: Number of mentions of 'what is working well' and 'less well' overall for all respondents

Figure 60: Number of mentions of 'what is working well' and 'less well' overall for Recorders Overall level of contentment for Recorders: 58.1% 'working well' (432 mentions) to 41.9% 'working less well' (312 mentions)









<u>CENTRALISE</u>

- 1. Definitive, centralised data flows.
- 2. Auto-verification and early aggregation.
- 3. Automated social media harvesting.
- 4. Improved feedback to recorders.

REGIONALISE

Regional Services

- 1. Regional rather than local services.
- 2. Online access to all services.
- 3. Automated planning screening.
- 4. Support needed for local data curation.

4 regional hubs (Aberdeen, Edinburgh, Glasgow, Inverness?), 1 national hub (Stirling?), 1 central hub (UK): £3.07m Scotland, £12.75m UK

REVOLUTIONISE

- 1. We collectively believe in our vision.
- 2. New organisation to provide governance.
- 3. Huge value of Super Partners.
- 4. Revolution needed (evolution insufficient).

<u>REALISE</u>

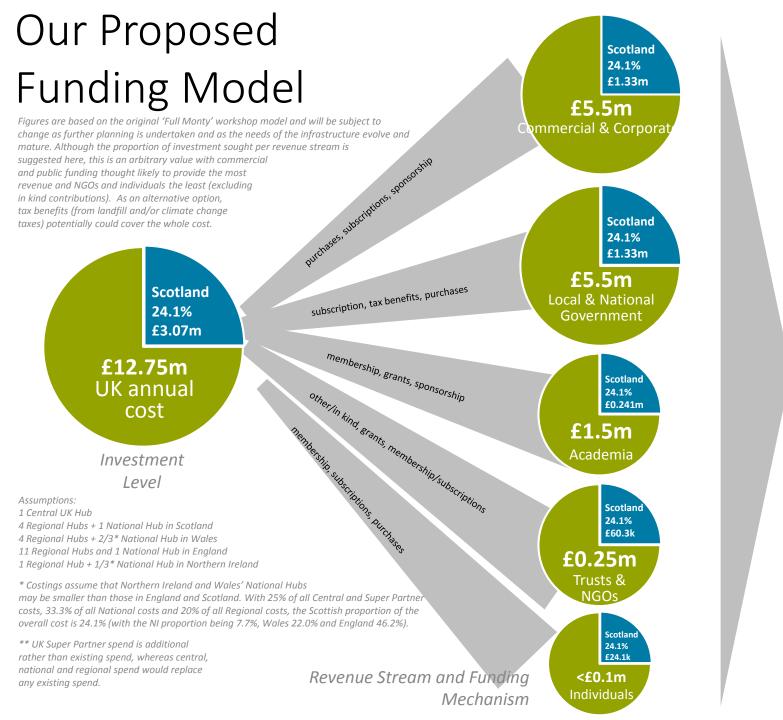
- 1. We must work together to remove competition for funds and share costs.
- 2. The level of investment must be sufficient to make change worthwhile.
- 3. Subscription model or beneficiary of environmental taxation.

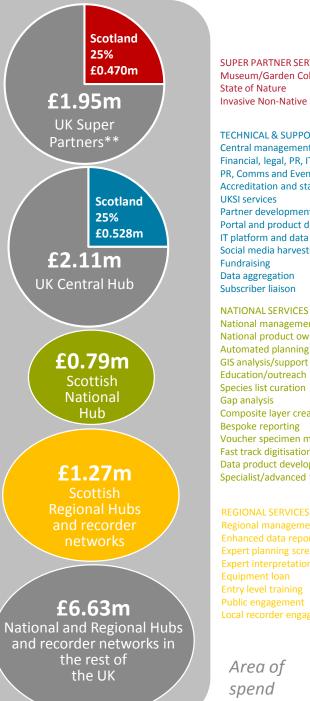




Governance

Funding





SUPER PARTNER SERVICES National Schemes Museum/Garden Collections State of Nature **Invasive Non-Native Species**

TECHNICAL & SUPPORT SERVICES Central management/admin Financial, legal, PR, IT, GDPR PR. Comms and Events Accreditation and standards UKSI services Partner development/support Portal and product development IT platform and data warehouse Social media harvesting Fundraising Data aggregation Subscriber liaison

National management/admin National product ownership Automated planning screening GIS analysis/support Education/outreach Species list curation Gap analysis Composite layer creation Bespoke reporting Voucher specimen management Fast track digitisation/verification Data product development Specialist/advanced taxon training

REGIONAL SERVICES Regional management/admin Expert planning screening Entry level training

Area of spend

18/24

Hypothecation musings

- 2% principle for ease of administration
- 2% of environmental taxation goes to biodiversity causes
- An 'Optimised Proportion' funds national biodiversity infrastructure
- Remainder funds community and conservation projects associated with:
 - i. National schemes
 - ii. Non-native species monitoring and interventions
 - iii. State of nature monitoring and conservation
 - iv. Museums and collections
- Massive public engagement in support of the infrastructure and biodiversity (and health)
- Excellence in monitoring biodiversity and impacts of actions
- Fully open data
- Highly-informed 'community fund administrator' able to best target biodiversity funding

Early implications

- 1. Fundamental change: one infrastructure, one team
- 2. Significant synergies from pooled resources
- 3. Definitive, agreed, championed data flows for everything
- 4. No local aggregation of biodiversity data
- 5. Automation removes the need for some manual tasks
- 6. Change in nature of relationships when data are open
- 7. Strong support for super partners, join-up with museums
- 8. Effort necessary to attract and retain subscribers; not open
- 9. Sufficient central funding could achieve fully open data

Potential benefits

- ✓ Recognition of volunteers and NBI being a 'public good'
- ✓ Substantial funding for the infrastructure
- ✓ Substantial support for Recorders and Verifiers
- ✓ Greater efficiency and greater insight from Open Data
- ✓ Clarity and consistency for data flow and services
- ✓ Access to academic and commercial data
- ✓ More taxonomic skill, more recording, better decisions
- ✓ Scotland being demonstrably effective and can-do
- ✓ Well-being improvements for everyone involved
- Better outcomes for wildlife in Scotland

Potential business case options

- 1. For the overall **change** desired (funding/staffing/extent)
- 2. For an effective **transition** (governance/sequence/recruitment)
- 3. For the level of **return on investment** (high/ medium/low)
 - To articulate the level of investment required and the level of value expected in return
 - Placing a value on the benefits so that the costs are justified



Next steps

Review Phase

FINISH

- Review of the changes needed
- Business case for our recommended options

2017 18

Advocacy Phase

START

- Priming of Scottish Government
- Decision by Scottish Government

2018 19

Implementation Phase

PLAN

- Central systems and governance
- National and regional services and support

Small pearl-bordered fritillary, Glen Affric © Steve Knell

Questions welcome

@sb_info_forum

Monthly highlight reports and all Review outputs are available online: https://nbn.org.uk/about-us/where-we-are/in-scotland/the-sbif-review/

Email Christine: c.johnston@nbn.org.uk or Ellen: ellen.wilson@rspb.org.uk

A free event hosted by the Inner Forth Landscape Initiative



From Source to Resource

A conference on making biological records count

Saturday 10 February, 09:30 - 15:30

Thank you for joining us.

Supported by Buglife Scotland, Stirling Council and The Wildlife Information Centre

