NBN Conference 2016: Workshop 5 – Biological recording online

Workshop aim:
To capture people's experience of what currently works well and what doesn't, and to identify positive steps that would benefit the future development of online recording.

Some context:

- 87.9% of adults in the UK (45.9 million) had recently (in the last 3 months) used the internet, compared with 86.2% in 2015.
- 10.2% (5.3 million) had never used the internet compared with 11.4% in 2015.
- Almost all adults aged 16 to 24 years were recent internet users (99.2%), in contrast with 38.7% of adults aged 75 years and over.

(Office for National Statistics. 2016. Internet users in the UK: 2016)

- The internet was used daily or almost daily by 82% of adults (41.8 million) in Great Britain in 2016, compared with 78% (39.3 million) in 2015 and 35% (16.2 million) in 2006.
- In 2016, 70% of adults accessed the internet 'on the go' using a mobile phone or smartphone, up from 66% in 2015 and nearly double the 2011 estimate of 36%.
- Desktop computers are down in popularity with only 40% of adults using these to access the internet in 2016.

(Office for National Statistics. 2016. Internet access – households and individuals: 2016)

The following notes are derived from what was written on the flipchart pages by the workshop leader during the workshop, based on participant responses and comments – there was agreement in the room that the flipchart had correctly recorded what people were saying, but apologies for anything missed out or misrepresented!

What do you like about online recording?

- Makes it easy to learn new things and find out if you've recorded something special or unusual
- It's easy and instant
- Contribute to building up a bigger picture of wildlife, and makes it easy to share experiences
- Online websites and apps provide easy access to tools and resources, much is widely and freely available
- Ability to store and share photos with records
- Online recording encourages/imposes a good data structure from the outset
- GPS-enabled systems make it easy to give locations more precisely and accurately

What don't you like about online recording?

- Users may add records in the hope that they will be identified or checked by others, creating an expectation that 'someone else will do the hard work' – this can put pressure on scarce volunteer resources and expert knowledge
- The increased use of photos for recording may lead to a new bias in biological recording (e.g. towards the more photogenic species, and/or to those that can be safely identified from photos)
- Connectivity in the UK is still patchy – working online can be difficult or impossible, especially in remote (or even not so remote!) rural areas

Online recording standards
The workshop moved on to look at what progress was being made with online recording, using a framework of the 14 *NBN Standards for integrated online recording and verification* (Lightfoot and Wilkinson 2012, available from the NBN Online recording resources page). We tried to assess which of these standards was already in place in the major online recording systems, which were almost in place, and which needed further work and development.

Inevitably it was hard to assign all standards unambiguously (see the additional notes below the table), not least because some standards are implemented in some systems and not in others. But we persevered nonetheless and ended up with these results:

NBN online recording standard	More-or-less in place?	Not far off?	Needs development?
1) Uses centrally updated NBN Species Inventory and Habitats dictionary	✓		✓
2) Exchange data in a standard format	✓		
3) Recorders give consent for their records to be shared and used at the point of data entry		✓	
4) Uses NBN validation and verification checks	✓		✓
5) Records are collated into datasets and shared via the NBN Gateway under the administration of appropriate organisations		✓ ↔	✓
6) Passes data directly to the NBN Gateway via web services/without manual handling		✓ ↔	✓
7) Identify sensitive data using a clear application of the NBN criteria	✓		
8) Automated synchronisation of verification comments between systems		✓	✓
9) Controlled vocabulary for verification status across all systems	✓ ↔	✓	
10) Unverified data needs to be made available promptly to key users			✓
11) Data should have accompanying information (meta-data)	✓		
12) There should be a single top-copy version of the data			✓
13) Clarity is needed over who can edit records and add determinations			✓
14) Personal details should be handled appropriately	✓		

Notes on the standards from the above table

1): species dictionary (UKSI) is widely used, but there is much less standardisation for habitats
2): although not universally implemented, the NBN exchange format is widely used
3): recorder consent is widely appreciated is an issue; it is currently handled in a variety of ways, but approaches such as Creative Commons licensing may offer a more consistent way forward
4): Record Cleaner is being implemented in some online systems, but a more comprehensive and regularly updated (auto-updated?) system would be ideal
5): Record collation and upload to NBN can work well, but depends on data flows being in place and agreed by recorders, recording schemes and records centres – still work to do here
6): (Semi-)Automated upload to NBN is in place for some systems (e.g. iRecord, for those recording schemes that want to use it), but is not yet widely implemented or taken up
7): Most established systems do allow for sensitive records to be identified and dealt with appropriately
8): Verification decisions and comments can be linked to records, and work is being done on automated exchange of verification data (e.g. between BirdTrack and iRecord), but still more to do in this area
9): A vocabulary exists for verification decisions, which has been implemented using similar terms and concepts in a number of systems, although there is more to do to increase the consistency of this approach
10): The sharing and use of unverified data is being increasingly discussed but more development is needed to make this happen in a safe and well-understood way
11): The concept of metadata is widely appreciated (if not yet universally applied)
12) and 13): There is not yet consensus on how best to identify a 'top-copy' of each record and how to implement and track any edits that may be required
14): Personal data is subject to data protection laws and all online recording systems should be abiding by these

The future

We finished by brain-storming what the future might hold for online biological recording. These are the ideas and suggestions we came up with (in the order they were written down – this does not imply any prioritisation):

- Recording via voice recognition (i.e. recorder can use voice to record sightings, rather than having to use a keyboard or similar)
- Recording songs and calls of wildlife, leading to automated data capture and species recognition (already happening with bat recording)
- Online systems to have intelligence to recognise and harmonise duplicate records
- Build species identification (keys, guides, image recognition etc.) into recording apps
- Query existing data 'live' to let people know what species they might see at the time of year and/or in the geographical area
    - Use existing data to target "missions", e.g. species record in area but not for a long time; species associated with species recorded
    - Can we 'gamify' this to get more people involved?
    - Could existing biological data be used to provide a virtual reality guide to wildlife in an area?
- Harvest more data from social media, academic publications, photo repositories – from every untapped online source!
- Online systems could provide more intelligent feedback to recorders about their records (maybe using automated natural language generation systems, see http://onlinelibrary.wiley.com/doi/10.1111/cobi.12705/abstract)
- Can funding and resources be made available to small organisations to allow them to create and participate in online recording systems (which can still be very costly to develop and maintain)?
- Progress is being made in automated sound and image recognition for species identification, and recording species via environmental DNA is also becoming a reality – what online systems will be needed for these potentially 'game-changing' developments, and what will this mean for 'traditional' biological recording?
- Online systems/apps will become more personalised, allowing people to customise systems to fit their requirements
- There is a lot of focus on the basics of online recording (what species, where, when), but what about wider natural history and autecological studies – can online offer more support for this aspect of biological recording?

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Thanks to all participants for their contributions