Community **Science**

Annual Report 2016

In partnership with

Contents

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With thanks…

… to the Heritage Lottery Fund, our project partners and most of all, Community Science volunteers!

Executive summary

In the second year of delivery Community Science has achieved a potential audience reach of over 2 million including radio, print and online coverage – bringing the project total to over 11.5 million people.

We have engaged 342 named volunteers, including 13% retention of volunteers from 2015, who have dedicated 5,571 volunteer hours – the equivalent of 796 days and more than 3 Full-Time Equivalent roles) to Community Science.

11,445 Opportunistic Monitoring postcards were distributed at 154 engagement events and static locations, including 4 weatherproof leaflet holders in visitor hotspot car parks. We received 1124 records this year, more than double the number received in 2015, yielding a 10% response rate, which is towards the upper limit of return rates cited by other citizen science projects. Overall digital data collection methods (iRecord; web form and smartphone app) were more popular than paper alternatives, accounting for 72% of records submitted in 2016.

Spring 2017 will see the staggered launch of new Opportunistic (Scales and Warts) and Targeted (Tails of the Uplands) Surveys, designed by Stockholm Environment Institute. The new surveys will not only add to the suite of moorland monitoring evidencing the impact of climate change on the moorlands of the South Pennine Moors Special Area of Conservation – they will also attract new interest groups and provide additional engagement opportunities for existing and new Community Scientists.

During 2016 we trained 448 volunteers in ecological survey technics during 38 Targeted Monitoring survey sessions including: Bumblebee surveys; *Sphagnum* moss surveys (which, through trial and error had improved through-out 2016) and this year's new survey – Buds, berries and leaves. We now have a network of 37 Community Science transects, 7 of which were set up in 2016, to monitor bumblebees and buds, berries and leaves.

We have extended the network of environmental monitoring sites to the south west and plan to install the remaining three EM sites in 2017. The annual vegetation monitoring campaign was completed across sites and Community Science EM volunteers and sites were included in the wider Moor for the Future Partnership's routine water-table monitoring campaign for the first time. Routine monitoring continued across sites through-out the year. By the end of the 2016 vegetation monitoring campaign we had 51 individual, active EM volunteers, with an average of 13 per site.

Looking forward the coming year we will continue to focus on recruiting, training and supporting a team of volunteer Project Assistants who will become increasingly involved in project delivery. We have also identified a range of potential collaborations and engagement opportunities with external organisations and volunteer groups as well as continuing to work with existing partners and partnerships.

Ensuring the legacy of Community Science and continued delivery of its outcomes beyond 2018, including ongoing volunteer recruitment and facilitation of sustainable volunteer journeys, is the Project Boards main priority over the coming years and will be supported by continuation planning in spring 2017.

Communicating Community Science

In the second year of delivery the Community Science team have continued to engage new audiences from day visitors to local communities, including groups and individuals to whom the opportunity to access green space, explore the great outdoors and learn new scientific monitoring skills would otherwise have been elusive. Whilst reaching new audiences is important, so too is supporting and maintaining the interest of those already engaged in the project. Through the launch of new monitoring surveys and flexibility of our varied volunteer roles, we provided existing volunteers with opportunities to expand their skills and knowledge to new activities or hone their skills and share their experience with others.

Having developed our volunteer strategy and recruitment process we have increasingly engaged volunteers in communication and engagement tasks including representing the Moors for the Future Partnership through Community Science at public events. As in 2015 our engagement event planning has been both pro-active and reactive, and has included an eclectic range of public and private events.

Building on our learning from last year we have mostly targeted small to medium local events including: A British Science Association demonstration day during which we introduced the work we do to 90 students at New Mills Secondary School (*Figure 1 below*) with the Peak District National Park Authority (PDNPA) Learning and Discovery team;

Figure 1: We continue to collaborate with other PDNPA teams and external organisations to make the most out of engagement events like the British Science Association demonstration at New Mills Secondary School with the PDNPA Learning and Discovery team.

an Eastern Moors Partnership led Take the Lead event aimed at engaging with dog walkers and promoting environmental responsible behaviour – as dog walkers often walk the same routes they are great potential Community Science recorders; Bogtastic (family moorland fun day); Into the Blue Natural Environment Research Council (NERC) conference in partnership with Manchester University; Burton Open Gardens;

> **"It was a great success and the students enjoyed it hugely - I had many of them talking to me about it afterwards and saying how they had never realised the importance and role of moss which was fantastic as they had really taken it all in."**
> ***Lorna - Teacher***

Nature Connections festival and village Country Days amongst others. Presenting display stands at 18 events gave us the opportunity to talk to over 3000 people face-to-face. In addition Community Science gave 19 talks to over 430 people including a Geography A Level Conference field trip; an Eco-Science event; Walking groups and Calderdale Council's public Wildwalk. These events give us a platform to introduce Community Science to new audiences in a more targeted manner and have inspired several people to become volunteers.

Figure 2: Community Science talks, guided walks and taster sessions continued to engage new audiences: here out on Snake summit with a University of the 3rd Age (U3A) group.

As well as local events we also continued to showcase Community Science at national and international conferences – increasing our audience reach among environmental professionals and sharing best practice at the IUCN Peatland Conference, UK National Park Educators Conference and EUROPARC conference (added value funding from EU LIFE funded MoorLIFE2020 project) at which Community Science was presented as a case-study in the 'We are Volunteers' workshop.

In total through-out 2016 we actively attended 42 engagement events with an audience reach of over 3750 people. When combined with face-to-face engagement from 2015 we have now presented at nearly 80 events with an audience reach of well over 5000 people.

Figure 3: Local events such as Burton Open Gardens in July provide a perfect opportunity to introduce potential Community Scientists to moorland wildlife and the importance of moorland conservation.

2015 launched the Community Science photography competition, inviting photography entries depicting 'Moorland and Wildlife' from the UK. Following internal and external online publicity the competition welcomed 130 entries from Scotland to Surrey, many of whom had not previously engaged with Community Science. Paul Hobson (Photographer whose signed photography book was donated as part of the first prize) and Kate MacRae (Wildlife Kate) judged a shortlist of 25 outstanding photos and selected 4 runners up and 1 winner. In 2016 we took the show on the road and displayed the shortlisted and winning images at 9 venues including: Edale (*below left*) and Castleton Peak District National Park visitor centres, Bakewell Tourist Information Centre, Huddersfield University and Long Eaton Libraries, Ecclesall Woodland Discovery Centre (Sheffield), Heptonstall museum and Oldham Gallery – with the exhibition spending at least two weeks at each location and featuring in event and exhibition programmes (*Figure 4 below right*).

Figure 4: Our Community Science exhibition of 2015 photography competition winners was included in Heptonstall Museum and Gallery Oldham programmes – broadening our audience reach and generating positive feedback.

Following on from the success of Community Science's first photography competition in 2015 we aim to make this an annual event. Our 2016 Photo Competition titled 'Water in the Uplands' attracted over 700 entries from 179 people. Whilst only images taken in the UK were allowed we were delighted with the broad audience reach and appeal of our competition, with numerous entries from outside the UK. 2016 also saw the addition of an 'age15 and under' category to increase our engagement with younger people and essentially running two competitions in one.

Prizes of the value of £230 were very kindly donated by gardenature & Harrison Cameras (*Figure 5 right*). The competition closed on New Year's Eve and will be judged by, as in 2015, Kate MacRae (Wildlife Kate) whose continued support is appreciated.

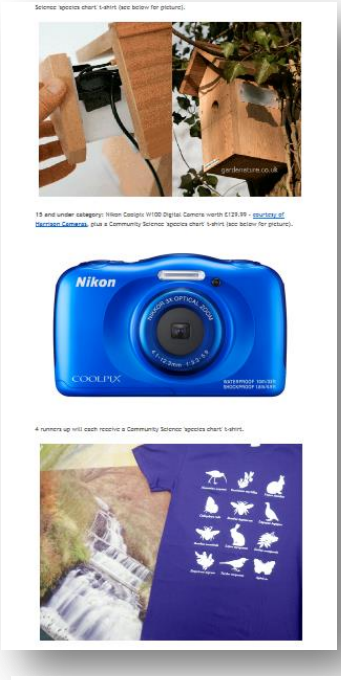

Figure 5: Our Community Science photography competition has become an annual event and a highlight of our engagement calendar.

To increase engagement and audience reach the winning images

and a selection of the short-list from this year's competition will be prepared for a roadshow in Summer 2017 at a range of venues.

As in the previous year exposure at engagement events generated significant media coverage and PR opportunities with articles in external publications including: a case-study in the Europarc Federation's Journal – 'Protected Areas In-sight' (Vol. 7) (*Figure 6 below left*) which is distributed to over 500 international organisations; a 4 page spread over 2 separate articles in the Mammal Society's 'Mammal News' which reached over 800 of their members (*Figure 6 below centre*) and the winning image of last year's photography competition took pride of place on the front cover of the 'Around Saddleworth & Tameside' magazine (*Figure 6 below right*).

Figure 6: Spreading the word internationally, nationally and locally through articles in the EURPARC Federation journal, Mammal Society and Around Saddleworth & Tameside newsletters.

This year we achieved a potential audience reach of 2,074,139 through 53 articles including 37 online, 10 print and 8 radio pieces. 19 of these articles were sparked by our photography competitions which have proved to a popular hook for attracting wider media interest in the project. Although this year's media coverage is lower than last year's (which was significantly boosted by an appearance on Countryfile – one of the BBC's most watched programmes), it brings total coverage achieved in Phase II of Community Science to a potential audience reach of over 11.5 million people – far exceeding the 10,000 annual target.

> **"The voluntary work has been really enjoyable but also a very useful way of meeting contacts and essential experience."**
>
> *Adrian, Community Science volunteer & now member of staff for MFFP & National Trust.*

The quality and quantity of material on the Community Science webpages on the Moors for the Future Partnership's website (http://www.moorsforthefuture.org.uk/community-science) continues

to improve with a view to supporting long-term project sustainability – providing context, instructions and supporting material for conducting our Opportunistic, Targeted and Environmental Monitoring as well as information about our volunteer project assistant roles and how to apply.

Having developed our web presence in 2015 we continue to have a growing online community. We have attracted 1499* MoorCitizens on social media through Twitter (807), Facebook (552), Instagram (112), Pinterest (21) and Flickr (7) – 482 of which joined us in 2016. *As undoubtedly some individuals will be represented more than once this figure is likely to be a slight overestimate.

Throughout 2016 436 tweets (more than one per day through-out the course of the year) attracted 3694 profile visits, 742 retweets and 240 mentions, resulting in 210,000 impressions (number of times tweets were loaded onto user pages) – an 11% increase from 2015.

2016 enjoyed a combined audience reach of Facebook and Twitter of 234,907, based on impressions, and subsequent engagement of 9,479 users.

On Facebook 263 posts had a total user of reach of 114,981 (more than double that of 2015) with an average of 15 unique users engaged daily (up from 11 in 2015).

In October 2015 we launched a Community Science blog which generated 1343 Blogger page views in the last three months of that year. This increased to 4,875 by the end of 2016 – nearly double the target of 50 page views per week. As well as Community Science created content, guest and external blogs in 2016 included:

- DEFRA data team's Big Bog Blog post following a day's *Sphagnum* survey training: https://defradigital.blog.gov.uk/2016/10/18/big-bog-blog-post/ ;
- A Volunteer view: Guest blog post by Community Science volunteer Mollie (05/12/2016): http://moorcitizens.blogspot.co.uk/search?updated-min=2016-01-01T00:00:00-08:00&updated-max=2017-01-01T00:00:00-08:00&max-results=18 ;
- Bumblebee survey – Edale transect 1: A guest blog post by Community Science work experience student Izzy (29/06/2016).
- Dunwood Park Nordic Walkers: https://www.facebook.com/dunwoodparknordicwalkers

In an attempt to create an online platform for volunteers to talk to each other, provide support or plan field visits we launched an online forum in 2016 as highlighted in the project deliverables. Despite staff advertising this and generating content there was no interest from volunteers. Having tried this approach we will try alternative platforms in 2017 including a Facebook group.

Our newsletter, Community Scientist, has gone from strength to strength since its launch in 2015 with 1000 subscriptions for the latest issue, of which 44% opened the Newsletter and 17% clicked on links. It has proved a good way of feeding back short updates on our survey results, which is widely recognised as a key


Community Scientist

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In short...
White Christmas?

This footage was captured near one of our environmental monitoring sites this month. It shows beautifully how the

Volunteer Awards Shortlist

We are delighted to announce that Community Science has been shortlisted for this year's UK National Park Volunteer Awards in the 'project' category.

Visit the National Parks website to find out more about the awards and the other shortlisted nominees.

Christmas 2016
Merry Christmas!

Welcome to this festive edition of Community Scientist - the newsletter for Moors for the Future Partnership's unique volunteer project.

A huge thanks to all the many volunteers who have contributed to making the project a

Figure 7: Christmas edition of Community Scientist.

element of volunteer retention, as well as keeping existing and potential volunteers and partners informed of new opportunities and items of interest. Although we didn't win we were delighted to be short-listed for the 2016 UK National Park Volunteer Project Award which featured in our December issue.

Volunteer engagement

Collectively volunteers dedicated 5571 hours to Community Science in 2016, equating to 796 days – more than three Full-Time Equivalent (FTE) posts and three times more than in 2015.

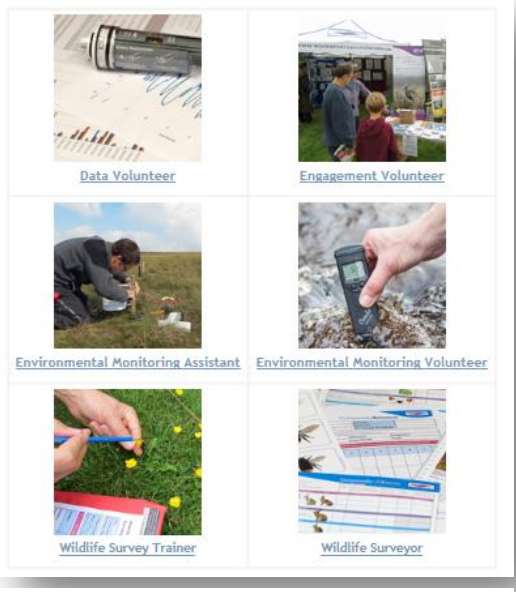


Figure 8: Volunteering roles displayed on the Moors for the Future Partnership website.

We have refined our volunteer recruitment process and launched our Community Science project assistant roles in 2016 which have been advertised on www.moorsforthefuture.org.uk/community-science/volunteering-opps (*Figure 8 left*), social media and external websites including www.countryside-jobs.com/volunteers/index.htm.

We have also created a quick reference guide to Community Science volunteer opportunities geared towards companies who promote volunteering amongst their employees which was developed for Hope Cement – part of the Breedon Group Plc (available in Appendix 1).

Since launching our volunteer project assistant roles we have invited 55 potential volunteers for Welcome Inductions in which volunteers have an opportunity to find out more about Community Science, its place in the Moors for the Future Partnership story, the importance of the uplands of the South Pennine Moors and ask any initial questions they might have. These introductions, which last about an hour, give us the opportunity to engage new volunteers on a one-to-one basis, find out what they are interested in, what skills they have and would like to gain and to ensure health and safety, safeguarding and other protocols are clearly understood. A copy of our new Volunteer Handbook (Appendix 7) has been so openly received that another project, The Beardwood Natural Living Project (to promote access to the countryside and provide a

"I really just wanted to say a big thank you... I don't think I'd have got the job if it hadn't been for my time with you guys. Thank you!"

Jenny, Community Science volunteer & now Yorkshire Peat Partnership member of staff.

community resource for people of all ages, backgrounds and abilities, especially children and young people and disadvantaged individuals and groups, in such a way that they can connect with nature…), asked to use it as a basis for developing their own on which we are acknowledged.

Across monitoring activities 342 named individuals volunteered as Community Scientists in 2016. Of these 87% (299 people) were new this year. The remaining 13% of named volunteers (43) were retained from 2015. 18 of our retained volunteers (42% of retained, 5% of 2016 total) increased their involvement, volunteering for more sessions than they had the previous year. 17 (41%) of the retained volunteers maintained the same level of activity they had in the previous year whilst eight (17%) volunteered for less sessions than in 2015 but remained engaged. The retention of a relatively small number of very active volunteers is consistent with findings from a literature review of data submission in Citizen Science projects in which "most work … is done by a minority of participants" (EVID4 Evidence Project Final Report (Rev. 10/14), Defra 2015). This is also anecdotally true of other citizen science based volunteering projects.

In recognition of volunteer dedication, 2016 saw the design of our fantastic Community Science t-shirts (*Figure 9*) which are awarded to volunteers that have invested 10 hours or 3 sessions and those representing us at events, promoting the project others.

Figure 9: New Community Science t-shirt for volunteers being modelled by regular CSP volunteer Mollie

Wonderfully, at least four of our Community Science volunteers have now gone on to paid employment in the environmental sector focusing on moorland conservation – three of whom continue to find time to volunteer with Community Science!

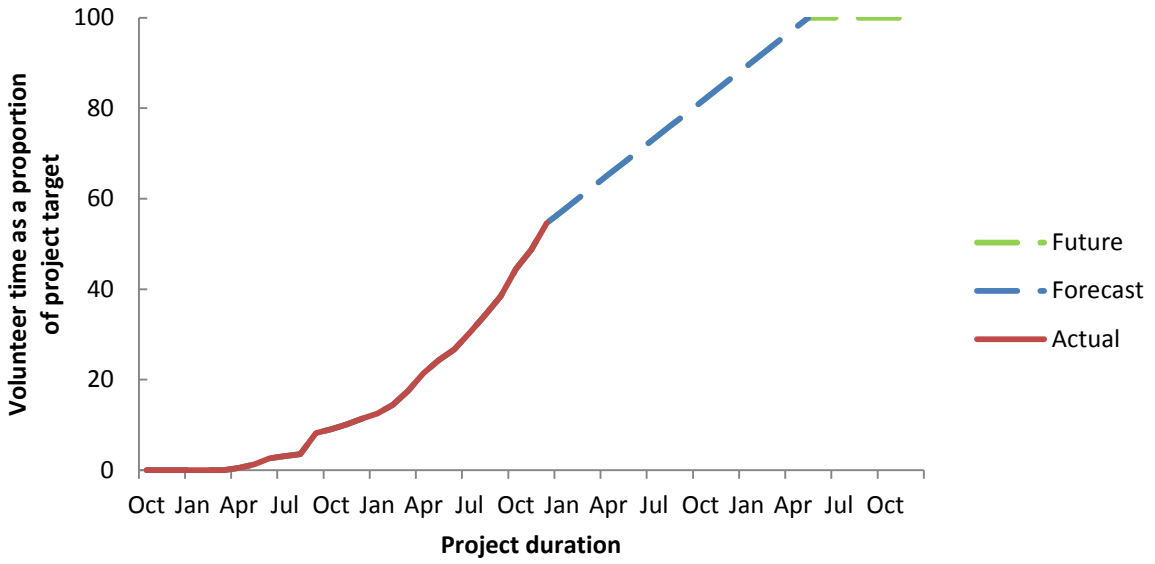


Figure 10: Volunteer time as a proportion of the project target.

By the end of December 2016 (50% of Phase II of the project in months) we have delivered 55% of the projected volunteer time as a proportion of the associated financial value (*see Figure 10*). As we didn't start accruing volunteer time until 16% of the way through the delivery phase of the project, due to a lag in volunteer engagement between phases, there has been a steep trajectory of volunteer engagement since October 2015 which we aim to sustain until the end of this stage of the project and beyond.

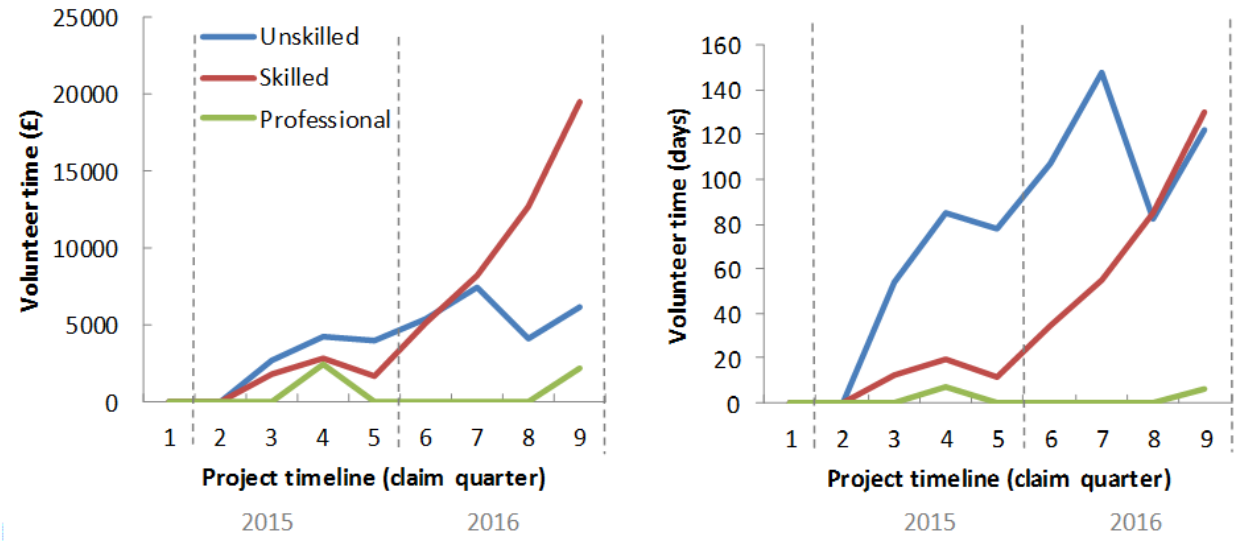


Figure 11: Volunteer time accumulated across the three activity categories: unskilled; skilled and professional. The figure on the left displays the financial value associated with volunteer time whilst the figure on the right illustrates volunteer time in days.

Whilst year two has seen an increase in volunteering across all roles we are delighted to report, as expected, an increase in 'skilled' volunteer activities in 2016 (*Figure 11*). In our first year of delivery 'unskilled' activities (predominantly training and accompanied tasks) accounted for 86% of volunteer time with the remaining 12% reported as 'skilled' and 2% as professional volunteer activities. In 2016 the proportion of 'skilled' volunteer activities increased – representing 39% of total volunteer time. 60% of volunteer time remained categorised as 'unskilled' as people continue to engage either for the first time or in a new aspect of volunteering, developing and becoming confident with the relevant skills needed.

Accessibility and inclusion

In addition to engaging visitors and local communities who may be familiar with exploring the green spaces of the Peak District and South Pennines an essential outcome of the project is to inspire and engage individuals and groups for whom moorlands and their wildlife may be a new experience. In doing so we not only increase the audience to whom we are able to raise awareness of moorland conservation but are also providing opportunities for all volunteers to be physically active; connect with people; be more aware of their surroundings; learn new things and be part of a community that is helping out in a big way – all of which contribute to personal health and well-being.

In 2015 we identified a range of opportunities through which we could engage under-represented groups in Community Science. This year we have taken forward our Creative Conservation programme with CRISIS, an organisation that works with homeless. Working with CRISIS's Skylight Arts team in Sheffield, on the first Friday of every month, we have led Community Science events, from introductory guided walks to *Sphagnum* survey sessions. We have had a fantastic response from volunteers that have joined us – some of whom were from Sheffield but had never ventured into the Peak District before, who within a day could confidently identify *Sphagnum* moss. As part of our Creative Conservation sessions we were also delighted to work with CRISIS to provide a day for members to visit North Lees and create nature inspired art. The day was a wonderful success with this quote from a CRISIS member summing up one of the benefits of the programme … *"I've not been feeling good but this is the best I've felt in ages".*

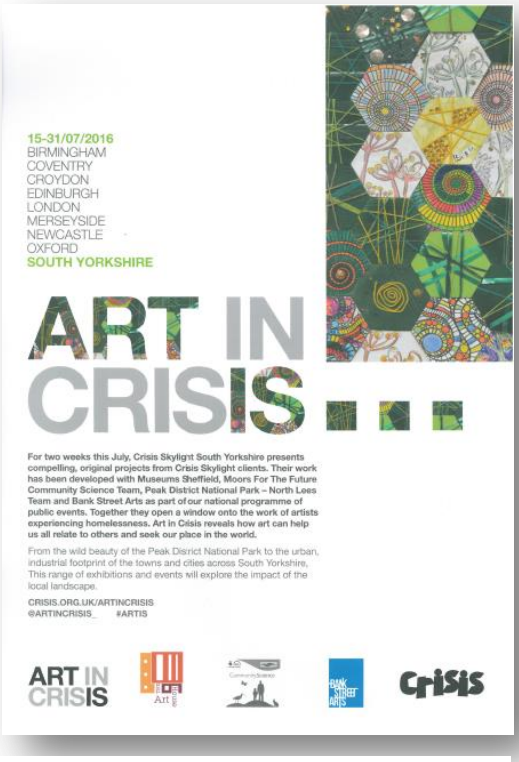


Figure 12: Poster for Art in Crisis.

Pieces from the day were displayed in exhibitions at Bank Street Art and The Art House galleries in Sheffield. This was a unique opportunity to combine art, Community Science and nature whilst enabling CRISIS

members a chance to experience and explore the green space of the Peak District uplands. The day was delivered in partnership with CRISIS, PDNPA Rangers and the PDNPA North Lees team.

Our Creative Conservation program will continue into 2017 when we look forward to working with CRISIS staff to develop Community Science Certa accreditation modules to complement their existing adult learning programme.

In addition to working with CRISIS we have also been working with the Peak Park Conservation Volunteer project to include Community Science survey training in the range of activities run with the Fit for Work scheme; a rehabilitation program for ex-offenders. Having run a successful *Sphagnum* survey training session with a group in April 2016 we aim to run refresher courses in 2017 to enable the group to undertake surveys independently.

Through-out 2016, working with the National Trust Marsden we have also provided two *Sphagnum* and two bumblebee survey training days for Phoenix Futures; a charity and housing association which has been helping people overcome drug and alcohol problems, who have been keen to continue volunteering with Community Science. Unfortunately the group covering this geographic area will be unable to continue in 2017 due to a lack of funding for core staff to support their group.

Conversations have also continued with Peak District Mosaic, who provide opportunities for people from black and ethnic minority communities living in the urban fringe of the Peak District National Park to engage in activities taking place in the Peak Park, and we plan to provide Community Science training at some of their Champion training sessions.

In 2017, with an additional financial contribution from UK National Parks, Community Science will take the lead on the Moorland Indicators of Climate Change Initiative (MICCI) project, engaging Year 10 secondary students in moorland monitoring through their schools. We will review the current monitoring methodology and materials to make them as consistent as possible with the Community Science Environmental Monitoring (EM) sites, increasing the number of EM sites across the Peak District and engaging more under 25s (both Community Science deliverables) whilst using Community Science to give MICCI greater context and providing additional data sets for schools to use back in the classroom.

MICCI currently happens once a year during British Science week. This snapshot of environmental monitoring can feed into Community Science data. It also forms part of a possible volunteer journey with the opportunity for students to continue learning about moorland monitoring through the Peak District National Park Learning and Discovery team's A Level outdoor based field course that counts towards a carbon focussed module in the curriculum, before becoming a Community Science Environmental Monitoring volunteer.

Looking forward

Through-out 2016 we have continued to work closely with, and be supported by our project partners, for whose steer, financial and practical contributions we are very grateful. In addition to

project partners we have also been working closely as a wider partnership with the Eastern Moors Partnership, Sheffield Wildlife Trust and Heritage Lottery Funded Pollinating the Peak project, whose steering group we sit on, amongst others, to deliver added value and promote long-term project sustainability. We will continue to work closely with the external organisations mentioned above in 2017. Our new Opportunistic Monitoring (OM) survey – Scales and Warts – will generate a database of adder, common lizard and common toad records, in the same format as previous OM surveys. This is of particular interest to the Eastern Moors Partnership, part of the Sheffield Moors Partnership including the Peak District National Park North Lees team, who, in addition to Derbyshire Amphibian and Reptile Group we will work closely to promote the new survey and share records. The records will also be shared with Froglife – a national amphibian and reptile conservation organisation.

We also look forward to creating the last Targeted Monitoring survey in this funding stream which will include surveying tracks and signs of water vole, otter and mink; Tails of the Uplands. Although the survey is yet to be finalised it has generated much support and interest from partners, especially the Environment Agency, and external organisations including Sheffield and Derbyshire Wildlife Trusts. There is also potential to complement two Heritage Lottery Fund projects – Sheffield Wildlife Trusts Nature Counts (to whom credit for the idea must be shared!) and Friends of Ilkley Moors Nature for All project.

We will continue to evaluate and refine our Volunteer Strategy through-out 2017 as we welcome more project assistants and become increasingly volunteer led. Continuation planning and production of a Community Science continuation strategy will be the focus of the Community Science Project Manager from April 2017 onwards and will include a facilitated stakeholder participation session with the project board and project partners to identify strengths, opportunities, aspirations and results (SOAR methodology) for taking Community Science forward in future, both within Moors for the Future Partnership and with other organisations.

Science: Moorland monitoring

In 2016 we continued to expand our suite of wildlife surveys and environmental monitoring across the South Pennine moors with the addition of our Ring ouzel and Redwing Opportunistic Monitoring survey and Buds, Berries and Leaves Targeted Monitoring survey, as well as the installation of a new Environmental Monitoring site at The Roaches in the South West Peak District.

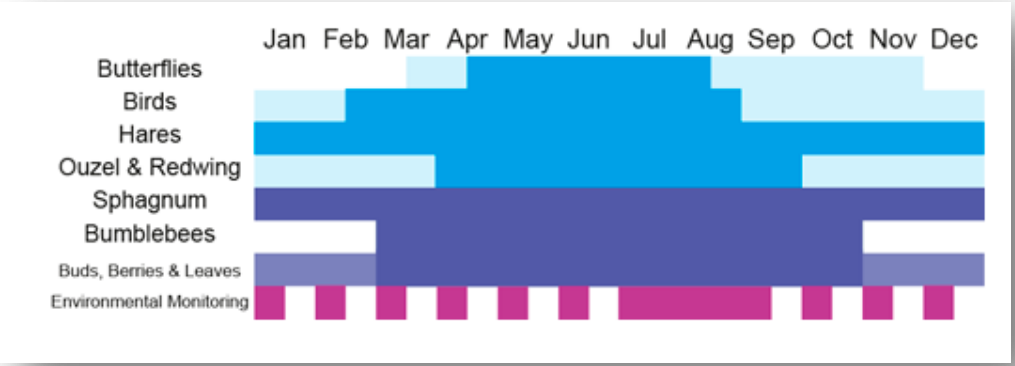


Figure 13: Moorland survey calendar.

Crucially we also ensured that momentum continued with our existing surveys – promoting the long-term monitoring of the health of the moorlands and impact of a changing climate. The new surveys not only provided additional indicators of moorland condition, as well as new engagement opportunities, but also built on the calendar of Community Science monitoring activities (*Figure 13*) and enabled us to talk about the importance of ecological connectivity (*Figure 14*).

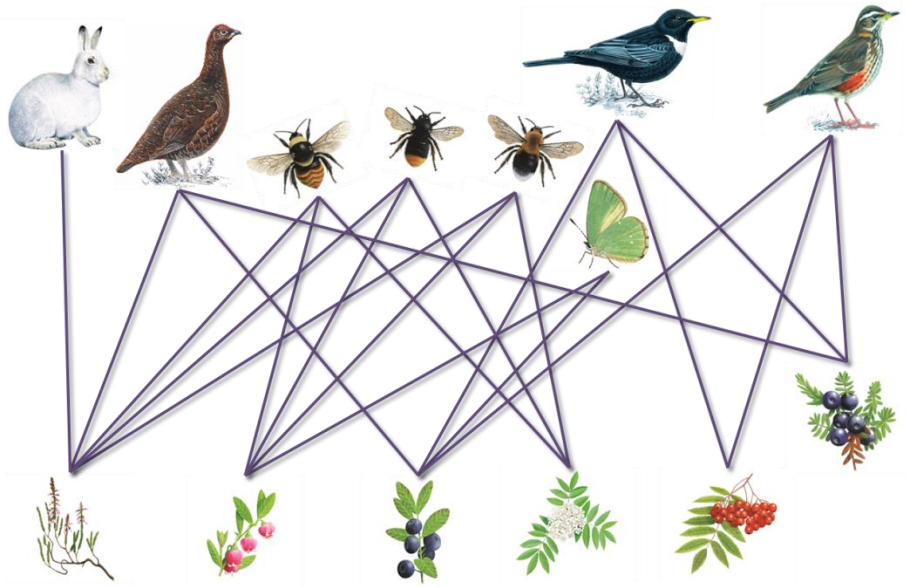


Figure 14: A simple food web demonstrating ecological connectivity of Community Science species.

Opportunistic Monitoring (OM)

Whilst our digital presence is growing paper based resources such as our OM postcards still provide an important tool for talking to people and inspiring people to submit wildlife sightings – even if the postcard isn't their chosen method of data submission they remain good communication and engagement resources.

11,445 OM postcards were distributed in 2016 of which 29% butterfly, 29% were ring ouzel & redwing, 22% were the original bird survey and 20% were our hare surveys – bringing the total number of OM postcards distributed during the first two years of delivery the Community Science project to 24,745, more than double the 5,000 annual distribution target.

The postcards were displayed at 62 events and 92 static locations (*see Figure 18 - map*) including four new weather proof leaflet holders in visitor hotspot car parks at Stanage (Hollins Bank), Surprise View, Langsett and Curbar Gap (Eastern Moors). Increasingly, volunteers are taking responsibility for postcard distribution in their local area and all four car park holders have been adopted by individual volunteers who check them and top them up or change over the survey cards as appropriate. Following the success of the leaflet holders we have plans to install more at appropriate locations including Torside and Dovestone further north.

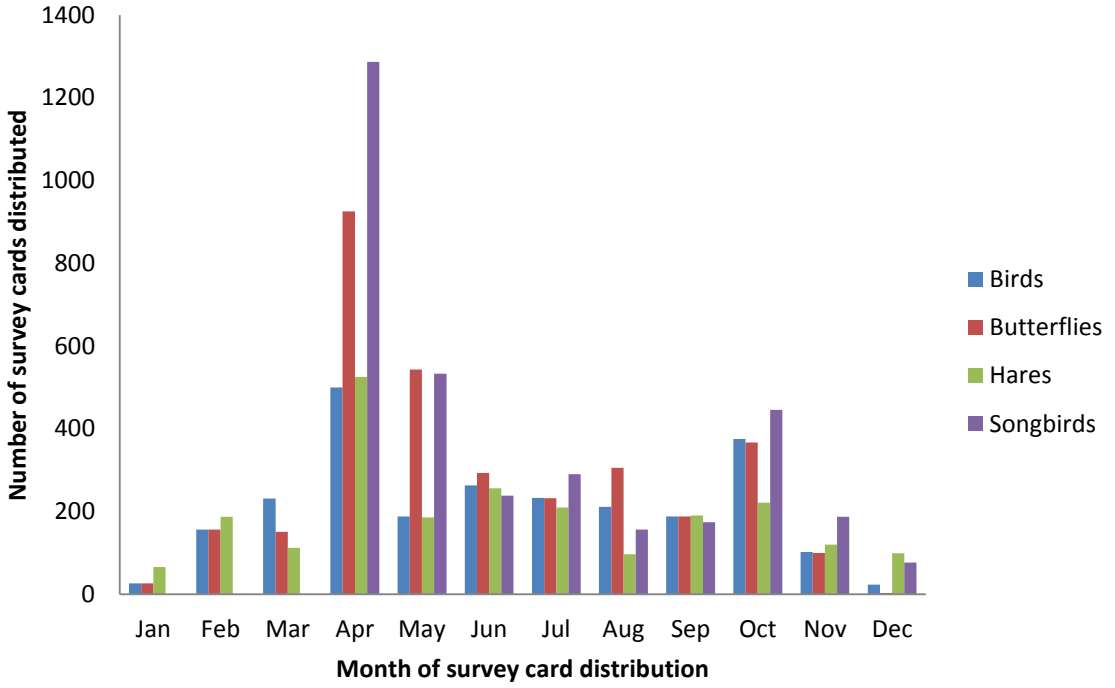


Figure 15: Opportunistic survey card distribution by month.

The number of survey cards distributed through-out the year varied by survey (as some species are only likely to be seen at certain times of year) and month (*Figure 15*). There was a predictable spike in the distribution of postcards at both events and static locations as the weather improved in Spring. We also hosted the launch of 2016's new OM survey on the 13th of April accounting for the spike in its distribution around this time. Distribution of postcards at static locations tailed off after April whilst distribution at engagement events remained relatively consistent through-out the year with the exception of the new OM launch in April and a large NERC conference (Into the Blue) in October (*Figure 16*). Maintaining postcard distribution through-out the year is something we will evaluate further in 2017.

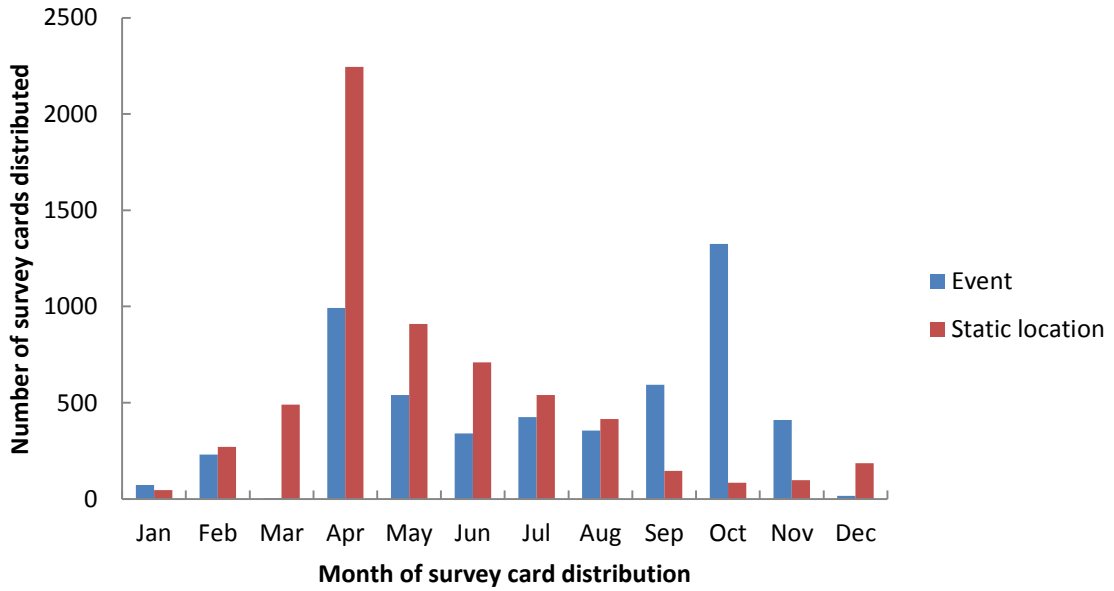


Figure 16: Opportunistic survey card distribution across the year at engagement events and static locations.

The known uptake of Opportunistic Monitoring survey postcards has increased by 11% from the previous year based on equal sample sizes, from 30% in 2015 to 41% in 2016.

As in 2015 there are 4 different methods for members of the public to submit casual sightings: by returning the Freepost survey card; using the recording function on the MoorWILD app; completing a webform on the Moors for the Future Partnership website (http://www.moorsforthefuture.org.uk/community-science/submit-results) or on the Community Science iRecord page (http://www.brc.ac.uk/irecord/moors-for-the-future?group_id=89&implicit=f).

Some Peak District National Park Rangers have also submitted the records they have collected. All channels have proved important in data collection – maximising audience participation by making it as easy as possible to submit sightings.

Overall digital data collection methods are more popular than paper alternatives, accounting for 72% of records submitted in 2016 (25% iRecord; 24% webform and 23% smartphone app) as opposed to 64% in 2015. Survey cards returned in the post account for 19% of records submitted in 2016, a slight decrease from 2015 in which they accounted for 25% of records. Total download figures for the MoorWILD smartphone app since Community Science enabled the recording function has been 770 (490 Android; iOS 280).

The contribution of different methods of data submission varied within and between surveys (*see Figure 17*). Submitting records directly through iRecord was the most popular method of logging sightings of all three of the species in the bird survey (curlew, red grouse and swallow). For all three of the butterfly species (green hairstreak, orange-tip and peacock) the Smartphone app was the most popular method of submitting sightings. For the other two OM surveys (hares and thrushes) the pattern of data recording mechanism is less clear as it differs between species. Postcard submission was the primary method of data collection for brown hares and second most important method for collecting ring ouzel sightings (accounting for 33% and 37% of 2016 records of these species respectively), whilst the webform was most popular for mountain hare and ring ouzel record submission and the smartphone app for the rabbit and redwing. The continued use of the different data collection methods suggests that providing a variety of ways for people to report sightings is important to encourage different people to become actively involved in biological recording.

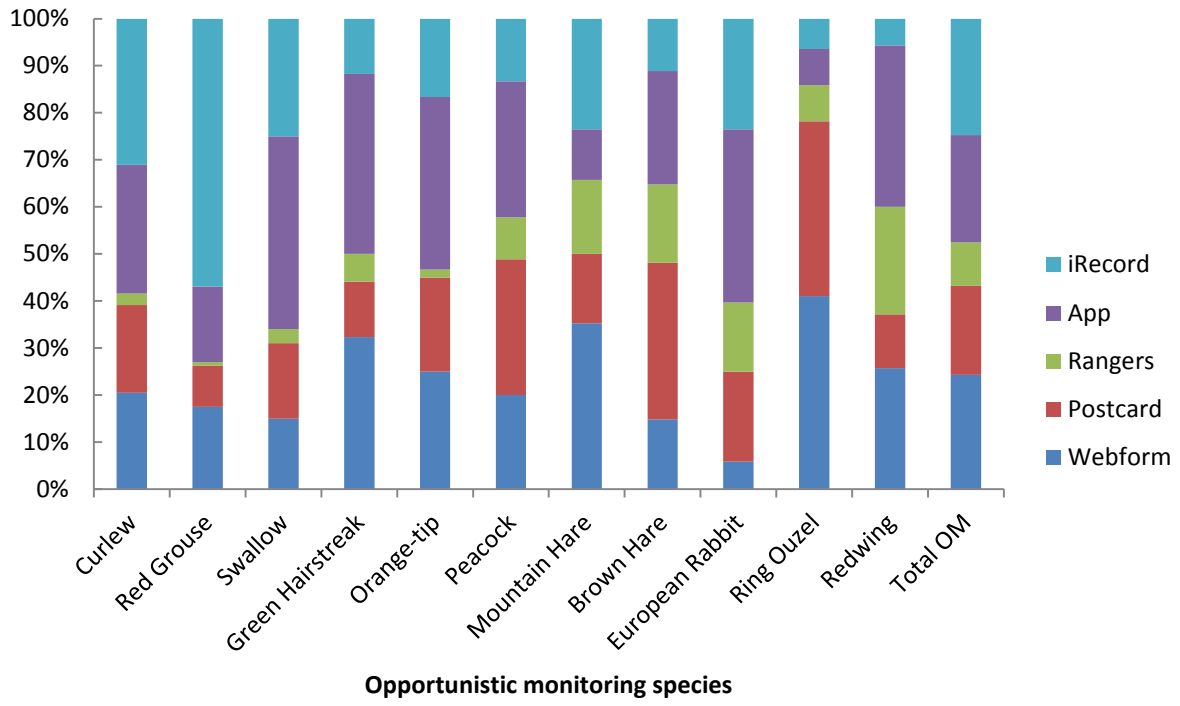


Figure 17: Contribution of different data recording methods per species surveyed.

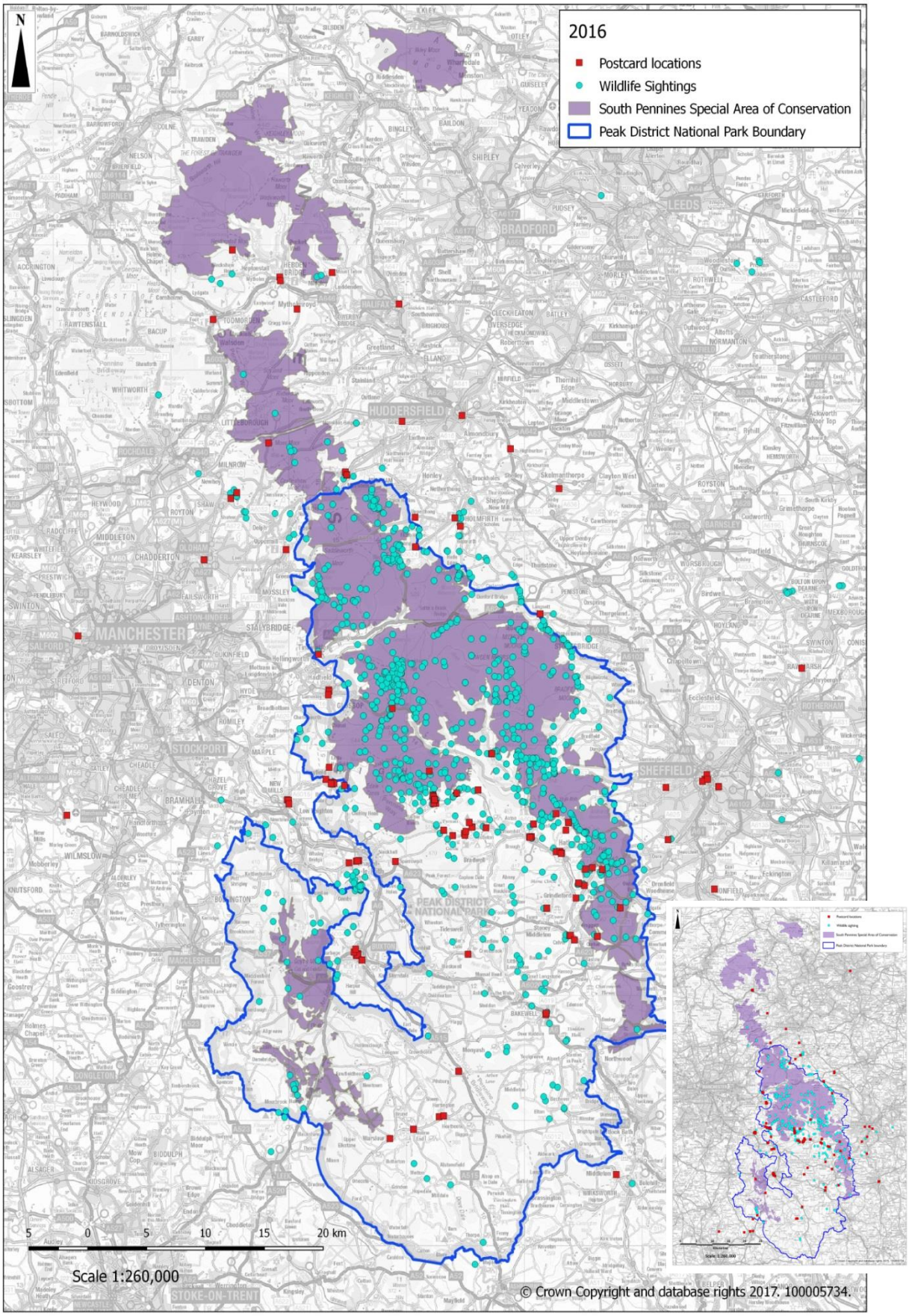


Figure 18: Postcard distribution locations and wildlife sightings.

The overall response rate for Opportunistic Monitoring surveys in 2016 was 10%. The response rate (shown in *Figure 19*) is based on the total number of records submitted through all channels divided by the total number of survey cards distributed. This is based on the assumption that, whilst recorders may not submit their records via post, the postcards are the primary engagement tool to which people are responding.

46 individual recorders submitted sightings through the MoorWILD app and so were named on iRecord. 586 records were submitted through Moorcitizens via routes which do not require recorders to submit their name and as such are not able to be attributed to individuals.

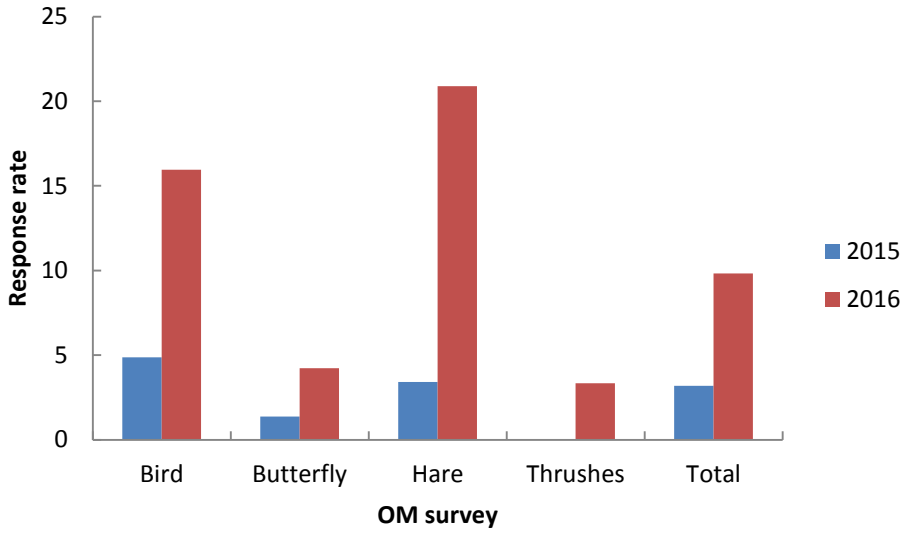


Figure 19: Comparison of OM survey response rate between 2016 and 2016.

The number of Opportunistic records received more than doubled (with a 214% increase) from 526 in 2015 to 1124 in 2016. Records of mountain hares were the most commonly submitted (*see Figure 20*) followed by curlew and red grouse – perhaps due to the apparency of these species compared with butterflies and smaller birds including the less well known migratory thrushes, although the same suggestion can't account for the relative lack of rabbit sightings – although these are perhaps arguably less often seen in the uplands. However, it is also likely that very commonly seen species such as rabbits are recorded less often because seeing them is a less noteworthy experience; whereas seeing a more unusual species such as a mountain hare may prompt an individual to be more inclined to view their sighting as important, and therefore worth recording.

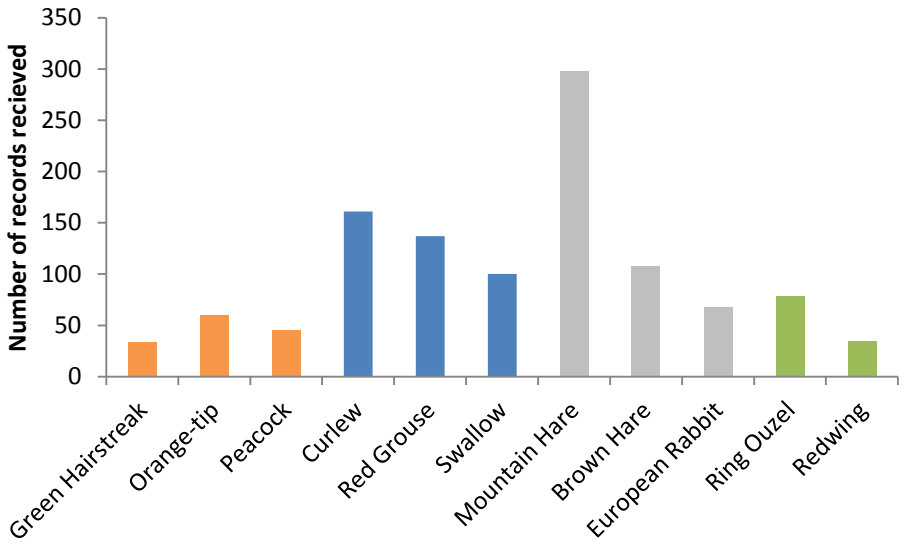


Figure 20: Number of OM surveys received for each species.

The number of sightings of individual animals reported through these records also more than doubled (increased by 275%). As the social behaviour of the study species differ, for example mountain hares are often seen by themselves during the day whilst swallows are usually seen in flocks; these patterns are more useful when looked at individually. Equally, the aim of our Opportunistic surveys is to pick up broad distribution changes over time and is not suitable to evidence changes in population sizes.

Whilst evaluating the success of the Opportunistic Monitoring element of Community Science the data verification process in iRecord remains a delay in reporting verified findings. Data verification is crucial to the robustness of sightings – the consistency of which is often a criticism of citizen science data – however the reporting of OM sightings in this report comes with the caveat that not all 2016 records had been verified at the time writing. As verifiers are necessarily experts in their fields and volunteers, there seems to be a lack of verifiers and the ask of those that do volunteer can be significant – especially when the number of wildlife records generated by Community Science alone, which is one of hundreds of wildlife recording projects using iRecord, is considered. We are therefore very grateful to all the verifiers that process Community Science data.

Butterfly survey

139 butterfly records were submitted in 2016 of which: 34 were sightings of green hairstreak; 45 of peacock and 60 of orange-tip butterflies – these represent three times as many records of green hairstreaks and four times as many records of orange-tip butterflies as were submitted in 2015. There were also significant increases in the number of green hairstreaks (78) and orange-tips (155) reported via

these records as well as mean increases in the number of individuals reported per record from 1.1 in 2015 to 2.3 in 2016 for green hairstreaks and 2.3 to 2.6 for orange-tips.

Only four more records of peacock butterflies were submitted in 2016 than in the previous year although even with an increase in the number of records the number of individual peacock butterflies recorded fell by 8 as did the mean number of animals per record from 1.8 in 2015 to 1.5 in 2016. These findings match wider observations reported by Butterfly Conservation that it has been a particularly bad year for peacock butterflies – a species which hibernates – due to the wet spring.

Our butterfly records are verified by the Derbyshire county recorder who we met and attended training with at Derbyshire Wildlife Trust this year. Community Science records have also been included in Butterfly Conservation's county updates.

The first Community Science butterfly record of 2016 was a peacock on the 4th of April. The first orange-tip sighting of 2016 was submitted on the 19th of April in Cheshire and were recorded relatively frequently until the 8th of June with two additional sightings on the 14th of July and 5th of August. Green hairstreaks were reported between the 22nd of April to the 31st of May. The last butterfly sighting reported in 2016 was a peacock on the 15th of September.

A map of where butterfly sightings have been reported is provided in the Appendices (see Appendix 2) and is available on request along with the data.

Birds

398 records were received of curlew (161), red grouse (137) and swallow (100) sightings in 2016. All of which were more than were submitted for each species in the previous year. There was also an increase in the number of individual animals seen in 2016, however these increases were not proportional to the increase in the number of records submitted as might be expected. 1,503 curlews were reported in 2016, increasing the mean number of individuals per record to 9.3 from 6.5 in 2015. Similarly 1,421 red grouse and 1,378 swallows were reported, increasing the mean number of individuals from 3.8 to 10.4 and 7.6 to 13.8 respectively. As, for example, curlew arrive back to moorland fringe habitats to breed each Spring and are often seen to flock in fields. These patterns – although not reflective of population densities – offer additional reassurance that the casual records being submitted through Community Science are painting an accurate picture.

The first curlew were reported in West Yorkshire on the 10th of January in 2016 but were not reported regularly until after the 25th of February. The last one was recorded on the 10th of October in South-West Yorkshire. The first swallows were reported regularly from the 29th of March until the 30th of September. Red grouse were recorded all year round as expected.

Maps of where these bird sightings have been reported are provided in the Appendices (see Appendix 3, 4 and 5) and are available on request along with the data.

Hares

Following the survey launch last year we have received 473 mountain hare (298), brown hare (108) and rabbit (68) records in 2016 reporting 515; 158 and 68 animals respectively. There are no significant differences in the mean number of animals reported per record for any of these three species. In 2016 an average of 1.7 mountain hares were reported per record, 1.5 brown hares and 3.1 rabbits.

A map of where lagomorph sightings have been reported is provided in the Appendices (see Appendix 6) and is available on request along with the data.

We continue to collaborate with Marketa Zimova, a PhD student studying the impact of seasonal crypsis at the University of North Carolina. Following Marketa's visit to the UK she is keen to include Community Science mountain hare data in her study if time allows. In the mean-time she is kindly providing us with graphs showing the mismatch of mountain hare coat colour with snow cover.

Ring ouzel & redwing

Ring ouzels, also known as mountain blackbirds, migrate to the uplands of the UK from their wintering grounds in or near Morocco in the Spring. Following the survey launch, the first sighting was reported on the 31st of March after which 78 records were received - reporting 146 sightings. On average 2 birds were reported per ring ouzel sighting. 44 individual birds were seen, 25 pairs, several groups of between 3 and 7 and one record of 21 in South West Yorkshire. Sightings were recorded until the 19th of October. Further analysis into whether they were singing (likely to be holding territory and male) and what their habitat preferences are and how these may change during the breeding season are ongoing.

The ring ouzel casual survey provides a fantastic way to engage with rock climbers who share the gritstone crags of the Peak District and South Pennines with nesting pairs and their young. As well as providing a good engagement tool it may also help identify areas where the birds may be nesting, allowing awareness of the risk of human disturbance to be targeted if appropriate or climbing routes restricted. Having worked closely with the Peak District National Park North Lees team, and benefited from the wealth of ring ouzel knowledge and experience of the estate Ranger (Bill Gordon), British Mountaineering Council and Eastern Moors Partnership team, we are happy to

share our 2017 ring ouzel records to help trained staff and volunteers undertake more detailed surveys through-out the season.

A map of where ring ouzel sightings have been reported is provided in the Appendices (see Appendix 7) and is available on request along with the data.

Redwings are winter migrants and arrive in flocks – with estimated sightings of up to 100 reported, although the average flock size is much lower at 19. 35 records were received in 2016 reporting 649 birds. We look forward to seeing more records come in through-out the winter, into 2017.

Targeted Monitoring (TM)

During 2016 we trained 448 volunteers in ecological survey technics to enable and inspire them to conduct Community Science targeted monitoring – more than doubling the 201 volunteers attending TM training sessions in 2015. Each free half-day training session consists of an indoor introduction to Moors for the Future Partnership; the importance of our uplands and the multiple benefits they provide us; Community Science and how and why to get involved in the relevant targeted monitoring survey. As part of our volunteer strategy we have also started our TM 'train the trainer' programme and welcomed our first TM Wildlife Survey Training volunteers in 2016.

We now have a network of 37 Community Science transects, 7 of which were set up in 2016, to monitor bumblebees and buds, berries and leaves (*see Figure 21*).

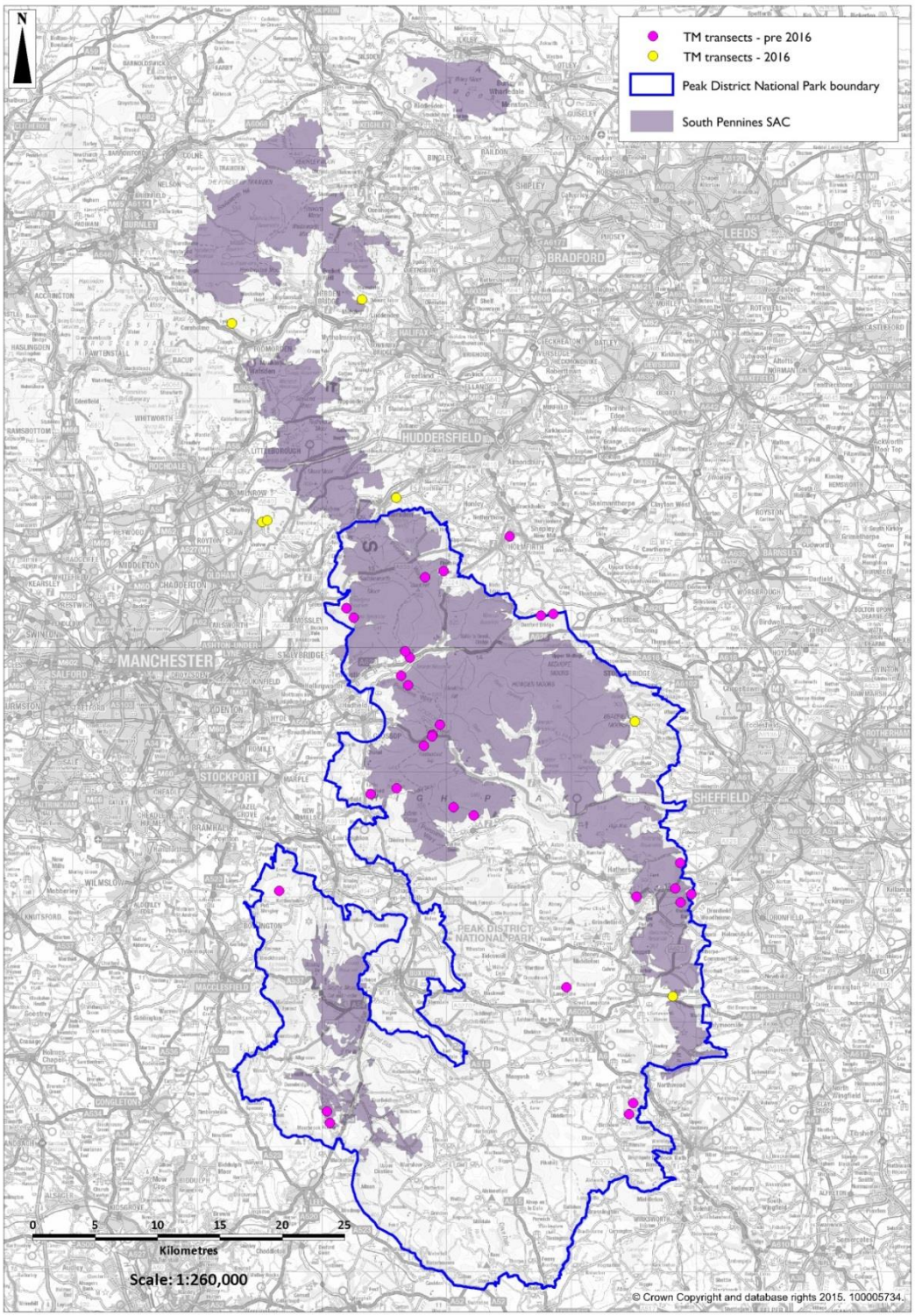


Figure 21: Map of TM transect locations.

Feedback was collected from 293 of the 448 volunteers that attended TM training sessions in 2016. Whilst we were aiming to collect feedback from all TM volunteers before they left the training sessions we have increased the level of feedback received from 59% of volunteers in 2015 to 65% in 2016. This sample size in 2016 represents the views of nearly 300 people which we have used to analyse how we are engaging with volunteers, the success of our training sessions and the social mix of volunteers we are attracting, as discussed below. Feedback across questions and surveys was extremely positive and very similar to that received in the previous year. We will continue to evaluate how we can increase the number of responses we receive in 2017.

41% of volunteers that attended TM survey training heard about the opportunity through digital communications including email, websites and social media. Word of mouth remains an important way of advertising Community Science opportunities, with 20% of volunteers hearing about TM training this way. Notices and posters at public and private venues were the media through which 7% of volunteers heard about TM training. The remainder were through unspecified mechanisms of other organisations.

"I really did enjoy the bumble bee information session. What a lot of information and of outstandingly good quality! I enjoyed relating some of the best facts to my (nearly) 9 year old grandson who is very interested in nature.!"

As in 2015, a third (29%) of volunteers heard about TM training opportunities directly from the Moors for the Future Partnership team (16% through our website, 7% via email, 4% through social media and 2% directly from Community Science staff). Other organisations were the most successful way of advertising Community Science TM training opportunities in 2016 with 50% of volunteers hearing about them through other organisations or other teams within the Peak District National Park including the Rangers, Peak Park Conservation Volunteers and Learning & Discovery.

For 282 volunteers (96%) of volunteers it was their first TM training session. 9 volunteers joined us for a refresher, 1 of which it was their third attendance at the same TM survey training – demonstrating real interest and engagement. A key finding from a review of data submission in citizen science projects for Defra in 2015 by the University of York (EVID4 Evidence Project Final Report (Rev. 10/14)) was that a small number of individual volunteers often account for the majority of records submitted, especially when participants are required to undertake training which is a pattern that bears out in Community Science. Retaining these volunteers and keeping them engaged is therefore important for the sustainability of data submission for the project.

On the five point Likert scale (Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree) 96% of volunteers that completed the feedback form enjoyed the sessions (70% strongly agreed; 26% agreed). 3% of volunteers neither agreed nor disagreed that they enjoyed the session and only one of 292 respondents didn't enjoy a *Sphagnum* moss survey training session – a University student of 18 years old or under who left no additional feedback.

95% of volunteers agreed that their understanding of moorland habitats and/or species had increased during the training. The remaining 5% neither agreed nor disagreed that their understanding had increased. 1 volunteer disagreed that their understanding of moorland habitats had improved during a Buds, berries and leaves survey training session however they Strongly agreed that they enjoyed the training session and intended to carry out the survey – suggesting they already have a good understanding of moorlands and were keen to engage with the surveying.

The majority of volunteers (85%) learnt new survey skills during the training sessions (54% strongly agreed; 31% agreed). 2% of volunteers disagreed that they had learnt new survey skills during *Sphagnum* sessions but had enjoyed the training and/ or strongly agreed that they intended to take part in the monitor, suggesting existing knowledge of biological recording and a keenness to become involved in Community Science.

Our Targeted Monitoring survey training met the expectations of 92% of volunteers (100% for Buds, berries and leaves; 95% for bumblebees; 80% for *Sphagnum* surveys). 13% of volunteers neither agreed nor disagreed that their expectation were met. Suggestions from volunteer feedback for how we can improve the sessions are provided in Appendix 8. One person neither agreed nor disagreed and one didn't respond.

92% of volunteers felt that the training gave them the confidence to undertake their own survey. Only two volunteers out of 293 disagreed that they didn't feel confident to conduct the surveys independently. As in 2015 more practice was cited as one of the solutions to increase confidence by those that neither agreed nor disagreed that the training had provided confidence for them to undertake their own survey.

Social mix of volunteers

Volunteers taking part in targeted monitoring continue to cover a broad age range from under 18 to over 66. Compared with the socio-demographic data for Sheffield – one of the closest urban centres to the Peak District (Office of National Statistics, 2012), more Community Science volunteers were between 46 and 65 years of age than would be expected based on the percentage of Sheffield residents in those age brackets. 19 to 25 year olds were also over-represented in the Community Science population compared to Sheffield residents – a pattern which increased in 2016 (*see Figure 22*). 30% of volunteers attending TM training that completed feedback forms (281) were under 25 years of age. Community Science's TM training sessions provide a great opportunity to engage with, actively involve and up-skill, people under the age of 25 – a group that has been identified as under-represented in their access to green space and the National Park. We continued to have an under-representation of volunteers in their late twenties to mid-forties; perhaps as family and work commitments take priority over time spent volunteering.

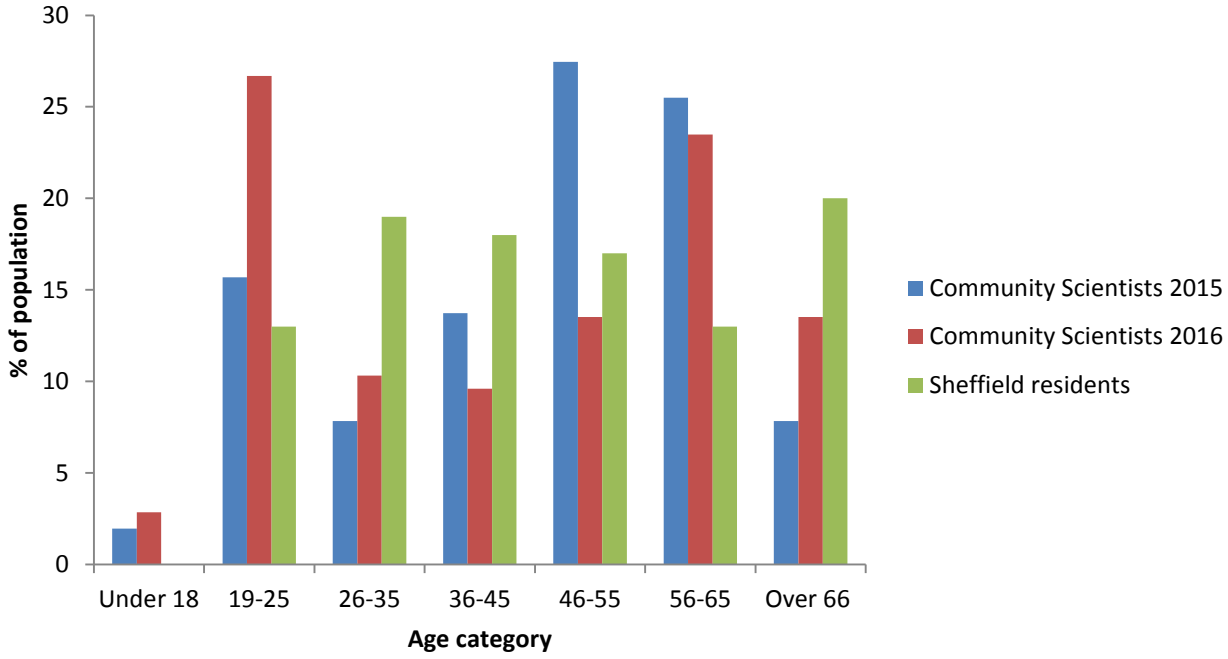


Figure 22: Age range of Community Scientists compared with Sheffield residents.

As in 2015 the majority of volunteers engaging in TM training were in employment: full-time; part-time or self-employed. In 2016 this majority was significantly smaller with 39% compared to 59% in 2015. The numbers of volunteers these percentages represent have however markedly increased from 30 volunteers in 2015 to 74 in 2016. The change in the proportion of volunteers in employment in 2016 reflects an increase in those in full-time education (28%), due to increased engagement with university groups, and those that are retired (25%). Continued engagement of volunteers with a variety of employment statuses suggests communication and engagement, as well as the volunteer activities available; continue to appeal to a broad audience with varying amounts of time commitments.

89% of 262 volunteers attending TM training sessions identified themselves as of Caucasian ethnicity, 2% less than in 2015. As the number of volunteers increased in 2016 so too did ethnic diversity, with an increased representation of volunteers with Arabic, Asian and African ethnicities, although collectively this only represents 3% (7 individual) of our volunteers. The remaining responses from volunteers identified themselves as having an 'other' ethnicity which were all variations of British. There were no remarkable differences in the social mix of volunteers attending the different Targeted Monitoring survey training sessions.

There was almost an equal representation of male (56%) and female (44%) volunteers attending bumblebee training in 2015. In 2016, when considering all named volunteers across different activities (342), there is slightly more of a male bias with a 57:43 male to female ratio.

As part of our volunteer recruitment process we now include the Peak District National Park Authority Human Resources Equality and Diversity form which will further inform the diversity of our audience reach and volunteer base in future.

Bumblebee survey

- 113 volunteers attended 11 training sessions in 2016, plus a one-to-one training session.
- 345 unaccompanied volunteer hours were spent surveying bumblebees.
- 222 transects were surveyed between March – October 2016- 196 independently by volunteers.
- 2510 bumblebees were recorded in total – 90 less than last year. Of these 246 were bilberry bumblebees; 63 tree bumblebees and 97 red-tailed bumblebees.

During the bumblebee survey season, from March to October, 35 transects were monitored across the South Pennine Moors in 2016. 71% (25) were surveyed for five months or more. One or more of the three target species (bilberry, tree and red-tailed bumblebee) were recorded on 20 of the 35 transects.

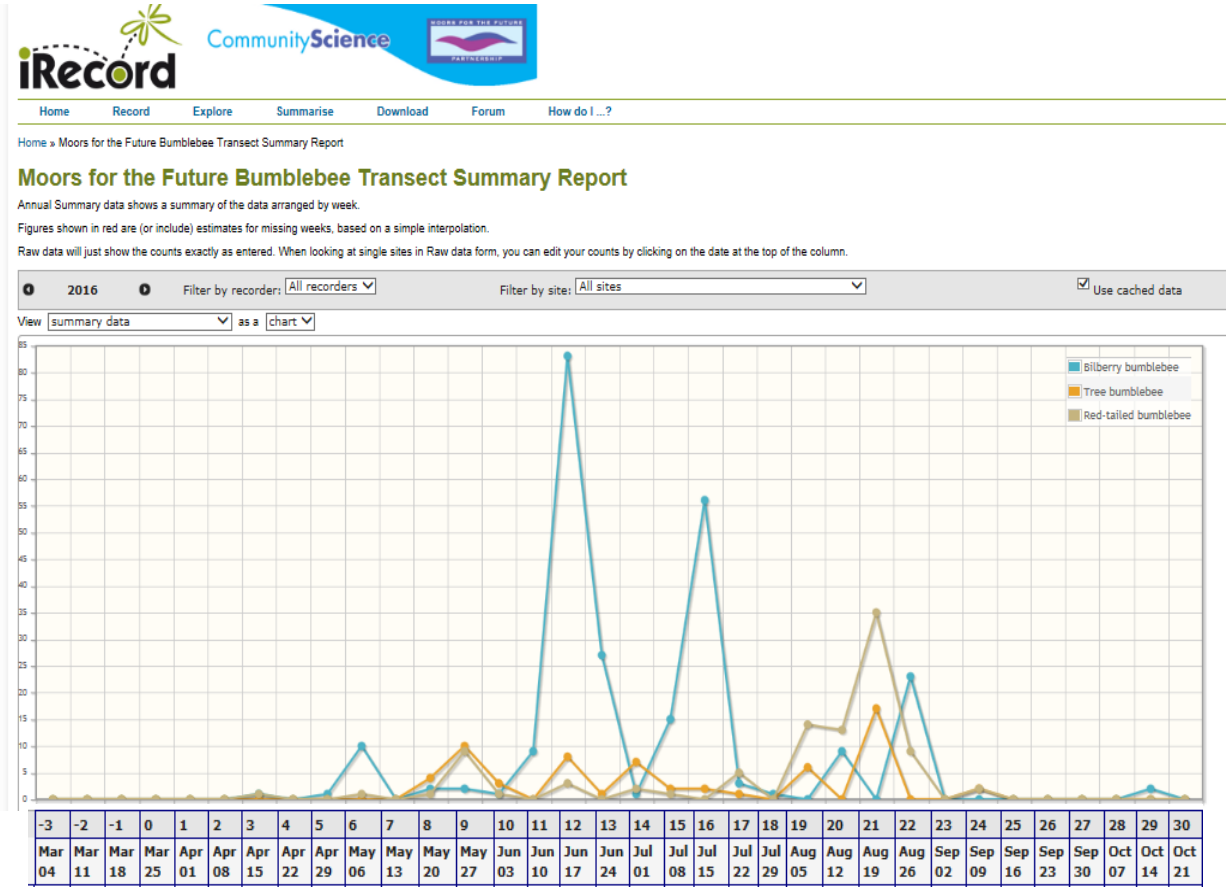


Figure 23: 2016 Community Science targeted monitoring of bilberry, tree and red-tailed bumblebees. Data submitted by, and visible to, volunteers on iRecord.

The number of bilberry bumblebees recorded across all transects increased from 55 in 2015 to 244 in 2016. The average number of bees seen in transect sections in which they were recorded also increased from 2.2 to 7.4. The duration in which bilberry bees were recorded increased by 9 weeks, with sightings reported from the 19th of April 2016 as oppose to 12th May 2015 and the last bees seen during surveys on the 15th of October 2016, five weeks later than those of 2015 (7th of September 2015). Further analysis is needed to determine whether these results indicate real

increases in abundance and activity or whether they reflect an increase in the ability of volunteers to confidently identify this species and their increased activity through-out the survey season.

There was no significant difference between the abundance of tree bumblebees recorded between 2015 and 2016. There was a slight decrease in the average number of bees recorded on transect sections in which they were seen (2.8 in 2015; 1.9 in 2016) although a marginal increase in the number of individuals recorded in total (56 : 58). Whilst the duration in which bilberry bumblebees were recorded during surveys increased by nine weeks the period in which tree bumblebees were recorded decreased by seven weeks. The first tree bumblebees were recorded during surveys on the 22nd of May 2016, five weeks later than those in 2015. The last tree bumblebees were recorded during surveys on the 13th of September, two weeks earlier than in 2015.

Unlike the bilberry and tree bumblebees, red-tailed bumblebee records show very little difference in abundance or activity period for the red-tailed bumblebee. 12 less individual bees were recorded in 2016 reflecting one less bee on average per transect section in which they were seen (4.2 in 2015 to 3.2 in 2016). The first sighting during surveys differed by just one day between years (18/04/2015 – 17/04/2016) whilst the last day was twelve days later in 2016 (13th September).

Sphagnum survey: The Big Moss Map

Following its launch last year 211 volunteers have attended one of 15 *Sphagnum* survey training sessions in 2016 as well as two one-to-one sessions.

Whilst our *Sphagnum* survey training events have been very popular and well received we had concerns that we were not seeing as many completed transects submitted as expected. In response to this we evaluated the methodology to increase the defined distance between patches (from 10cm to 2m) to enable surveyors to cover larger distances and record *Sphagnum* presence at a more useful (and more engaging) landscape scale.

"*VERY* well delivered, very informative - Both Tom and Joe very knowledgeable and helpful"

With the help of a volunteer, who led on the production of the maps using GIS software from home, we have now divided the South Pennine Moors special Area of Conservation into manageable sections (*see Figure 24*). Much like the British Trust for Ornithology's Breeding Bird Survey, we now have 'squares' available for volunteers to adopt and walk the footpaths surveying for *Sphagnum* in their square. By defining set search areas and creating more ownership of survey transects within these, we hope to inspire more *Sphagnum* monitoring amongst our newly trained TM volunteers.

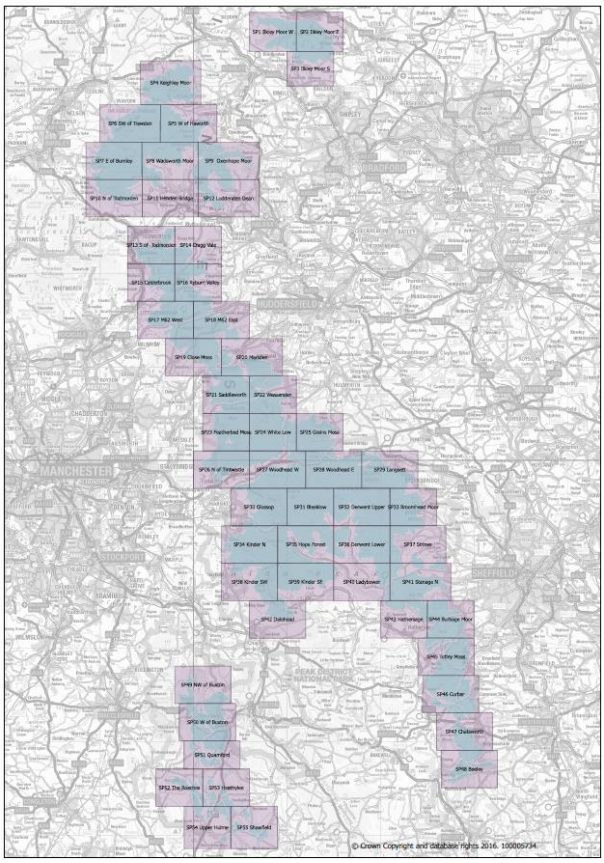


Figure 24: Community Science's Big Moss Map

We are also looking forward to the Community Science *Sphagnum* survey guide featuring in a new ecology textbook, the front cover of which is shown below (*Figure 25*), as an example of citizen science by Dr. Paul Rees, University of Salford.

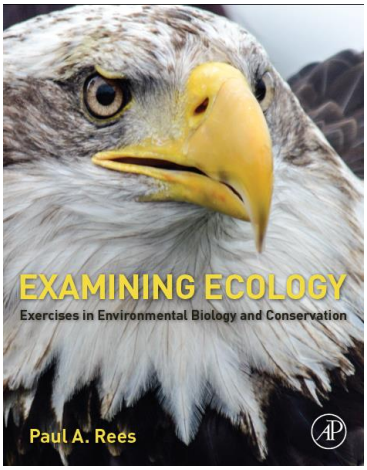


Figure 25: New, as yet unpublished ecology textbook in which our *Sphagnum* survey guide is set to feature.

Buds, berries & leaves survey

Our Buds, berries and leaves survey – focusing on phenology – joined our suite of wildlife monitoring in 2016. Following its successful launch in July we have trained 124 volunteers to monitor the life stages of four common moorland plants (bilberry, common heather, rowan and crowberry) during 12 sessions, plus a one-to-one. As with the *Sphagnum* moss survey this survey can be conducted all year round – in fact that is one of the key elements of the methodology. The transects are based on the same routes as our TM bumblebee survey, enabling volunteers to build up their ecological knowledge and wildlife identification skills across a range of taxa. In future it will also enable Community Science to build a broader picture of the habitat condition at these sites and how this changes over time.

> **"Excellent session especially with the extra info on nutritional benefits of berries"**

Environmental Monitoring (EM)

Monitoring of our four established Environmental survey sites (Edale, Holme, Marsden and Burbage) continues and is now embedded in the monthly activities of National Trust Marsden and Eastern Moors Partnership volunteers at Marsden and Burbage respectively. Monitoring of the Edale and Holme sites is carried out by a small number of individual volunteers who are either local, for example Holme is often visited by local Scout leaders, or keen volunteers from further afield. By the end of the 2016 vegetation monitoring campaign we had 51 individual, active EM volunteers, with an average of 13 per site. We have an additional 44 potential EM assistants who are keen to engage, following their induction, and start accompanying existing volunteers on site visits which provide a great opportunity for peer to peer learning of not only monitoring tasks but also navigating to site and becoming familiar with it.

In addition the summer vegetation monitoring campaign Community Scientists also took part in the Moors for the Future Partnership's wider Science and Monitoring programmes winter dipwell campaign this year. This additional seasonal monitoring campaign has been run across Moors for the Future Partnerships monitoring sites in previous years to build a picture of how water tables are behaving comparably across the landscape. This is the first year Community Science has been included. An extract from a blog post written by a Community Science volunteer explains more…

"Since the middle of September I have been taking part in the dipwell campaign. The purpose of this is to measure the water table level across different sites in the South Pennines on the same day every week for twelve weeks. There are over ten areas to cover with 2 to 3 volunteers or staff members each so it's a fairly big operation.

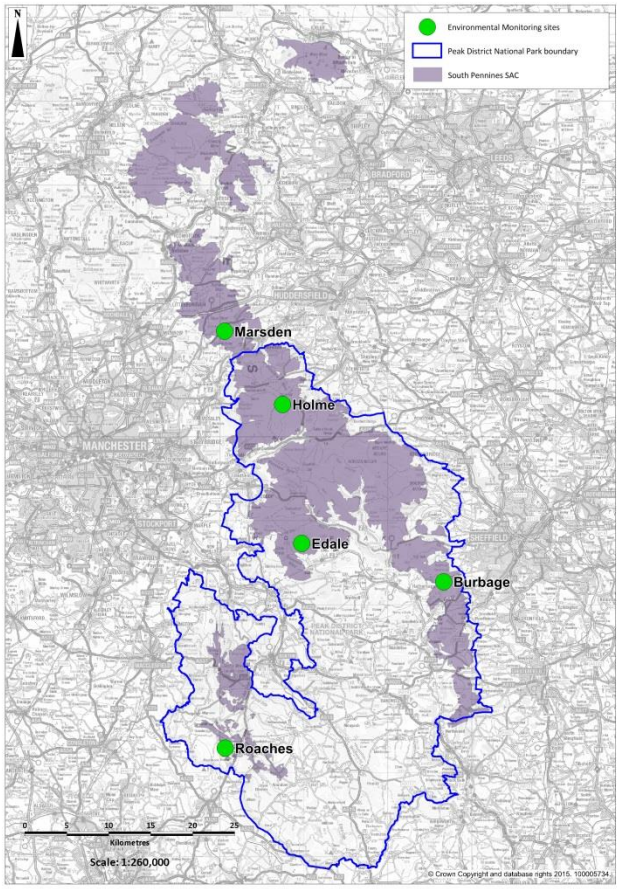
For our group of volunteers we've had the responsibility of monitoring five patches across the Kinder Scout Plateau. As someone who's only ever been up and down a small part of Kinder it has been an amazing opportunity to explore the landscape up there and see it change as we've gone from September through to December.

We've seen ring ouzel, kestrels, a mountain hare, lots of grouse, flocks of redwing and field fares and one of my favourites, a snipe.

It's going to be really interesting to see what the data shows about how well water is retained across different sites, as many of them have restoration works happening nearby. Taking part in the dipwell campaign has been a great way to get involved and didn't need any previous experience. I'm hoping to also take part next year to see how the sites are continuing to change and hopefully spot some more wildlife!" *Mollie, Community Science volunteer.*

Figure 26: Kinder river - our favourite spot for a lunch break.

Although we have experienced glitches with some of the monitoring equipment – namely the surface temperature loggers – which we are resolving with the provider, the reviewed suite of monitoring introduced in Phase II of the project has proved fit for purpose, perhaps most importantly due to its ease of use for trained volunteers.



2016 saw the installation of a new Environmental Monitoring site in the Roaches, expanding our network of EM sites across the South Pennine Moors to 5 (*see Figure 27*).

There are three remaining EM sites to be installed in 2017. Pending permissions these will be located towards the south eastern edge of the South Pennines SAC near Chatsworth, in the High Peak near Langsett and towards the north-west near Hardcastle Crag. At the later site there is potential opportunity to work with the local Slow the Flow volunteer community near Hebden Bridge who are keen to evidence the impact of local natural flood risk management interventions – placing a Community Science EM site above the works at the headwaters of the catchment would add value to both projects.

Figure 27: Community Science Environmental Monitoring sites, including the Roaches which was newly established in 2016.

HLF Approved purposes

HLF Approved purposes	Summary of progress in the first year of delivery – 2016.	Percentage complete
Set up the project management structure and recruit appropriately skilled project team members to deliver the project. Ensure timely support and management of the team.	Project management structure established and strong project team in place. Remaining 10% progress is reserved for timely support and management of the team through-out the life of the project.	90
Establish a pool of volunteers that are trained and supported through the life of the project and beyond. Additionally identify 'Super volunteers' to support other volunteers and work with Project staff.	2016 saw the launch of a new online volunteer registration process (http://www.moorsforthefuture.org.uk/community-science/volunteering-opps) to streamline volunteer recruitment to new Community Science Volunteer Project Assistant (Super Volunteer) roles whilst ensuring PDNPA HR and safeguarding policy requirements are adhered to. To date 141 volunteers have registered for our Project Assistant roles which include Communication; Data; Engagement;Environmental Monitoring; Volunteer Co-ordinator and Wildlife Survey Assistant opportunities. To facilitate volunteer recruitment and ensure volunteers have the opportunity to find out more about the roles, the project and the moorlands – and meet the Community Science face-to-face – 'Welcome Interviews' are a key part of our recruitment process, with emphasis on the 'Welcome'. Our first Welcome interview was held on 31st March 2016. In response to the advertisement of volunteer roles to our existing contacts – some of whom have never actively engaged with Moors for the Future or Community Science – we have now induced 56 volunteer Project Assistants. Having trialled our volunteer registration process and the volunteer role descriptions they will now be externally advertised. Volunteer Project Assistants identified through the Welcome Interviews will begin their volunteer journeys. Quarter 8 (July – September 2016) was the first period where skilled tasks dominated (51%) unskilled tasks in volunteer time as trained volunteers become increasingly confident in undertaking independent monitoring activities. We continue to roll out and evaluate our volunteer strategy as	55

	Volunteer Project Assistants are Data, Communications & engagement, Environmental Monitoring Assistants and Wildlife Survey training volunteers are recruited through our induction process. Following the launch of this year's new TM survey (Buds, berries and leaves) we have recruited 6 new Wildlife Survey Training volunteers who will be the first cohort to go through our 'train the trainer' training. Evaluation of Year 2 will focus on our volunteer strategy, legacy planning and volunteer retention.	
Identify and establish Environmental Monitoring on the Moors on 6 sites plus 2 sites in reserve.	Monitoring of our 4 existing Environmental Monitoring sites continues with volunteer groups taking increasing responsibility for their sites. We have been working with IT departments of external organisations to ensure the relevant software is available for Community Scientists to download and view EM data at these satellite bases. Monitoring of wildlife activity on our environmental monitoring sites, using camera traps, is underway as an additional monitoring variable for 2016 – providing a fantastic data link between our environmental monitoring and wildlife surveys as well as providing an additional point of interest and skill set for volunteers. Our Environmental Monitoring continues to progress with an average of 13 volunteers for each of the four established sites and good retention of individuals. Training sessions this year included 2 bespoke days with a professional botanist to develop or refresh vegetation identification in advance of the Community Science vegetation monitoring campaign at EM sites. Several individuals conducted vegetation surveys at multiple EM sites, giving them opportunity to visit different sites and share knowledge. A new site for 2016 has been established on the Roaches (land managed by Staffordshire Wildlife Trust) and new volunteers for this site have already been recruited. There is a possible opportunity to link in with Environment Agency funding for flood risk monitoring in Calder catchment, increasing learning opportunities for volunteers and increasing added value to Community Science. The exact location of the second of this year's EM site is pending progress of this opportunity but will be installed by March 2017. Permissions for 2017 sites to be secured before March 2017. New to quarter 8 – Community Scientists are now monitoring weekly water table measurements through-out Moors for the Future Partnership's Science and Monitoring teams annual dipwell campaign (September – December). This allows CSP data to feed	50

	into a picture of water table depths across the moorlands of the Peak District and South Pennines on a landscape scale.	
Work with groups using the moorland and establish Targeted Monitoring.	During 2016 we trained 448 volunteers in ecological survey technics to enable and inspire them to conduct Community Science targeted monitoring. • 113 volunteers attended 11 bumblebee training sessions in 2016, plus a one-to-one training session. • 345 unaccompanied volunteer hours were spent surveying bumblebees. • 222 transects were surveyed between March – October 2016- 196 independently by volunteers. • 2510 bumblebees were recorded in total – 90 less than last year. Of these 246 were bilberry bumblebees; 63 tree bumblebees and 97 red-tailed bumblebees. During the bumblebee survey season, from March to October, 35 transects were monitored across the South Pennine Moors in 2016. 71% (25) were surveyed for five months or more. One or more of the three target species (bilberry, tree and red-tailed bumblebee) were recorded on 20 of the 35 transects. 211 volunteers have attended one of 15 *Sphagnum* survey training sessions in 2016 as well as two one-to-one sessions. Our Buds, berries and leaves survey – focusing on phenology – joined our suite of wildlife monitoring in 2016. Following its successful launch in July we have trained 124 volunteers to monitor the life stages of four common moorland plants (bilberry, common heather, rowan and crowberry) during 12 sessions, plus a one-to-one.	66
Create and deliver Opportunistic Surveys for tourists and day visitors.	11,445 OM postcards were distributed in 2016 of which 29% butterfly, 29% were ring ouzel & redwing, 22% were the original bird survey and 20% were our hare surveys – bringing the total number of OM postcards distributed during the delivery phase of the Community Science project to 24,745, more than double the 5,000 annual distribution target. The postcards were displayed at 62 events and 92 static locations including four new weather proof leaflet holders in visitor hotspot car parks. The number of Opportunistic records received more than doubled (with a 214% increase) from 526 in	66

	2015 to 1124 in 2016.	
Work with partners to deliver the project and enable the sharing of data. For example the Stockholm Environmental Institute at York University, Landowners, Environment Agency, Utilities and others.	We have been developing relationships with external partners with whom we can collaborate with on delivery and data sharing of the new Ring ouzel and Redwing survey including the PDNPA North Lees team, Eastern Moors Partnership, Sheffield Bird Study Group, Sorby Natural History Society, National Trust and Eastern Moors Partnership. On the 19th of April we will welcome Environment Agency staff on a Bumblebee training day on which they will conduct surveys in the afternoon. We have also presented at a number of EA presentations and conferences, including the EA Flood and Coast conference. We continue to work closely with the PDNP Learning and Discovery team and jointly presented to 90 Year 10 secondary school students (in 5 groups of 18) through-out a STEM careers day as well as 80 students at Uppingham School on a separate occasion. We also had a stand at a recent Sheffield Moors Partnership event aimed at engaging dog walkers during bird breeding season – enabling us to reach a different audience. We continue to work with Crisis to develop a 'Creative course' and are exploring options for National Accreditation through Certa. As the quantity of data continues to increase partner organisations and collaborators increase our data sharing potential. We continue to speak to Stockholm Environment Institute about engaging students to increase the depth and breadth of data analysis. Marketa Zimova, a PhD student from North Carolina, who is studying the impact of climate change on seasonal crypsis of mammals, is working on graphical presentation of our Community Science hare survey data to feedback to volunteers. Our OM data now feeds into the Mammal Society's Mammal Atlas and Butterfly Conservation's annual butterfly records. Speaking to a member of the public at an engagement event we captured a Ring Ouzel sighting from the previous day in our casual records. This sighting promptly led to the discovery of a breeding territory on a site that had eluded observers from the Eastern Moors Partnership and Sheffield Bird Study Group so far this year – enabling the ongoing observation of breeding success at this site. In addition to partners aiding delivery we have also been speaking to neighbouring HLF funded projects including the South West Peak project and Bumble Bee Conservation Trust's Pollinating the Peak project, on which we sit on the steering group. In July we will be meeting with Sheffield Wildlife Trust's HLF funded Nature Counts project which we hope to collaborate in future. Stockholm Environment Institute are contracted to deliver specific elements of the Environmental,	60

	Opportunistic and Targeted Monitoring design as agreed in Phase 1 and revised at the beginning of Phase 2. In addition to the contracted deliverables we have been working with SEI on joint PhD applications with Moors for the Future Partnership's Science team. Whilst these PhD projects are not specifically related to Community Science they are nurturing important academic relationships for the future. It is still very early days for the Community Science datasets – especially when considering analysis in the context of climate change – keeping academic organisations and professionals on-board will be key to the sustainability of the project. Project delivery has been supported by the contribution of £1,500 from UK National Parks to lead on the Moorland Indicators of Climate Change Initiative (MICCI), incorporating sites into Community Science and, pending the successful engagement of secondary schools during British Science Week, increasing audience reach of under-represented groups in the National Park. There is an opportunity with York University to host a PhD student for 3 months as part of their PIPS programme – Industry Placement.	

Table of Figures

References

- Data submission of Citizen Science Projects: EVID4 Evidence Project Final Report (Rev. 10/14), Defra (2015).

Appendices

- Appendix 1. Volunteering opportunities.
- Appendix 2. Map of 2016 butterfly records with 2015 records inset.
- Appendix 3. Map of 2016 curlew records with 2015 records inset.
- Appendix 4. Map of 2016 red grouse records with 2015 records inset.
- Appendix 5. Map of 2016 swallow records with 2015 records inset.
- Appendix 6. Map of 2016 lagomorph records with 2015 records inset.
- Appendix 7. Map of 2016 ring ouzel records.
- Appendix 8. Volunteer feedback.
- Appendix 9. Volunteer handbook.