Biological Recording:
The role of volunteers in the conservation panoply

NFBR Conference

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A unique perspective - An independent voice

Outline

NATIONAL FORUM FOR BIOLOGICAL RECORDING

There is an urgent need for gathering quality data for assessing trends in the diversity and abundance of our wildlife.


Mike Rae

Gathering choices:

- **University and other professionals**
- **Remote Sensing**
- **"Coalition of the willing"**
- **The wider constituency**

"Citizen Science"

The Professionals

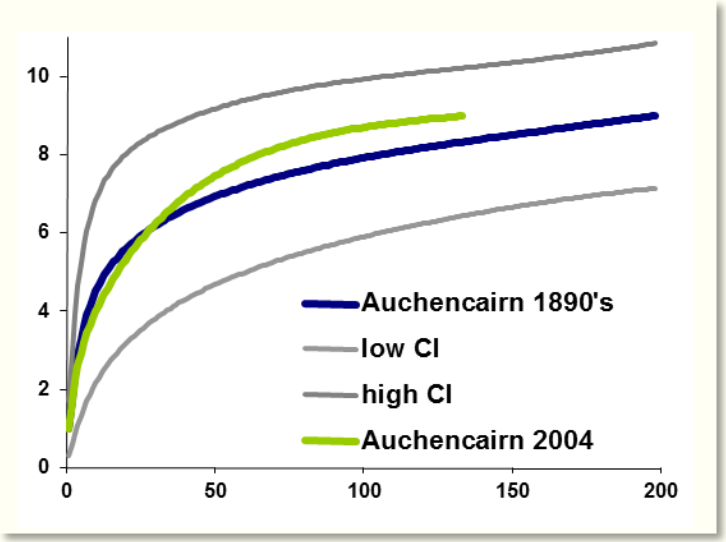
National Forum for Biological Recording

- University academics
- Museum based taxonomists
- Policy and decision makers
- Conservation Agencies
- Land owners and managers
- Ecological consultants

defra
Department for Environment Food and Rural Affairs

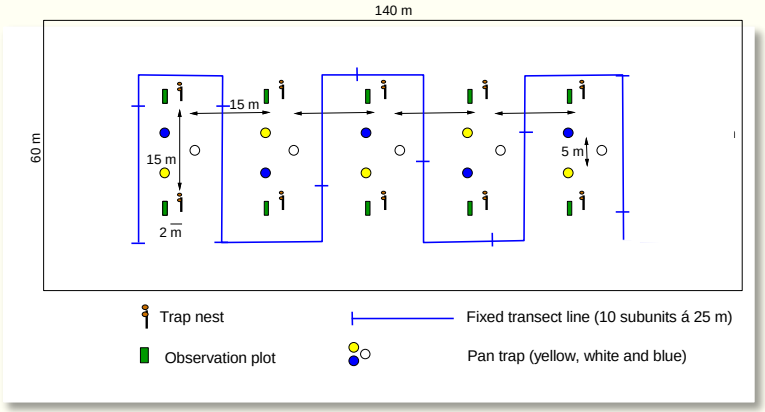
SCOTTISH NATURAL HERITAGE
DUALCHAS NADAIR na h-ALBA

The Professionals



Professional skills

- Resources
- Ability to design and work to protocols to ensure results are scientifically valid
- Analytical skills
- Reporting skills



The Professionals; The downside

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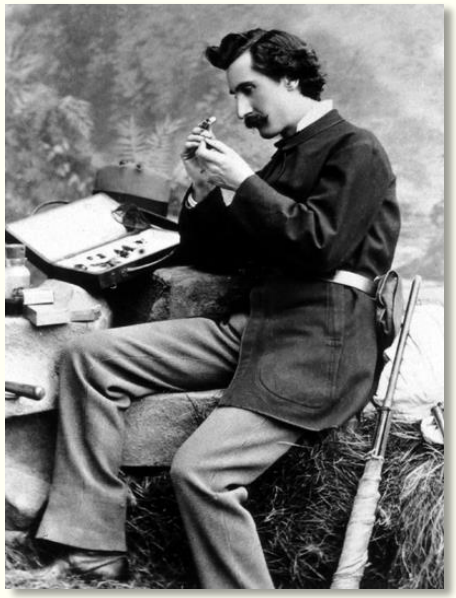
Cons

- Relatively few in number
- Expensive to hire



Summary

- Ideal (or even essential) if you can fund them adequately and find suitable candidates

The Volunteers

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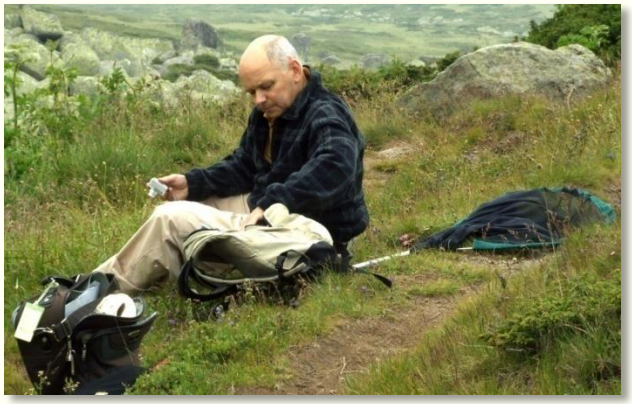

A huge diversity of people from all walks of life:

- Hobbyists
- Gardeners
- All-round naturalists
- Photographers
- Retired professionals

The Volunteers

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Volunteer skills

- A passion for what they do
- Experience & motivation
- Considerable expertise
- Massive databases
- Sound validation and verification protocols
- Boots on the ground
- TIME

EIS stichting european invertebrate survey nederland

NL: 120,000 records

UK: 530,000 records

LIETUVOS GAMTOS FONDAS

LT: 90,000 records

The Volunteers; The downside

National Forum for Biological Recording

Cons

- Data gathering methods mostly non-standardised
- Free to do what they like and when they like (i.e. different priorities)
- Subject to bias
- Different timescales

Summary

- For large scale data gathering this group is ideal..... If it can be mobilised effectively

The Wider Public

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Public

- Colossal numbers of potential recorders or observers
- An untapped resource?
- Making a difference

http://www.greatsunflower.org/

The Public; The downside

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Cons

- Identification skills: nil
- Restricted target taxa
- Rely on photographic dets.
- Inaccuracy a problem
- Time consuming and expensive to deal with QA
- Sustaining interest
- A lack of understanding at political level

Summary

- For data-gathering at a huge scale... but with extremely limited aims, this can be very useful.

The Costs of Citizen Science

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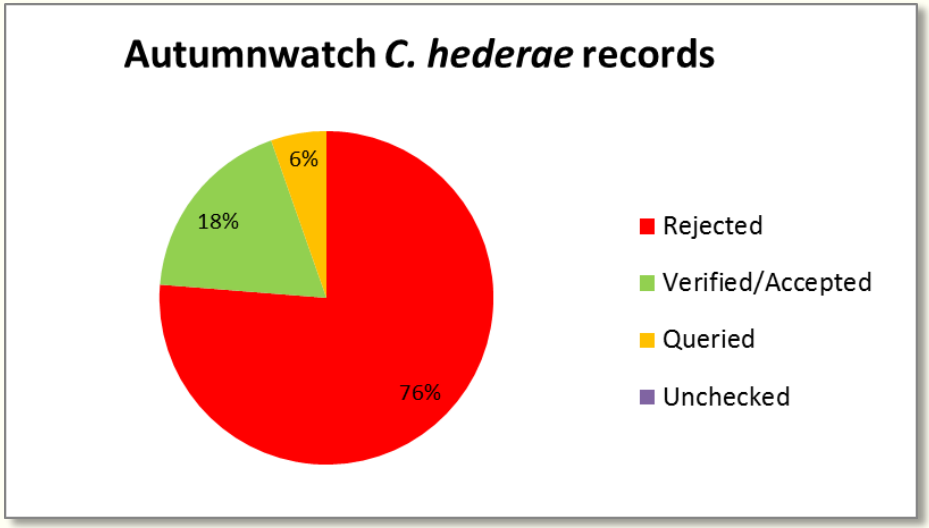
- Looks a beguiling option to cash-strapped organisations
- Apparently free labour
- BUT - quality data needs rigorous validation and verification
- Understanding volunteer motivation is essential
- Never presume on the time, goodwill and expertise of volunteers

Costs

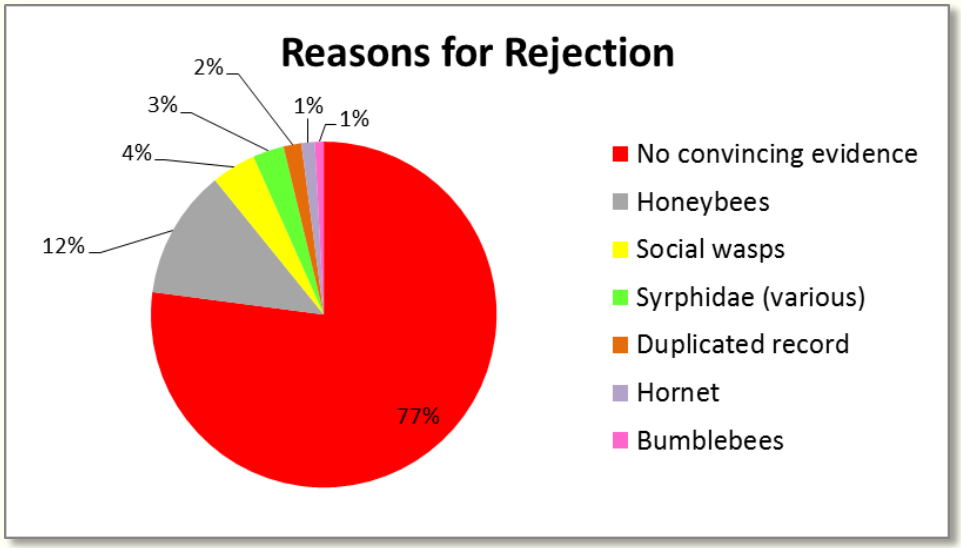
- Latest estimates for BWARS and HRS
- c. £490,000/year

The Costs of Citizen Science



- n=316
- 4 days of time to verify
- c. 450 emails sent
- 316 verification or rejection comments

- This is a species that **can** be identified from photos
- Cost per verified record
- c. £18.30p



The Great British Bee Count 2014

National Forum for Biological Recording

The Bait

- 10 taxa to be recorded
- Handy coloured guide produced
- Sponsored by B&Q
- Easy to use phone App. for data uploading
- Promoted by well known campaigning NGO
- Making a difference

The Results

- 832,000 records
- 23,000 people engaged
- Many radio and TV interviews given
- Newspaper articles
- 2 species new to Ireland

WOW!!!

The Great British Bee Count 2014

National Forum for Biological Recording

But……

Among the 10 taxa to be recorded….

- 3 had finished season before project launched
- All social wasps lumped together
- Bumblebees covered by colour, not species
- No photo uploads possible
- No proper sampling protocol
- No verification possible

- **ZERO USABLE RECORDS**
- **Citizen Science… or Public Engagement?**

Reassurance

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Volunteers need

- Guarantees
- Recognition
- Support
- Awareness raising
- Convincing of the role of professionals

Professionals need

- Convincing of the role of volunteers
- To be shown "how"

Case Study; BWARS

National Forum for Biological Recording

- The Society is fully volunteer
- Broad-based membership

The Society is the only source of fully validated publicly available data on the distribution and ecology of all British bees and wasps, and has an important role in making information available

www.bwars.com
http://data.nbn.org.uk/

"*The value of data is in its use, not merely in its possession*" GBIF mantra

BWARS Role

NBN Gateway

Hymettus

Data & Maps

Data & Maps

Data & Maps

TV & Radio

BRC Biological Records Centre

Data

Funding

Data

Taxonomists

Funding Data &

Expertise

Data & Expertise

Members **Museums** **Universities**

National Museums Liverpool

World Museum

National Museums Liverpool

UNIVERSITY OF READING

Trinity College Dublin

BWARS Role

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BWARS IS:

- 100% Volunteer
- Independent
- Active in Biological Recording
- Dedicated to making data available to academics, NGO's, statutory bodies, LERC's etc.
- Keen to raise awareness

BWARS is NOT:

- Engaged in advocacy or campaigning
- Involved in direct conservation action

Citizen Science in action: Tree Bee

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- Widespread in Europe
- Previously unknown in UK
- Undergoing range expansion everywhere
- Catholic choice of habitat
- Broad pollen forage spectrum
- Partial second brood

Arrival

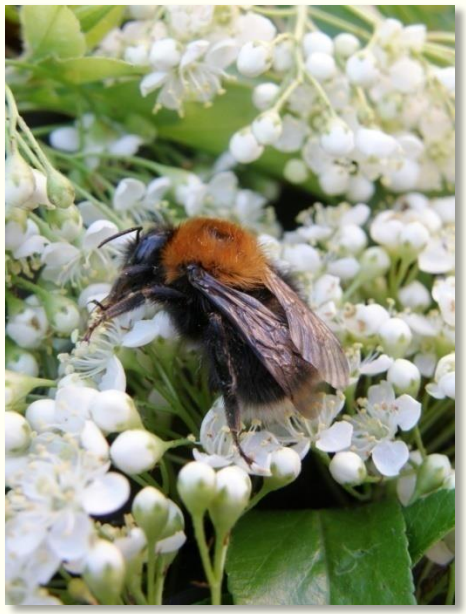
BR. J. ENT. NAT. HIST., ●●●: 2001 01035.1

BOMBUS HYPNORUM (HYMENOPTERA: APIDAE), A NEW BRITISH BUMBLEBEE?

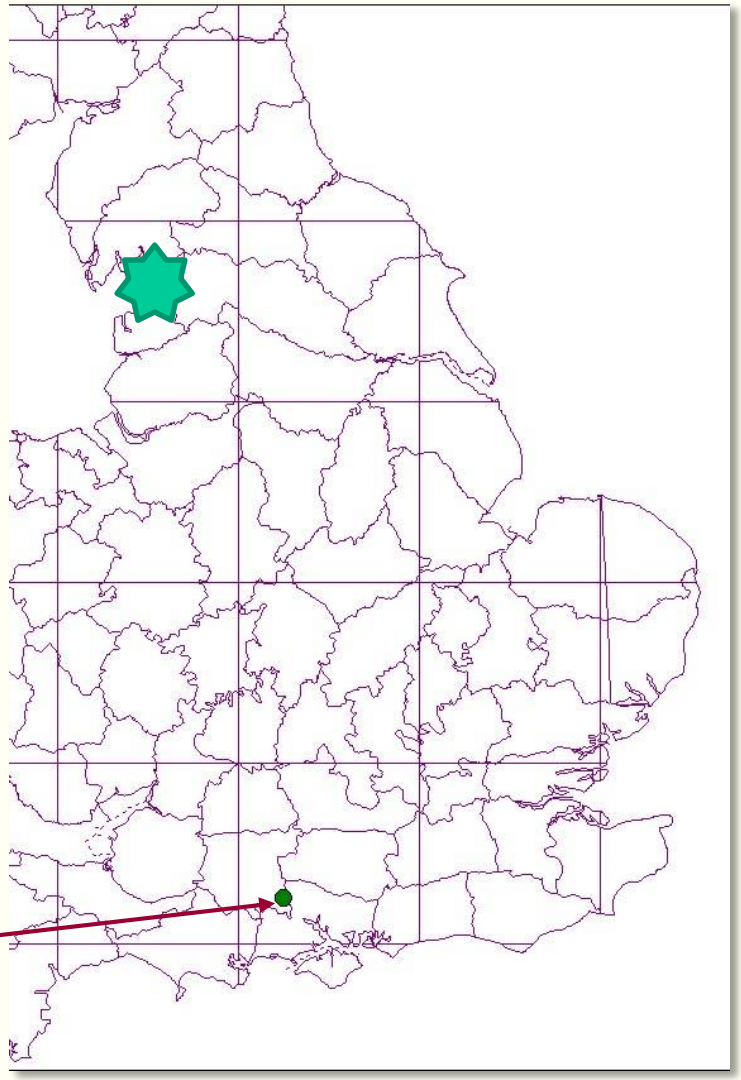
DAVE GOULSON[1] AND PAUL WILLIAMS[2]

[1]*Biodiversity and Ecology Division, School of Biological Sciences, University of Southampton, Biomedical Sciences Building, Basset Crescent East, Southampton SO16 7PX, UK. Email: dg3@soton.ac.uk.*
[2]*Department of Entomology, The Natural History Museum, London SW7 5BD, UK*

Abstract. A male of the bumblebee *Bombus hypnorum* (L.) has been collected in Wiltshire. This species has not been recorded previously from Britain and its identification and status are discussed.



Discovery site, 17 July 2001; Landford



A problem with identification

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"The species of Bombus are exceedingly difficult to distinguish apart, the colour of the pubescence varies so greatly in different specimens of some species that it is wise to rely only on structure as a character in the discrimination of species; these characters are often very obscure, and difficult to appreciate"

Edward Saunders (1896)

A candidate for Citizen Science

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- Distinctive and unique colour pattern
- Identifiable to species level from photographs

Worker

Male

A candidate for Citizen Science

- BWARS well placed to launch a campaign
- 450 members across the whole of UK
- Immediate interest in tracking the spread
- Nests regularly in bird nest-boxes

A candidate for Citizen Science

National Forum for Biological Recording

- Accessing the public via Social Media (eg WAB, iSpot, FB, Twitter)
- County Wildlife Groups
- Other Wildlife NGO's
- BBC Springwatch
- Involvement of the BBCT
- Online recording via iRecord and via apps

A candidate for Citizen Science

National Forum for Biological Recording

Hymettus

MENTER AR Y CYD: HYMETTUS — BWARS

Taflen Gwybodaeth 3

Ebrill 2010

Coed Cacwn Tingoch

(Bombus hypnorum)

Stuart Roberts & Caryl John

BWARS

Cynnwys:

* Pwysig pollinator gwyllt o goed ffrwythau
* Newydd goloneiddiwr y DU
* Uchel patrwm lli arbennig
* Allwch chi ychwanegu at ein gwybodaeth?

Hanes a dosbarthiad yn y DU

Cafodd y Gwenynen coeden (*Bombus hypnorum*) ei ddarganfod am y tro cyntaf yn y DU yn ystod haf 2001 wrth sampl o'r ffin rhwng (Hampshire a Wiltshire). yn ystod y blynyddoedd a oedd yn dilyn, gwelwyd hwn yn gysm yn ardal Southampton, a ddarganfyddwyd poblogaethau newydd yn Hertfordshire. Ers 2007, bu ymlediad enfawr mewn amrediad a bu digonedd wedi eu cofnodi. Cafwyd cofnodion mor bell ar Gogledd o Northumberland, ac Orllewin Cymru.

Ar y cyfandir yn Europ, mae'r rhywogaeth yn eang, a gellir dod o hyd i ddigonedd hyd yn oed ar gorynys kola yn ardal Arctig Rwsia.Yn bennaf, mae'n wenynen o safleoedd iseldir, a chysylltwyd yn gryf a pharciau a gerddi

Brenhines *Bombus hypnorum* yn gorffwys ar deilen.

The data arrives

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Dear Mr Roberts,

While checking nest boxes on the 28/05/2009 in mixed woodland, surrounding the FERA Labs, at Sand Hutton near York (Grid ref SE672 584).

I came across a bee standing guard at the entrance to one of the boxes. While it is not uncommon for me to encounter the odd bee inside a nest box which I assume are either a buff or a white tailed (they usual fly off as lift the lid and before I have a chance to id them) and even the odd wasp nest, this encounter was different.

While watching the guard, it would on occasion turn 360 deg, which allowed me to see that it had a ginger thorax with no other yellow bands, with a black abdomen and a white tail.

As I watched the bee began to fan in wings in alarm, which elicited a response from the rest of the bees inside. I carefully opened the lid and at least 10-15 bees started to emerge from the box before I had a chance to gently close it.

Mapping

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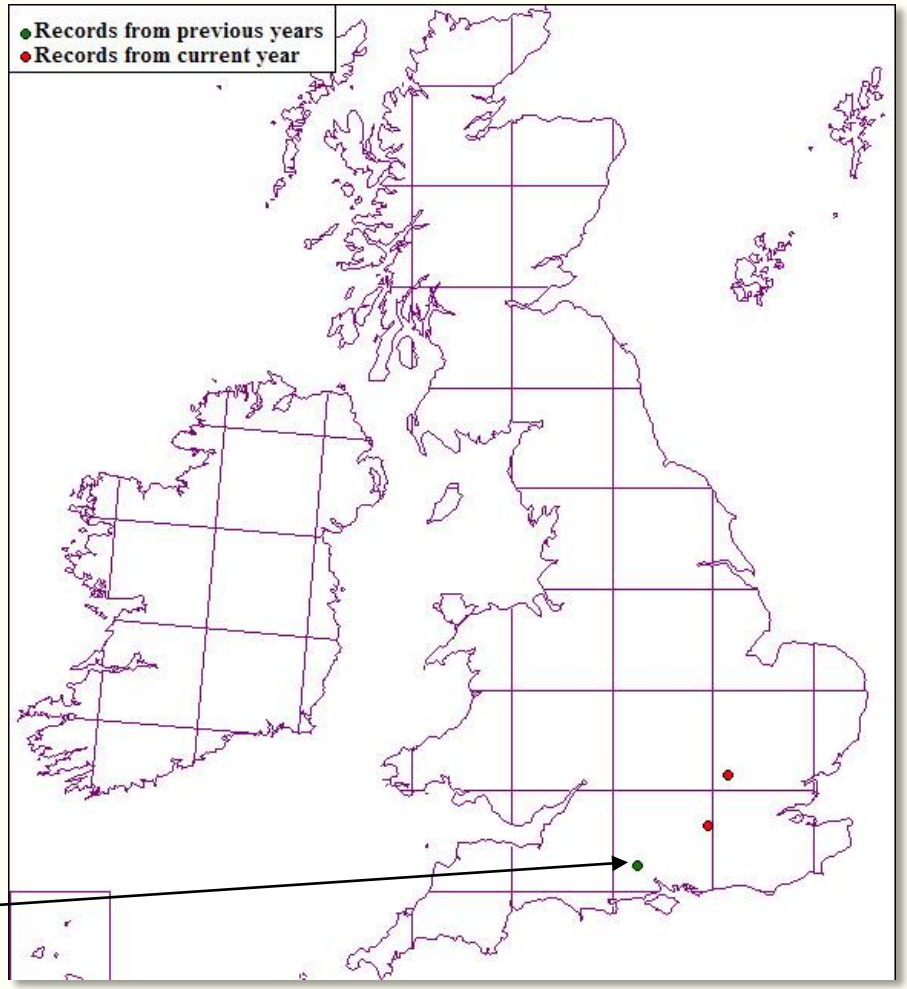
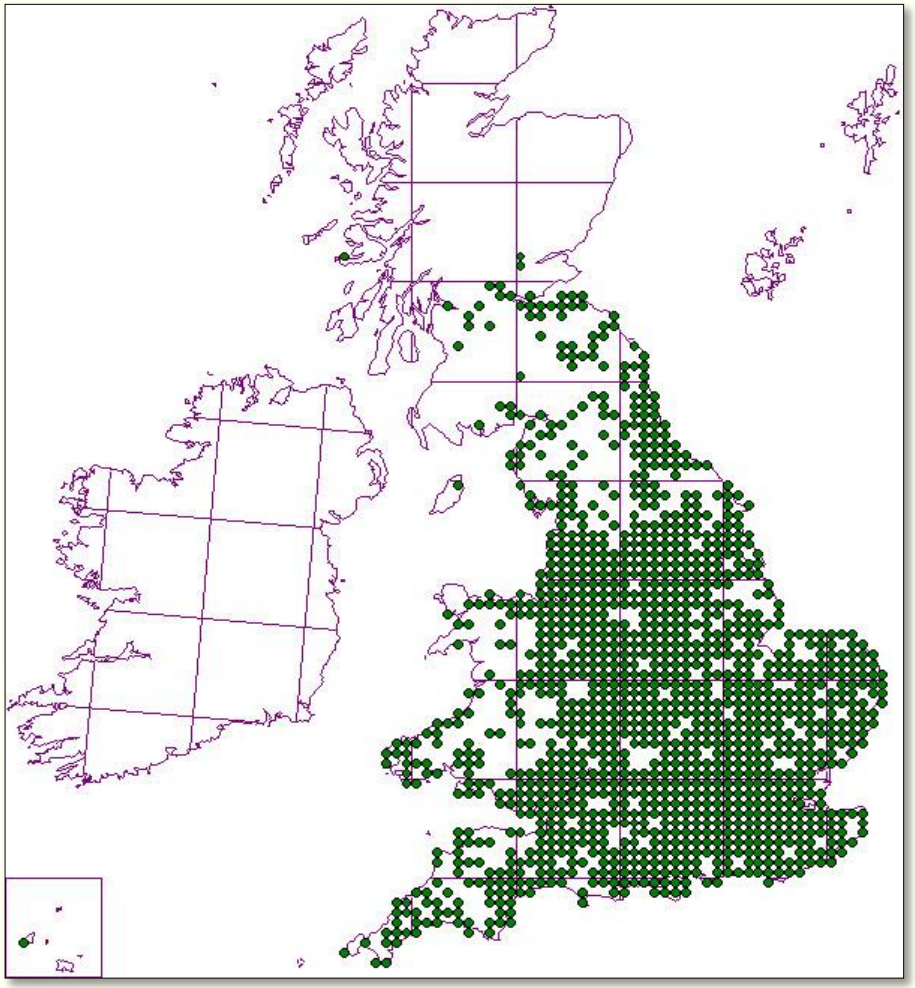
- First record in 2001
- First nesting records in 2004
- In the 15 years since its arrival in the UK, *B. hypnorum* has come from THIS



2001-2004

Mapping



2015 (BBCT data to add)

- Occupied Grid cells 1 Jan 2015: **1170**
- Occupied Grid cells 31 Dec 2015: **1265**
- Total of 1600+ data
- Largely absent from uplands
- New to Man in 2015

Value

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- New relationships can open up new areas of research
- Applied links with conservation and agriculture

defra
Department for Environment Food and Rural Affairs

SCOTTISH NATURAL HERITAGE

NATURAL ENGLAND

Cyfoeth Naturiol Cymru
Natural Resources Wales

NIEA
www.ni-environment.gov.uk
Northern Ireland Environment Agency

Uses

National Forum for Biological Recording

Recent papers and Publications:

- Nieto, Roberts, et al. (2015). European Red List of bees. Luxembourg: **Publication Office of the EU**.
- Rasmont et al. (2015) Distribution Atlas of European Bumblebees. **Pensoft**
- Ollerton et al. (2014) Extinctions of aculeate pollinators in Britain and the role of large-scale agricultural changes. **Science** 346.6215: 1360-1362.
- Kerr et al, (2015). Climate change impacts on bumblebees converge across continents. **Science** 349 (6244), 177-180.

Challenges

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Where to record?

- LERCS?
- National Recording Schemes & Societies?
- Other NGO's?
- iSpot?
- iRecord?
- FB?
- Twitter?
- Flickr?

Melissa Harrison

Confusion

- Too much choice?

Challenges

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Open Access: Participants

- I consulted a number of people who have an interest in data gathering, verification, data flow and data use
- Statutory bodies: 3
- Schemes & Societies: 4
- LERC's: 1
- NGO's: 2

Challenges

National Forum for Biological Recording

Open Access: What is it?

- Open data and content can be freely used, modified, and shared by anyone for any purpose
- Data available to others to use for free at the level of detail at which it is made open
- Data available to others to use for free at all times but at a full resolution with full attributes
- Data available to users who can re-use it however often they like, without contributing towards data gathering or data management costs
- A means for government to get rid of costs of development

Challenges

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Open Access Benefits:

- Wider use of data would enable better informed decisions to be made on development and conservation action
- Potentially rapid movement of data around the network
- Easier for academics or other users, with little knowledge of how volunteer schemes work, to access data
- Value of public benefit if data generated through public funding
- Ensure that data providers' information would actually reach the intended users

Challenges

National Forum for Biological Recording

Open Access Drawbacks:

- Reduction of income to LERC's from commercial bodies
- Loss of funding from LERC partners could lead to loss of LERC's
- Loss of control over data use (eg rare edible fungi being over collected, rare orchid sites being crushed and trampled by ignorant photographers (both known issues)
- A reduction in data provision or withdrawal of data
- Breach of existing agreements with data providers
- Free access to data may be subsidising competitors
- Data misrepresented or abused

Is it worth it?

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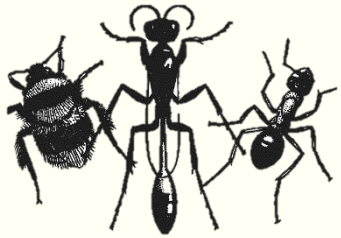
"They [the volunteer recorders] absolutely deserve to feel good about what they do because it is demonstrably valuable and significant both economically and scientifically."

Dr. Tom Breeze
(University of Reading)

Thanks

National Forum for Biological Recording

- NFBR for the privilege of addressing the conference
- Committee, Social Media team and Members of BWARS
- Colleagues at BRC (especially Helen & David Roy)
- Tom Breeze (UoR)
- The contributors to my *ad hoc* information trawl on Open Access
- The volunteer recording community



NBN Gateway

BRC Biological Records Centre

Uses

National Forum for Biological Recording

Recent papers and Publications:

- van der Wal et al (2015). Mapping species distributions: A comparison of skilled naturalist and lay citizen science recording. **Ambio**, 44(4), 584-600.
- Isaac & Pocock (2015). Bias and information in biological records. **Biological Journal of the Linnean Society**.
- Senapathi et al (2015) The impact of over 80 years of land cover changes on bee and wasp pollinator communities in England. **Proc. Roy. Soc.(b)**
- DEFRA (2016) UK Biodiversity Indicators 2015