MOORS FOR THE FUTURE PARTNERSHIP

Community **Science**

Annual Report 2017

LOTTERY FUNDED

YorkshireWater NATURAL ENGLAND RSPB PEAK DISTRICT NATIONAL PARK Environment Agency National Trust SEVERN TRENT WATER United Utilities helping life flow smoothly

Overall outcomes

Community Science's vision is to evidence the impact of climate change on the internationally important Blanket Bog habitat in the South Pennine Moors Special Area of Conservation by engaging local communities in environmental monitoring and biological recording – raising awareness of the natural world through citizen science.

Suggested reference

Proctor, S., Aspinall, T. D., Margetts, J, J.(2017) Moors for the Future Partnership's Community Science Annual Report 2016, Moorland Centre, Fieldhead, Edale, Derbyshire, UK, S33 7ZA.

With thanks…

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

Contents

Executive summary

In the third year of delivery Community Science has achieved a potential audience reach of over 3.5 million including radio, print and online coverage – bringing the project total to over 15 million people.

We have engaged 370 named volunteers, including 20% retention of volunteers from 2016, as well as 136 un-named volunteers as members of organised groups. This year volunteers dedicated 5,353 hours (765 days) to Community Science bringing the project total to 12,530 hours (1791 days) – the equivalent of more than 6.5 Full-Time Equivalent roles.

21,743 Opportunistic monitoring postcards were distributed in 2017, far exceeding the annual target of 5,000 and doubling last year's distribution of 10,298. Since 2015 9,031 wildlife sightings have been submitted through 2,946 records, a third of which were in 2017 (2,766 sightings from 999 records). The associated HLF target is 50 records per year then doubling with an expectation of 400 by the end of 2018 – to date this has been achieved seven times over.

During 2017 we trained 358 volunteers in ecological survey technics during 43 Targeted Monitoring survey sessions including: Bumblebee; *Sphagnum* moss; Buds, berries and leaves and our newly launched Tails of the uplands (water vole, otter and mink) survey. Volunteers spent 1,162 hours independently conducting targeted surveys and walked over 910 transects (565 miles) – the same distance as Land's End to Edinburgh.

We have extended the network of environmental monitoring sites to seven sites, including the West Pennines and plan to install the remaining site in 2018. Routine monitoring is to be continued across sites through-out the year. By the end of the 2017 vegetation monitoring campaign volunteers had collected 12,000 pieces of information while surveying 720 square metres of moorland.

Results from stakeholder evaluation workshops including Steering Group members, Moors for the Future Partnership staff and Community Science volunteers, identified actions to be achieved before the end of the current funding phase, to improve the sustainability of the Community Science outcomes as well as items for exploration and inclusion, in the Legacy Strategy for Community Science.

Building on last year's evaluation of the project, work in 2018 will focus on implementing improvements to communication, engagement and monitoring elements of Community Science by strengthening and increasing sustainability of the volunteer network and long term wildlife and environmental monitoring. Legacy planning will explore opportunities to expand MFFP's portfolio of citizen science.

Introduction

This report presents an overview of delivery in 2017 in context of the work undertaken in the previous two years of Phase II of the HLF funded Community Science project.

As Moors for the Future Partnership's step into citizen science the Community Science project is widely considered a success. It has been commended by Natura2000 for Best Practice Communications, was a finalist for the National Biodiversity Network's group award for biological recording and won this year's Campaign for National Parks Park Protector Award (see Figure 1).

Figure 1: Award winning - Community Science received the Campaign for National Parks Park Protector Award (left) and were short-listed for the National Biodiversity Network's Lynne Farrell group award for biological recording (right).

2017 was the third year of Delivery (HLF Phase II) and, with a strong project team in place, it saw the launch of the last Opportunistic and Targeted Monitoring surveys– this increased audience reach though greater diversity of available and relevant volunteering opportunities for robust wildlife monitoring in the uplands. This year also saw the expansion of the network of Environmental Monitoring (EM) sites across the South and West Pennine Moors to seven, with new sites established at Chatsworth and Holcombe Moor. The eighth and final EM site is due to be installed in spring 2018.

Community Science has developed clear, engaging volunteer roles (http://www.moorsforthefuture.org.uk/community-science/volunteering-opps) and a supportive volunteer recruitment process underpinned by a variety of high quality communication and survey resources.

To ensure resilience within the small project team we have actively encouraged the development and use of communication, engagement and scientific skills across the three project roles (Project Manager, Project Officer and Communications and Engagement Officer).

A flexible, pragmatic and forward looking approach has led to several budget revisions during the project which have enabled the appropriate reallocation of resources to support effective delivery. In December 2017 an extension of the HLF funding expiry date was confirmed from May to December 2018 during which the three members of the Community Science staff team will be retained full-time.

Since 2015 we have raised over £9,400 of additional income and generated £12,400 of added value from partners and external organisations enabling us to maximize the benefits of the projects approved purposes (page 45). This included working with the Peak District National Park's Learning and Discovery team to co-ordinate the 9th year of the Moorland Indictors of Climate Change Initiative (MICCI) to engage under 25's (primary school, secondary and university groups) in scientific moorland monitoring across UK National Parks using Community Science methodologies.

Communicating Community Science

Sharing and exchanging information about Community Science with a broad range of audiences in an accessible and engaging manner has been highlighted as one of the strengths of the project and remains key to ensuring its sustainability.

A network of digital communication tools (social media; blog and e-newsletter) and face-to-face engagement events (guided walks; talks; displays and survey training sessions for multiple taxa). Community science raises awareness of and attracts attention to the importance of the internationally important blanket bog habitat on which MFFP work. Whilst this function alone is valuable Community Science communications aim to hold people's interest and inspire the decision to take action by volunteering with the project.

Face-to-face engagement

Building on the 38 events attended in 2015 and 42 in 2016, Community Science actively participated in 60 local and regional and national events in 2017, representing 70% of the events attended by Moors for the Future Partnership this year. These events included: ten meetings with a focus on our Targeted Monitoring surveys; four events to promote Opportunistic surveys; four survey taster sessions; four stands at promotional events and a Bogtastic event as per the annual project target.

Figure 2: Environment Agency Biodiversity Technical Specialist and otter expert, Andrew Crawford, explained the importance of the Community Science survey in a national context in a wonderfully engaging and informative presentation at the Tails of the Uplands launch event.

Events hosted by Community to mark the launch of new surveys have gone from strength to strength thanks to fantastically engaging guest speakers. This year's new Opportunistic survey 'Scales and Warts' was successfully launched in April with an audience of over 90. August saw the launch of our new Targeted Monitoring survey – Tails of the Uplands – monitoring water vole, otter and mink across the South Pennine Moors. The event attracted a 100 strong audience and was very well received (see Figure 2).

Community Science reached over 2,500 people in 2017, of which 13% (321) were known to be under 25 years old bringing the projects total face-to-face audience reach through engagement events to over 7,350 in the last three years.

Digital community

Having developed our web presence in 2015 we continue to have a growing online community. We have attracted 1804 *MoorCitizens on social media through Twitter (978), Facebook (645), Instagram (150), Pinterest (23) and Flickr (8) – 305 of which joined us in 2017. This far exceeds the project target of 500 twitter followers. *As undoubtedly some individuals will be represented more than once this figure is likely to be a slight overestimate.

Throughout 2017 218 tweets attracted 3620 profile visits, 519 retweets and 196 mentions, resulting in 163,100 impressions (number of times tweets were loaded onto user pages) – a 22% decrease from 2016. There has however been a significant increase in the projects cumulative impressions (see Figure 4).

Figure 3: Videos captured on our Environmental Monitoring sites, like the one above featuring a roe deer in August, have been a great way of increasing online engagement.

2017 enjoyed a combined audience reach of Facebook and Twitter of 275,677 based on impressions, and subsequent engagement of 6,549 users.

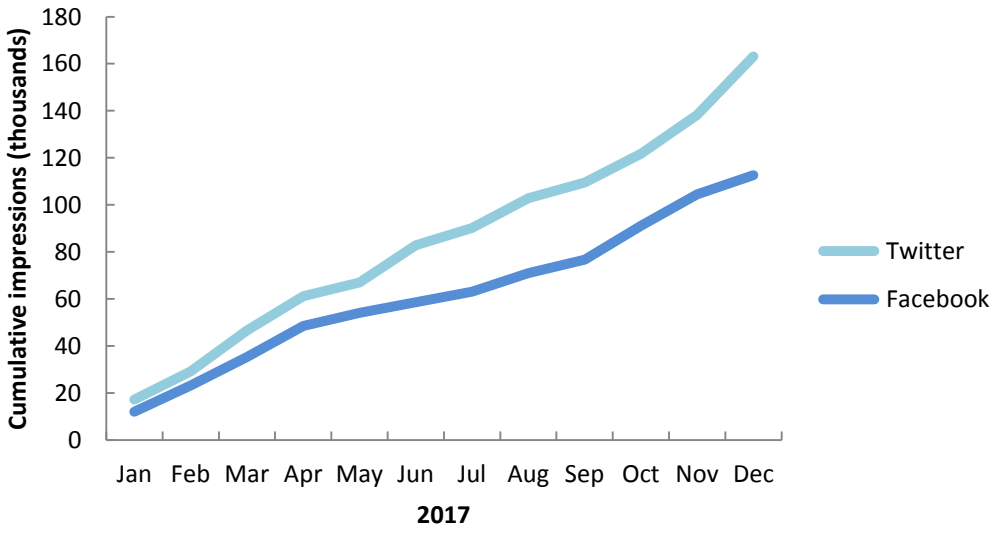


Figure 4: Number of social media impressions MoorCitizens achieved in 2017. Impressions are the number of times that items, in this case tweets or Facebook posts, are displayed on screen.

On Facebook 177 posts had a total user of reach of 58,114 with an average of 8.5 unique users engaged daily and 645 page likes (see Figure 5) - exceeding the annual target of 156 posts.

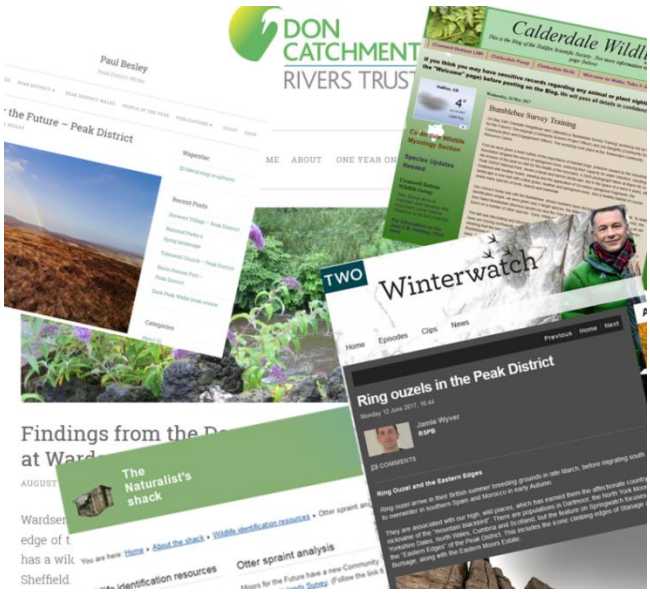


Figure 5: Social media, blog and web statistics 2017. External blog articles (pictured left) increased our audience reach.

978 Twitter followers ⬆ **152**

645 Facebook page likes ⬆ **94**

8,281 Views of Community Science blog ⬆ **3,165**

46,815 Views of Community Science webpage ⬆ **17,929**

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. This increased to 8,281 in 2017 (see Figure 5). Community Science created content, guest and external blogs in 2017 included:

- The Mountain Hare (04/04/2017) Paul Besley - Peak District Writer
  https://paulbesley.blog/2017/04/04/the-mountain-hare-peak-district/
- Moors for the Future - Peak District (27/04/2017) Paul Besley - Peak District Writer
  https://paulbesley.blog/2017/04/27/moors-for-the-future-peak-district/
- Bumblebee Survey Training (24/05/2017) Calderdale Wildlife
  http://calderdale-wildlife.blogspot.co.uk/2017/05/bumblebee-survey-training.html
- Ring Ouzels in the Peak District (12/06/2017) BBC Springwatch blog
  http://www.bbc.co.uk/blogs/natureuk/entries/ded4661d-2064-4253-bd66-e7fe19fff13d
- Otter spraint analysis (09/08/2017) The Naturalist's Shack
  http://www.naturalists-shack.com/about-the-shack/wildlife-identification-resources/40-spraint-analysis.html
- Findings from the Don Discovery Bioblitz at Wardsend Cemetery (18/08/2017) Don Catchment Rivers Trust
  https://doncatchment.wordpress.com/2017/08/18/findings-from-the-don-discovery-bioblitz-at-wardsend-cemetery/

Community Scientist

Our quarterly newsletter, Community Scientist was launched in 2015. It has proved a good way of feeding back short updates on our survey results to volunteers, which is widely recognised as a key element of volunteer retention, as well as keeping existing and potential volunteers and partners informed of new opportunities and items of interest. November and December's edition of Community Scientist were sent to 1,134 people of which 41% and 38% opened them respectively, including people in Australia, India, Canada and Egypt. 10 - 16% clicked a link to view content in more detail.

Figure 6: Our e-Newsletter, the Community Scientist, can be found at http://www.moorsforthefuture.org.uk/community-science/newsletter

> ***"Thank you for such an interesting and upbeat newsletter to end the year! This project has fuelled a lot of enthusiasm and spawned new skills for many people. Very well done!"*** **Jenny (volunteer)**

As a result of press releases inspired by monitoring or engagement events (see Figure 7) such as; launching new wildlife surveys and promoting events such as our annual photography competition. Community Science achieved a potential audience reach of 3,598,732 this year through 67 television, radio, print and online articles (see Figure 8). With the addition of a shout out on Simon Mayo's Drive-time show on BBC Radio Two, the audience increased to 13,184,732. Since 2015, the start of the Delivery Phase, Community Science's total audience reach through media sources has now extended to over 15 million people (excluding the BBC Radio 2 mention) – far exceeding the 10,000 annual target.

Figure 7: Our Community Science team welcomed Maha El-Jack from British Muslim TV Sisters' Hour – the piece featured during National Parks Week over three evenings on July 25, 26 and 27, 2017.

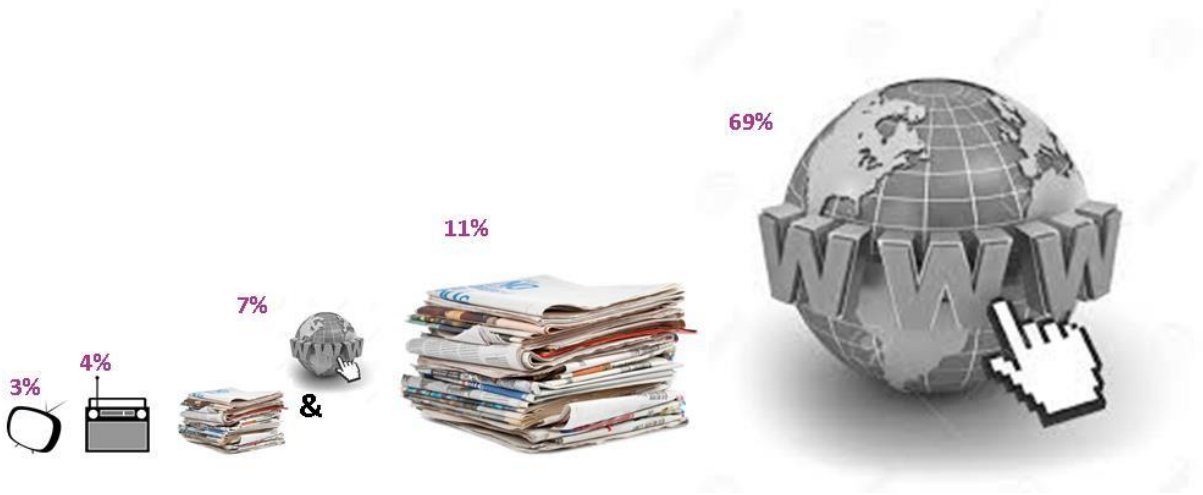


Figure 8: 67 media articles featured Community Science in 2017 across: television; radio; print & online features; print only and online only sources – the relative coverage of each is shown above.

Annual photo competition

Following on from the success of previous years 2017 saw the launch of the third Community Science Photo Competition. The competition meets a delivery target whilst maximising on the opportunity to engage new audiences which Moors for the Future Partnership may not otherwise reach. Not only does the competition draw interest from those entering images, it creates significant social media and press coverage. Its audience is extended through subsequent winning and short-listed images being collated into a touring display.

Figure 9: Winning and short-listed images were displayed at venues, including Sheffield Central Library (centre) from April to September. This year saw the first 15 Years and Under category – won by Ben Roebuck (left) and close runner up Lewis Knowles (right).

The 2016 Photo competition 'Water in the Uplands' went on the road from May to September 2017 (see Figure 9) visiting 10 venues including two art galleries, four libraries, four visitor centres and exhibition rooms in around the South Pennines.

13 media articles including an online piece in BBC Wildlife Magazine's 'Discover Wildlife', an item on High Peak radio and feature in Rochdale online – these had a combined audience reach of 374,000.

Figure 10: Kindly donated and much appreciated prizes make the photo competitions a success. Prizes for 2017 were collectively worth £660.

The subject of the competition has changed each year. 2015 started with 'Wildlife in our Uplands' and in 2016 was 'Water in our Uplands'. This year's competition 'Adventures in the Uplands' encouraged entries to be more people focussed on images of people in the landscape as a common criticism of landscape orientated projects is that don't promote people using the landscape for activities. When this year's competition closed on the 31st of December it attracted 440 entries.

Knowledge sharing

Whilst much of the knowledge and experience gained by the Community Science team has been accumulated during delivering against objectives the opportunity to network with other professionals has been invaluable.

In 2017 the Community Science team presented at the 'Learning with the citizens' workshop organized by the HLF funded CoCoast project and British Ecological Society's Citizen Science Special Interest Group. The aim of which was to 'bring together individuals with a range of expertise and experience in citizen science, in order to evaluate the design of citizen science to date and learn from each other how to improve the design of citizen science projects in the future.'

Moors for the Future Partnership's Community Science team also presented at a HLF funded conference of the same name - Community Seagrass Initiatives 'Community Science in the Natural World' (see Figure 11). Collectively we shared knowledge and expertise with over 400 citizen science professionals and volunteers through these two events. To further our understanding of biological data flows, which have been identified as a potential challenge for all citizen science projects, the

team also attended the National Biodiversity Network's annual conference which provided valuable insight into data verification issues and data flows common at local, regional and national scales.

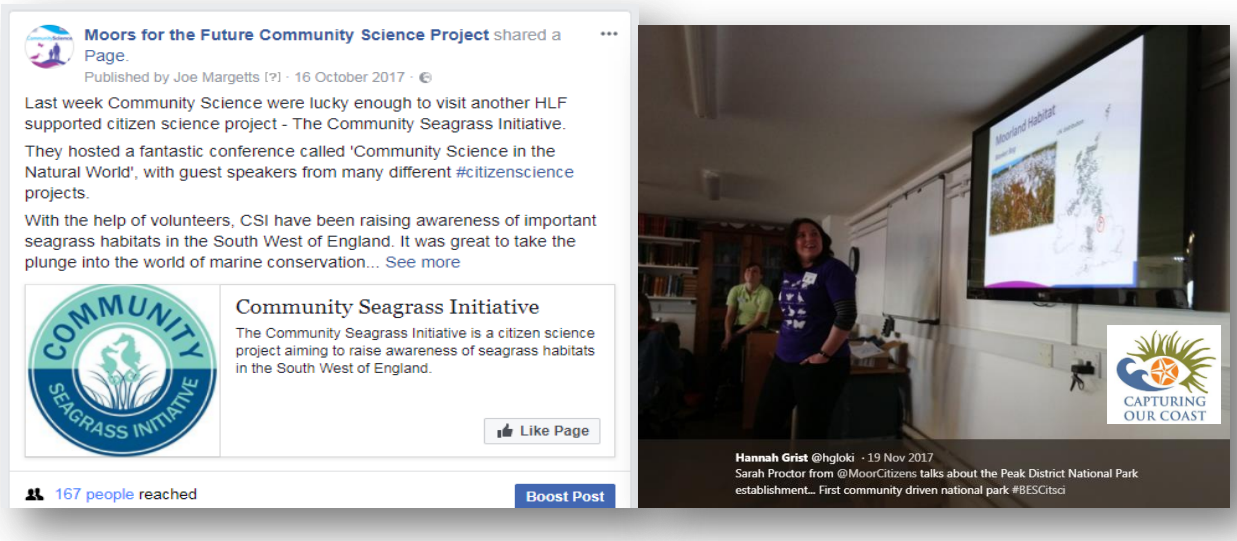


Figure 11: Networking with other citizen science projects such as the HLF funded Community Seagrass Initiative (left) and Capturing our Coast projects (right) have provided valuable knowledge sharing opportunities.

As well as promoting Community Science in national networks we have been increasingly involved in sharing knowledge and expertise with local citizen science projects. During 2017 we worked closely with Sheffield and Rotherham Wildlife Trust's HLF funded Nature Counts project during development of the new 'Tails of the Uplands' survey. We have also provided training to the HLF funded Nature for All community project in Ilkley, potentially enhancing sustainability for both projects. Community Science also represents MFFP on the Bumblebee Conservation Trusts HLF funded Pollinating the Peak project, a project we have supported since it's initiation, and will continue to support them with deliver in 2018. Community Science has also provided best practice knowledge exchange with the HLF funded Sheffield Lakeland Landscape Partnership and RSPB led 'Upland Skies' Expression of Interest submitted to HLF this year.

Volunteer engagement

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 and explore the great outdoors to 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.

Since 2015 volunteers have dedicated 12,530 hours (1,790 days) to Community Science - 5,353 hours (765 days) of which were in 2017. Overall this equates to more than 6.5 Full time-equivalents giving more than a 2:1 return rate against the three Community Science members of staff in terms of resources.

The number of named volunteers, (not part of an organised group) recording volunteer hours has continued to increase through-out the project. The hours went from 186 in 2015 to 342 in 2016 and 370 in 2017. An additional 274 volunteers took part in activities but were not individually named.

Of the 789 named volunteers:

- 41 were retained from 2015 to 2016 – 35 (85%) of whom volunteered for the same number of sessions or more.
- 74 were retained from 2016 to 2017 – 50 (67%) of whom volunteered for the same number of sessions or more.
- 28 carried on volunteering from 2015 to 2017.

In 2017 73% of volunteers engaged in a single type of activity (Targeted Monitoring; Environmental Monitoring; communications; data or Opportunistic Monitoring), 17% (88 people) engaged in two types of activity, 9% in three types of activity and 1% (5 volunteers) engaged in four types of volunteering activity.

Figure 12: Volunteer engagement ranged from sessions with Edale Primary School (above left), training with Sheffield University (above right), skilled environmental monitoring (bottom left) and guided walks with University of the Third Age (bottom right).

At least ten Community Science volunteers have gone on to gain employment in a related field, including posts at the National Trust, Peak District National Park, Yorkshire Peat Partnership, Chatsworth Ecology team, an ecological consultancy and within the Conservation and Land Management, Communications and Science teams of Moors for the Future Partnership.

By the end of December 2017 Community Science reached its project target of £171,050 financial equivalent of volunteer time as illustrated in Figure 13. This graph previously included forecast trajectories for during and after project however, having reached the current target it is difficult to accurately estimate future increases in volunteer time expressed as a financial value. Reporting of volunteer time will continue as long as there is capacity to do so. Future analysis of volunteer time will give valuable insight into the importance of factors including staff support and the provision of fresh volunteering opportunities on continued volunteer activity.

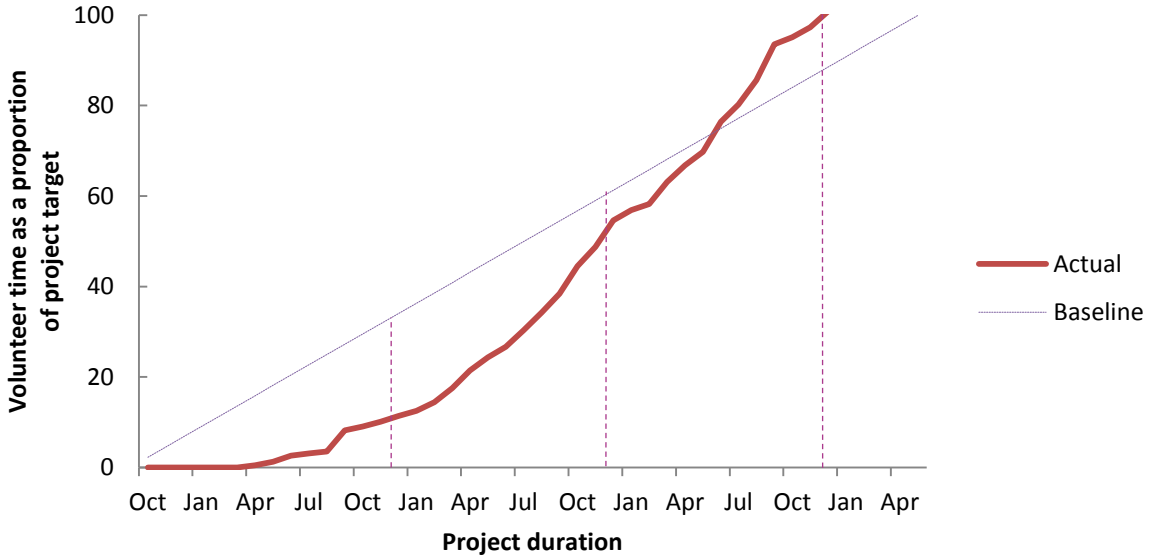


Figure 13: Volunteer time as a proportion of the project target. Vertical lines indicate calendar years of Delivery Phase.

The financial equivalent of volunteer time is based on the assignment of volunteer tasks to 'unskilled', 'skilled' and 'professional' categories. Supported activities that don't require prior training such as submitting wildlife sightings through the OM surveys or attending training are classed as 'unskilled' whilst unaccompanied activities that require prior training such as completing Targeted or Environmental Monitoring categorised as 'skilled'. Tasks in the 'professional' category include activities such as providing expert advice, being a guest speaker or producing GIS maps for reports such as this. The contribution of volunteer time attributed to these categories is shown in Figure 14.

Unsurprisingly there is somewhat of an annual pattern in volunteer activity associated with seasonal monitoring activities with TM training sessions occurring in spring and summer, along with the highest number of OM record submissions. Activity falls off towards late summer and autumn when trained surveyors submit their own TM records. We would expect a retention of volunteers undertaking independent TM and EM surveys which would account for a minimum level expected level of 'skilled' volunteer activity throughout the year (see Figure 15) – currently above 40 volunteer days per quarter (see Figure 14).

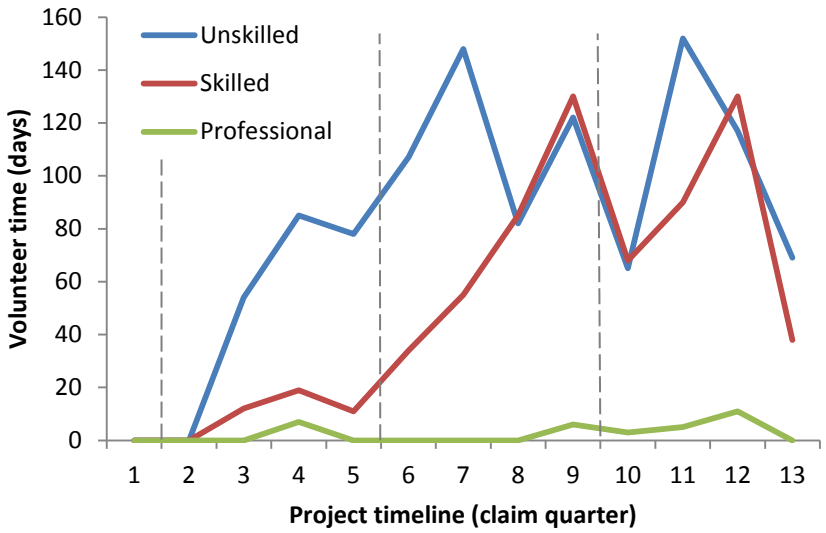


Figure 14: Volunteer time accumulated across the three volunteer activity categories: unskilled; skilled and professional. Dashed lines illustrate calendar years from 2014 to 2017.

The majority of volunteer time categorised as unskilled has been accumulated from volunteers attending Targeted Monitoring (TM) training sessions (62%), assisting with communication activities including distributing Opportunistic Monitoring (OM) postcards and helping at engagement events (14%), and learning how to undertake Environmental Monitoring (EM) whilst accompanied by a member of staff (13%) (see Figure 15).

When volunteers start conducting TM and EM surveys independently their time becomes categorised as Skilled, with TM and EM surveying accounting for 85% of skilled volunteer time (48% and 36% respectively) (see Figure 15).

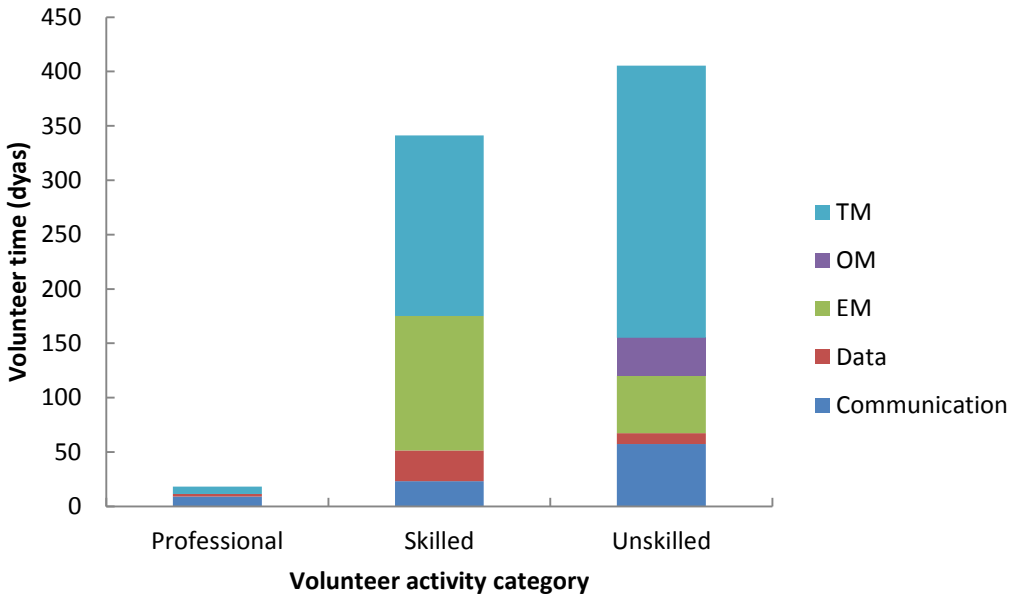


Figure 15: The contribution of volunteer time per Community Science volunteer task (including: Targeted (TM), Opportunistic (OM) and Environmental Monitoring (EM)) within assigned volunteer activity categories from 2015 - 2017.

Figure 16 explores which activities volunteers have dedicated time to since the start of the Delivery Phase in 2015. Data, engagement and OM activities categorised as unskilled have steadily increased through-out the project. More time was spent learning how to undertake Environmental Monitoring with staff in 2015 than in 2016 (unskilled) however this was mirrored by an increase in time spent undertaking independent EM surveys (skilled) as volunteer activities moved from unskilled to skilled. Unskilled EM time rose again in 2017, presumably with the addition of new sites and therefore new volunteers whilst skilled EM time decreased, perhaps as individuals became more confident and able to complete surveys more quickly.

The amount of volunteer time spent on unskilled TM activities (attending training sessions) reflects a shift in the mechanism of survey training from large groups to more one-to-one sessions led by volunteer Wildlife Survey Trainers. The amount of time spent undertaking TM surveys (skilled) continues to increase.

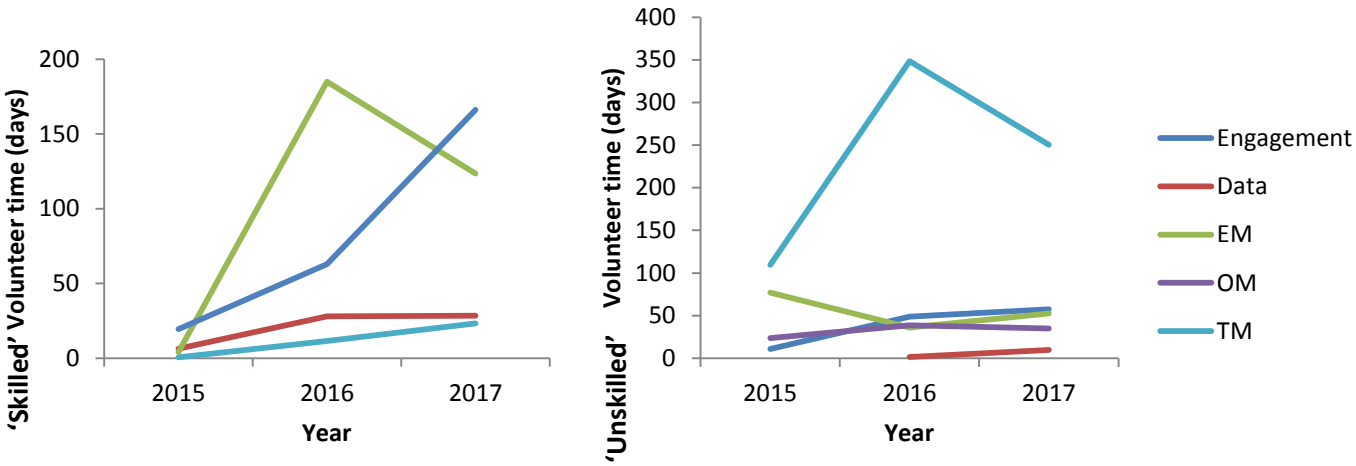


Figure 16: Volunteer time dedicated to Communications and Engagement; Data entry, processing and presentation; Environmental Monitoring (EM); Opportunistic Monitoring (OM) and Targeted Monitoring (TM) tasks categorised as Skilled (left) and Unskilled (right).

As part of the project evaluation a questionnaire was designed to assess the contribution of different aspects of Community Science at engaging volunteers. 89 responses were received from 380 invitations to participate yielding a good response rate of 23%. The results of the completed questionnaires were analysed to identify how volunteers first became aware of Community Science. The majority (20%) first heard of Community Science from a MFFP member of staff or volunteer suggesting the enthusiasm and communications of the existing team play an important role in engaging new potential volunteers. Picking up or seeing a postcard provided the second most common way of becoming aware of Community Science along with 'through other organisations' and from an 'internet search for volunteering' – all of which gained 11% each of responses to the question 'How did you first hear about Community Science?'. Press coverage (8%), social media (7%) and 'attending a talk' (7%) provided other notable ways of hearing about Community Science with the remaining 25% of responses including: word of mouth; posters; through the Peak District National Park; through the website and newsletter.

Figure 17 begins to explore the impact of different methods of communication at raising awareness which then translates into the action of taking part in a volunteer activity. Of the 18 people (20% of questionnaire respondents) who heard about Community Science through an existing member of staff or volunteer all but one went on to take part in a volunteer activity. The majority (61%) either attended a Targeted Monitoring training session or took part in a TM survey as their first volunteer activity. All of these volunteers then went on to submit an OM record and participated in one or more TM survey (which would count as skilled volunteer activities), engagement, data or EM activity. This volunteer pathway, from awareness to action, led to some of the most engaged volunteers in terms of participating in a range of volunteer activities, including independently undertaking TM surveys. People that became aware of Community Science by picking up or seeing a postcard tended to participate in submitting an OM record as their first volunteering activity. Of these people four went on to take part in TM surveys while the other two have taken no further part in other volunteer activities to date.

Further analysis of these volunteer pathways is needed, however on initial investigation the less commonly reported the method of first communication is, the less likely it is for the volunteer to become engaged in a variety of activities especially those requiring slightly more commitment like TM surveying.

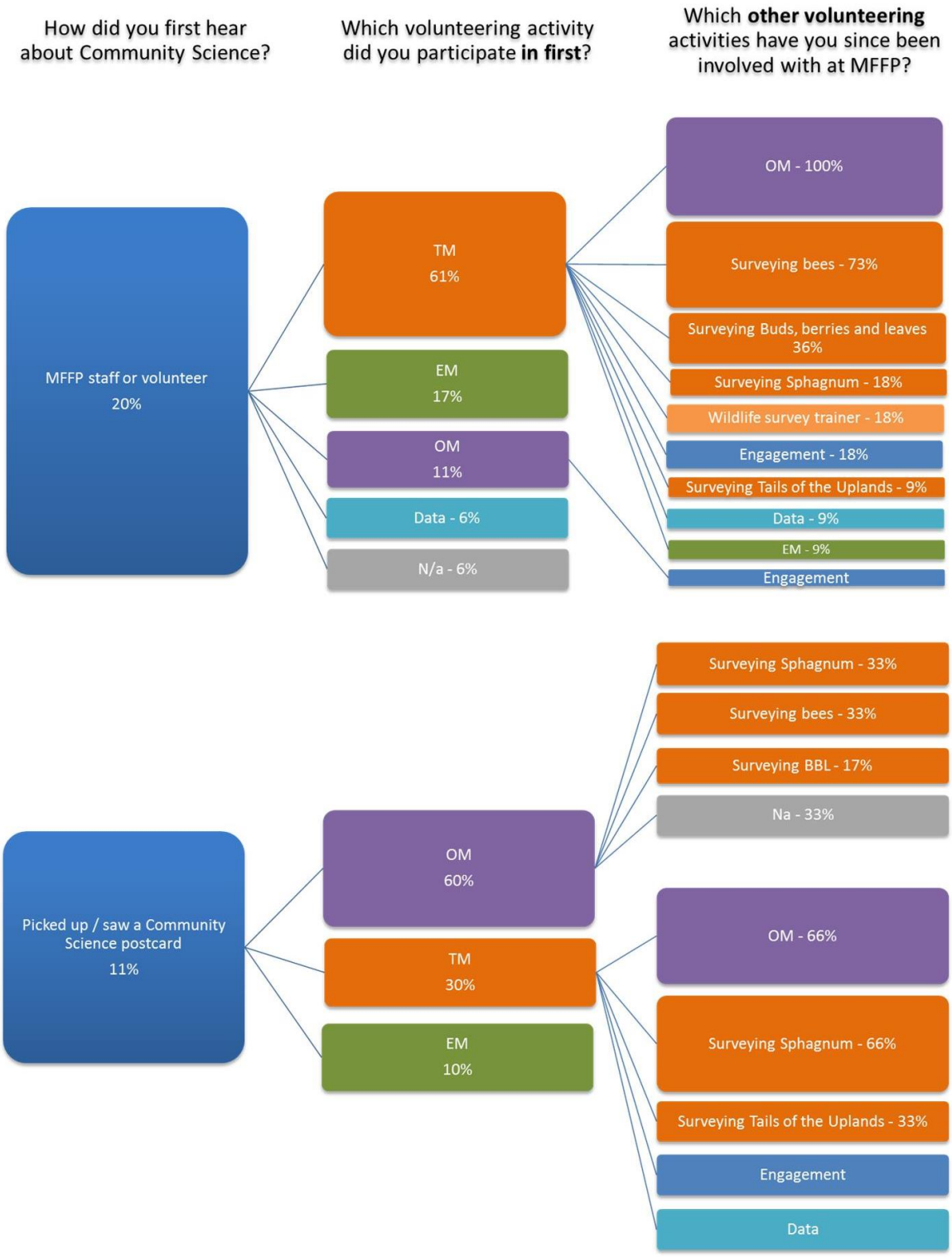


Figure 17: Example of Community Science volunteer pathway from becoming aware of opportunities to taking an interest and then taking action. Targeted Monitoring (TM) shown in orange; Opportunistic Monitoring (OM) in purple; Environmental Monitoring (EM) in green.

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 we are able to raise awareness of moorland conservation to 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.

Young people under the age of 25 are underrepresented in their access to green space. In 2017 Community Science led the Moorland Indicators of Climate Change Initiative (MICCI) – 'a UK-wide project that has been developed to give secondary school students the opportunity to take part in real world climate science – helping to make concepts learned in the classroom come to life' (http://www.nationalparks.gov.uk/students/micci-project).

MICCI was initially set-up by the Peak District National Park Authority's Learning and Discovery team, with Moors for the Future Partnership providing the Science advice and support. In 2017, with funding from National Parks UK and working with the PDNPA Learning and Discovery team, Community Science revised the methodology to refresh the activities, learning objectives and equipment use. Twelve MICCI sites were incorporated into Community Science Environmental Monitoring system, meeting several of our HLF deliverables.

Figure 18: Community Science's environmental monitoring expanded to include the Moorland Indicators of Climate Change Initiative (MICCI) in 2017 enabling 51 young people to experience scientific moorland monitoring.

During British Science Week (10th – 19th March 2017) Youth Rangers, Secondary School & University students explored their local moorlands and learnt how to monitor indicators of climate change across the Peak District, Snowdonia and North York Moors National Parks.

In the Peak District 51 young people explored internationally important moorland within the National Park and learnt how to undertake scientific monitoring in the field.

Data from additional Community Science Environmental Monitoring sites give context to MICCI data – which represents a snapshot of environmental conditions at specific moorland sites. Data collected included wildlife sightings, vegetation monitoring, peat depth measurements, weather recording and blowing

bubbles to measure the water table. This year MICCI volunteers were the first to test a brand new prototype developed by University of Manchester to visually estimate Dissolved Organic Caron (DOC) in water samples in the field.

Figure 19: Working with teams across the National Park, Community Science has expanded its audience reach to groups who are underrepresented in their access to green space including MOSAIC, CRISIS and Experience Community.

2017 saw the second year of our monthly Creative Conservation programme developed with CRISIS's South Yorkshire Skylight Arts team. This year three members completed a Certa unit certificate in Data Handling: recording and representing data (see Appendix 9). Feedback from members at these sessions suggests the volunteers are developing their personal skills whilst exploring green space and learning about moorland conservation (see Figure 21). In 2018 our sessions will enable people to work towards Navigation and Map reading; Taking part in an activity and Vegetation and tree identification units.

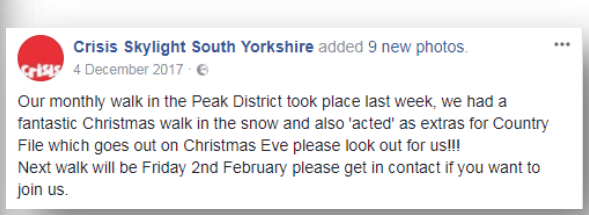


Figure 20: Our Christmas Creative Conservation celebration session with the Crisis Skylight programme included snow, Christmas trees and surprise Country File filming.

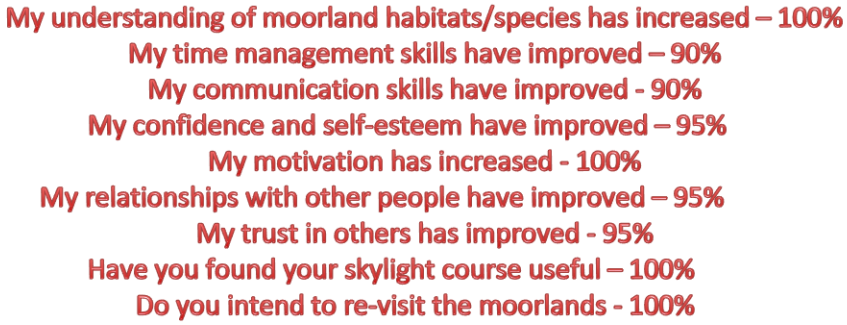


Figure 21: Responses from 20 Crisis Creative Conservation feedback forms - % = number of people who thought:

To ensure volunteer opportunities are available to everyone, irrespective of whether they own suitable outdoor clothing we ask all volunteers during the induction process if they feel they have appropriate outdoor clothing for fieldwork – an explanation of this is provided during the welcome meeting. Of 237 volunteers 78% responded that they did have appropriate outdoor clothing for fieldwork. The remaining responses were blank and no-one stated that they didn't. Whilst it is vital to ensure volunteers are suitably equipped and budgeted appropriately the project has had a significant underspend in volunteer equipment therefore some has been reallocated during budget revisions.

Of 237 registered volunteers 39% also volunteer for other organisations including wildlife conservation organisations: Wildlife Trusts; National Trust; RSPB and Peak District National Park as well as charities that directly support people including: Mountain / Cave Rescue groups; Community groups and Duke of Edinburgh. This suggests 61% of people registering to volunteer with Community Science are not otherwise engaged with volunteering.

Social mix of volunteers

To review the social mix of active volunteers the feedback from 644 volunteers taking part in targeted monitoring training sessions from 2015 to 2017 were analysed.

Volunteers 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 this is to 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 2017 (see Figure 22). Community Science's TM training sessions provide a great opportunity to engage, 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 from this sample (see Figure 22). However, this age range is engaged with through our

work with Crisis where 80% of volunteers are between 25 – 45 years old, although this is a small sample size from 20 feedback forms.

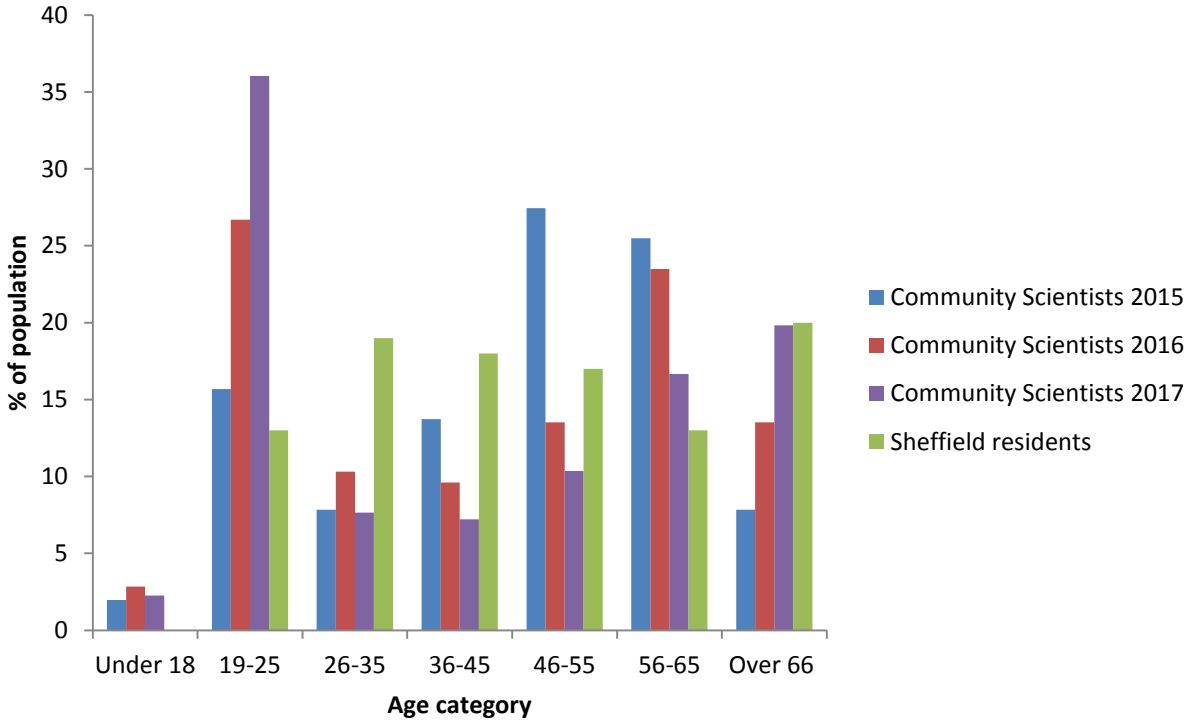


Figure 22: Age range of Community Scientists compared with Sheffield residents. Data from Targeted Monitoring training session feedback forms.

Continued engagement of volunteers with a variety of employment statuses (see Figure 23) suggests communication and engagement, as well as the volunteer activities available; continue to appeal to a broad audience with varying amounts of time commitments. 2016 saw an increase in the proportion of volunteers in full-time education and retirement in comparison to those in employment (full-time, part-time or self-employed) and unemployed. This pattern continued in 2017 with 36% of people attending TM training sessions being in full-time education; 30% retired; 28% in employment and 6% unemployed. This sample however may not be representative of the wider demographic of Community Scientists as the attendance of university groups to TM training may over-represent the number of volunteers in full-time employment.

91% of 213 volunteers attending TM training sessions identified themselves as of Caucasian ethnicity in 2017. 3% of volunteers (6) identified themselves as Asian and 1% (2) as African – a small increase in the representation of volunteers with Asian and African ethnicities. The remaining responses from volunteers identified themselves as having an 'other' ethnicity which included Eastern European, Maldivian and variations of British. There were no remarkable differences in the social mix of volunteers attending the different Targeted Monitoring survey training sessions. Whilst the feedback from TM training sessions is the largest data set we have to capture the social demographic of active volunteers it may not be representative of the wider diversity of volunteers participating in other activities including our work with Peak District MOSAIC, who provide opportunities for people from black and ethnic minority communities living in the urban fringe of the Peak District to engage in activities taking place in the National Park.

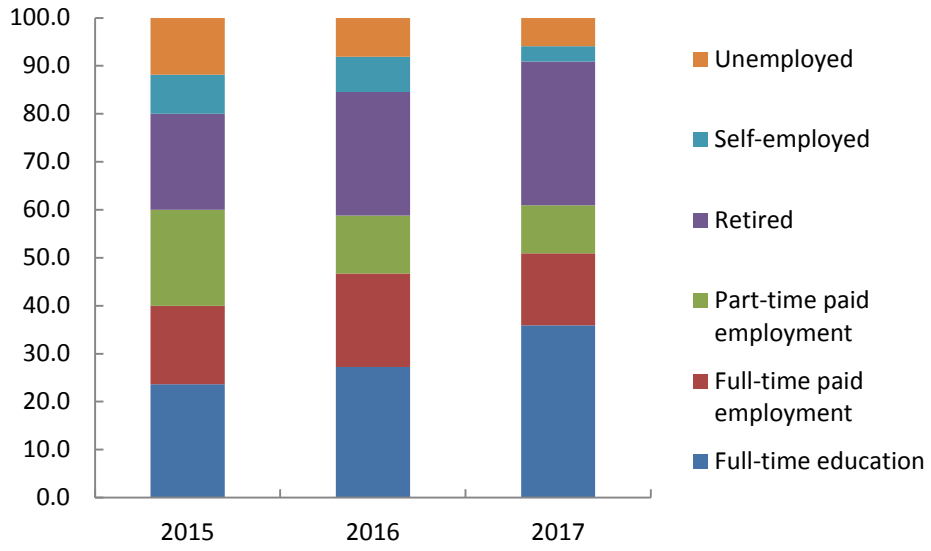


Figure 23: Employment status of Community Scientists attending TM training.

Health and well-being

Volunteering is strongly associated with health and wellbeing benefits (see www.mind.org.uk five ways to well-being) by enabling people to:

- *Connect* with people; creating time to talk & interact outside your work life.
- *Be active* - walking, talking & exploring the moorlands of the Peak District and South Pennines.
- *Take notice* of the natural space around you - develop your awareness of the little things and take in the spectacular views—taking time to savour the moment.
- *Learn* something new , like how to identify moorland wildlife or set yourself targets to take part in environmental surveys.
- *Give* your time to help Community Science collect valuable information on the health of our moorlands and share this with others.

Feedback from 641volunteers who attended a Targeted Monitoring training session reported that their understanding of the moorland habitat had increased (96%), that they had learnt new surveying skills at the session (84%) and that the information given at the training session had given them the confidence to undertake surveys (90%) – see Figure 24.

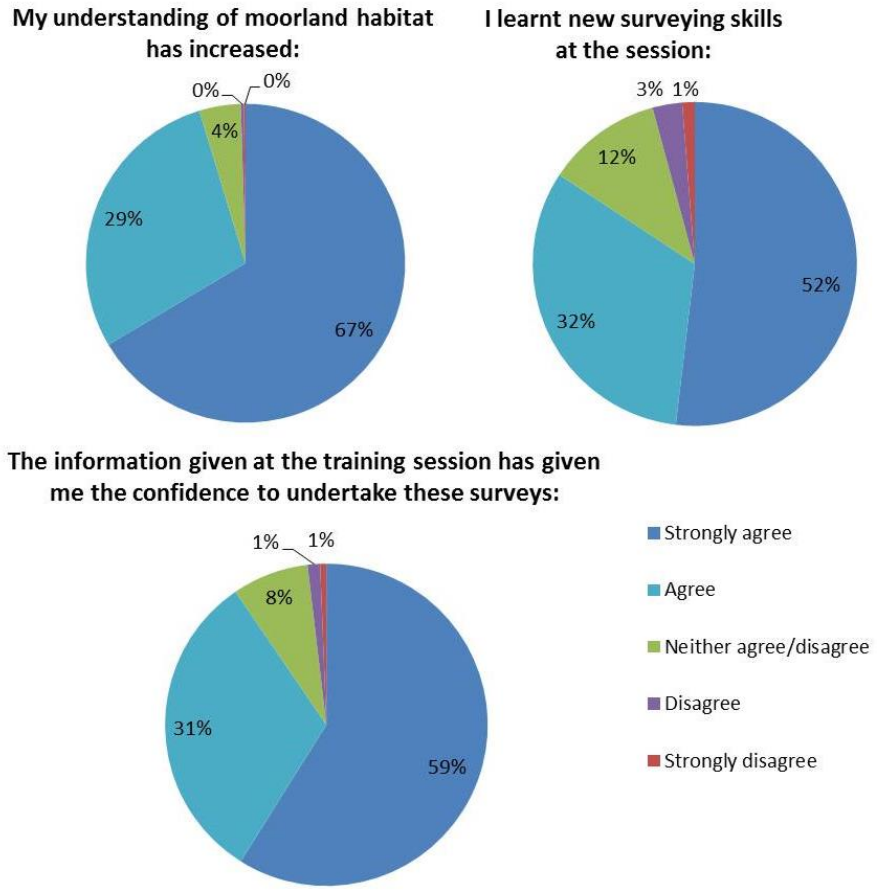


Figure 24: Benefits of attending a Targeted Monitoring training session. Responses from 641 volunteers.

Results from the volunteer questionnaire circulated at the end of 2017 highlighted the benefits that people felt they had gained from volunteering with Community Science. These results are presented in Table 1.

Table 1: Benefits gained by volunteering with Community Science. Results from 89 responses to a volunteer questionnaire.

What have you gained from volunteering with us?	%
Increased skills or knowledge	48
Allowed me a way of 'giving something back'	40
Gained a feeling of satisfaction	35
Helped me to take notice of my surroundings	34
Helped me to meet / connect with people	22
Helped me to stay physically active	20
Inspired me to spend more time outdoors or visit new places	16
Helped me on a path to a new career	9
Helped with or inspired studies (e.g. college, university or other course)	6
Increased confidence	4

Of the 641 volunteers who completed a feedback form following Targeted Monitoring training 96% enjoyed their experience (71% strongly agreed; 25% agreed). Of the remaining responses 3% neither agreed or disagreed and only 1% disagreed. Comments from eight people, 4 of which were from one University field trip, who didn't enjoy their training session have been reviewed and relate primarily to wanting more field experience.

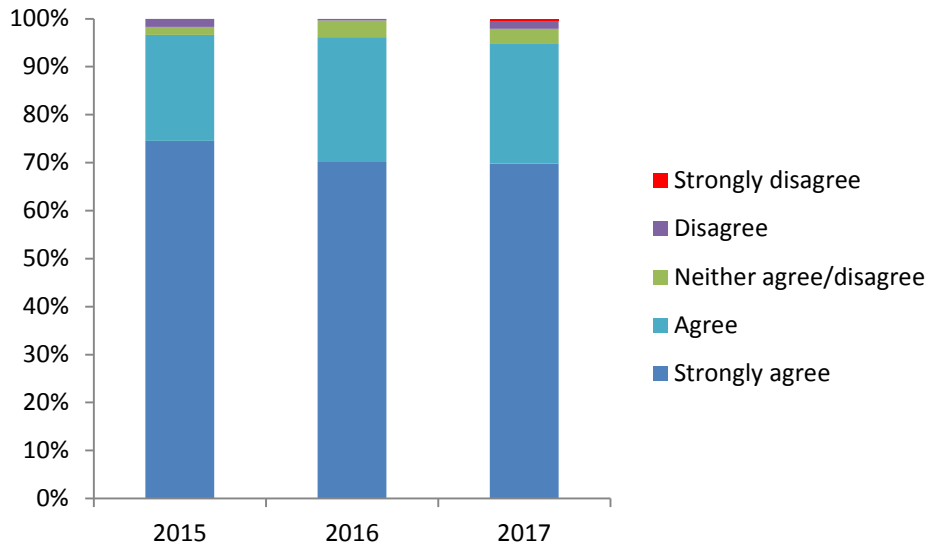


Figure 25: Volunteer feedback from Targeted Monitoring training sessions in response to - "I enjoyed the training session". Number of responses = 641: 118 in 2015; 288 in 2016 and 235 in 2017.

Evaluation

Results from stakeholder evaluation workshops including the Community Science Steering Group members, Moors for the Future staff and Community Science volunteers, as well as a critical appraisal by the Community Science team, identified a series of actions to be achieved before the end of the current funding phase to improve the sustainability of the Community Science outcomes (see Appendix 10).

These actions are have been grouped into:

- Technical improvements to scientific data collection;
- Improvements to the volunteer recruitment process;
- Training improvements;
- Communication with volunteers about monitoring activities;
- Communication with volunteers – ongoing visibility of volunteer activities;
- Wider communication with volunteers;
- Communication between volunteers - socialising / networking opportunities;
- Providing additional contextual information;
- Feedback improvements.

Reviewing and implementing these improvements have been programmed into the Community Science Project work plan before December 2018.

Figure 26: Wordle of responses to 'What do you think has worked well' at the Community Science volunteer evaluation workshop.

The stakeholder workshops also identified items for exploration and inclusion, as appropriate, in the Legacy Strategy for Community Science (see appendix 11). Items to be considered during legacy planning include:

- Strategic fit and business planning
- Monitoring focus
- Engagement focus - young people
- Funding focus
- Engagement focus - further links
- Volunteer strategy
- Communication focus

Science: Moorland monitoring

Benefits of science in the community: Through robust, repeatable scientific monitoring - achievable through equipping, educating and supporting local volunteers - the effects of climate change on Blanket Bog (an internationally important habitat) can be recorded, analysed and responded to.

We work with sponsors, academic institutions, national biodiversity recording schemes and charities in the conservation sector (see Figure 27) to increase the impact and long-term sustainability of Community Science.

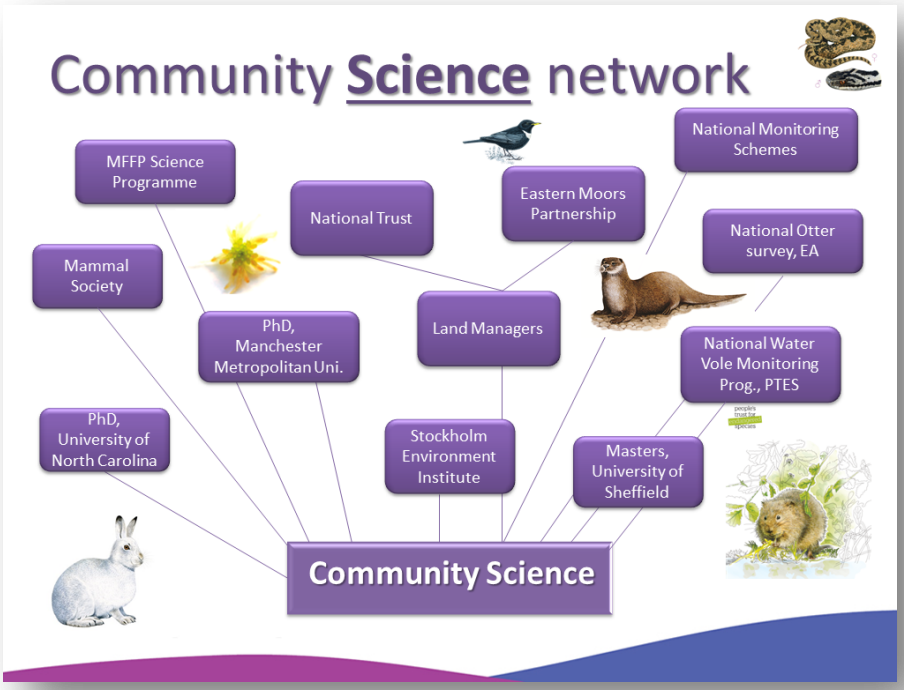


Figure 27: Community Science has developed a network of local, national and international organisations with an interest in data generated by the project.

Stockholm Environment Institute, contracted as academic consultants, will provide analysis, presentation and interpretation of opportunistic, targeted and environmental monitoring data sets in Spring 2018. The following sections therefore provide brief summaries of the monitoring undertaken in 2017 in anticipation of more in-depth analysis to come.

Opportunistic Monitoring (OM)

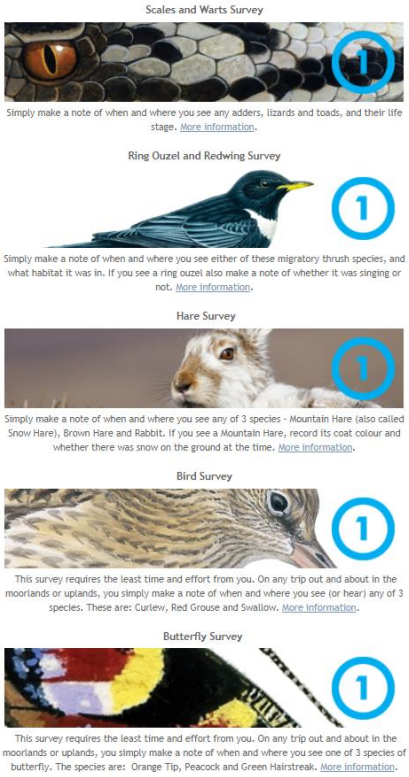


Figure 28: Information on Community Science OM surveys is available at: www.moorsforthefuture.org.uk/community-science/surveys

Community Science's OM surveys were designed to enable anyone to engage with wildlife recording of species either indicative of upland habitats or a changing climate, or both. The simple survey methodology of 'see it, record it' is easily accessible and provides valuable information on broad ecological patterns including the distribution of species and timing of natural events including migration and coat colour change.

Since 2015 9,031 wildlife sightings have been submitted through 2,946 records, a third of which were in 2017 (2,766 sightings from 999 records). The associated HLF target is 50 records per year then doubling with an expectation of 400 by the end of 2018 – to date we have achieved this seven times over.

21,743 Opportunistic Monitoring postcards were distributed in 2017, far exceeding the annual target of 5,000 and doubling last year's distribution of 10,298. This brings the total number of OM postcards distributed since the start of the Delivery Phase (2015) to 41,408. A third of these postcards (14,045) were taken to 933 events whilst the rest (27,313) were distributed at 297 static locations on 1,155 occasions.

Through-out 2017 Community Science expanded its audience reach both inside and outside the National Park through the distribution of OM postcards. These locations are shown in Figure 34: Opportunistic postcard distribution locations and wildlife sightings. along with OM wildlife sightings received this year.

The overall response rate for Opportunistic Monitoring surveys, based on the total number of records submitted through all channels (2,417) divided by the total number of survey cards distributed (43,537), was 5.5% in 2017. The HLF target is between 1 -10%.

Community Science were delighted to design a bespoke leaflet holder for Hope Construction to display Opportunistic cards in their reception area.

Figure 29: Community Science were delighted to unveil a bespoke leaflet holder designed to display the full range of survey postcards and guides in the reception of Hope Cement, a Breedon Group Company.

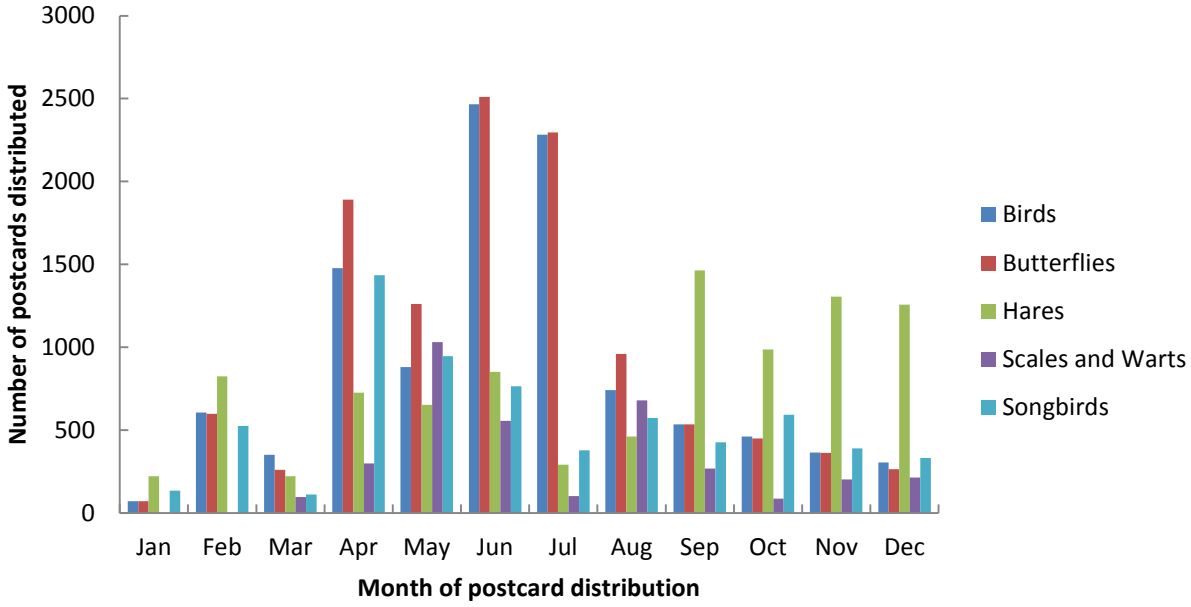


Figure 30: Opportunistic Monitoring postcard distribution through-out the year for 2015, 2016 and 2017.

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) (see Figure 31).

Figure 31: Methods of sending in an OM record.

In keeping with the results received in 2016 all methods of data submission remain productive. 1,016 OM records were received in 2017, 108 less than in 2016 but five times more than the target of 200. As in 2016 the highest number of records were submitted for sightings of mountain hares (23%); curlew (16%) then red grouse (12%) (see Figure *33*: Number of records received per Opportunistic Monitoring species. Dashed lines indicate species in the same survey.).

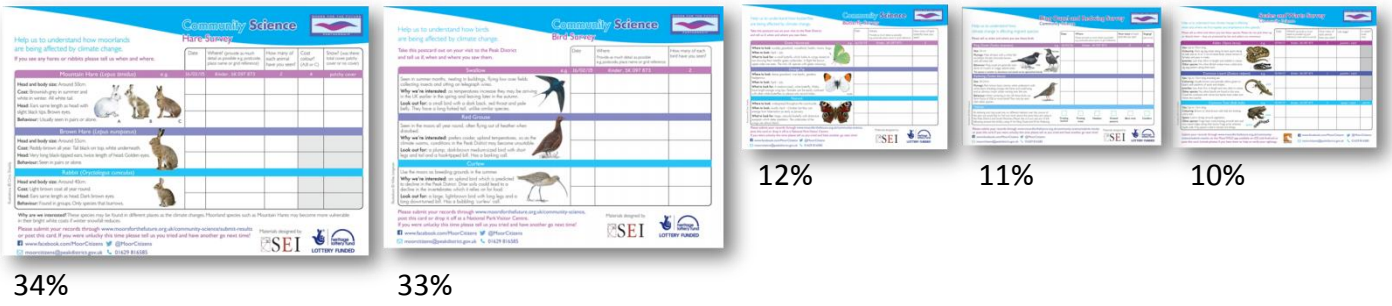


Figure 32: Relative number of records received per OM survey: Hares; Birds; Butterflies; Ring ouzels & redwings and Scales & Warts.

As previously suggested this may be 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 – however these are perhaps arguably less often seen in the uplands. 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.

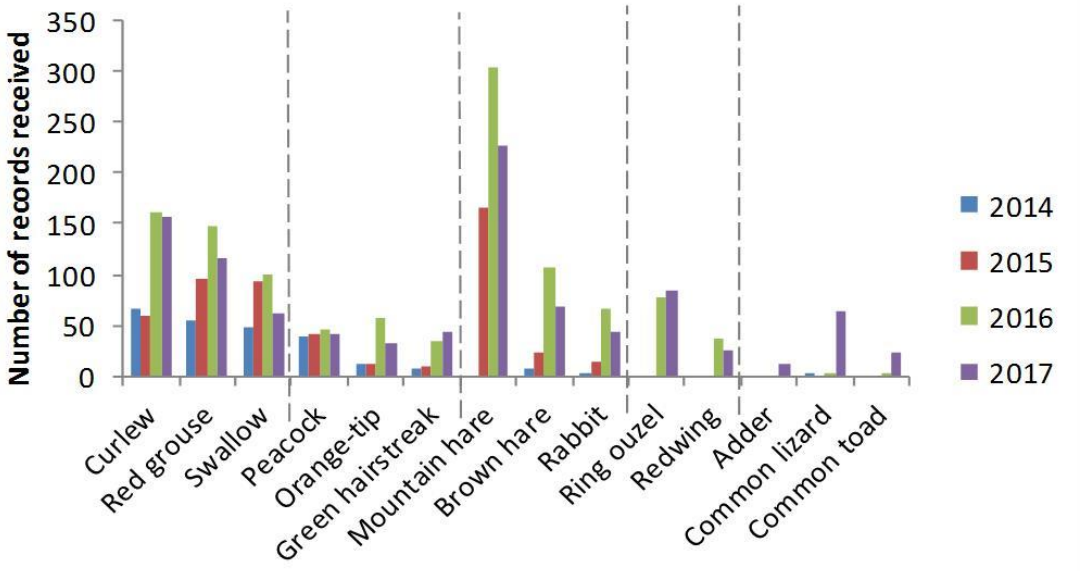


Figure 33: Number of records received per Opportunistic Monitoring species. Dashed lines indicate species in the same survey.

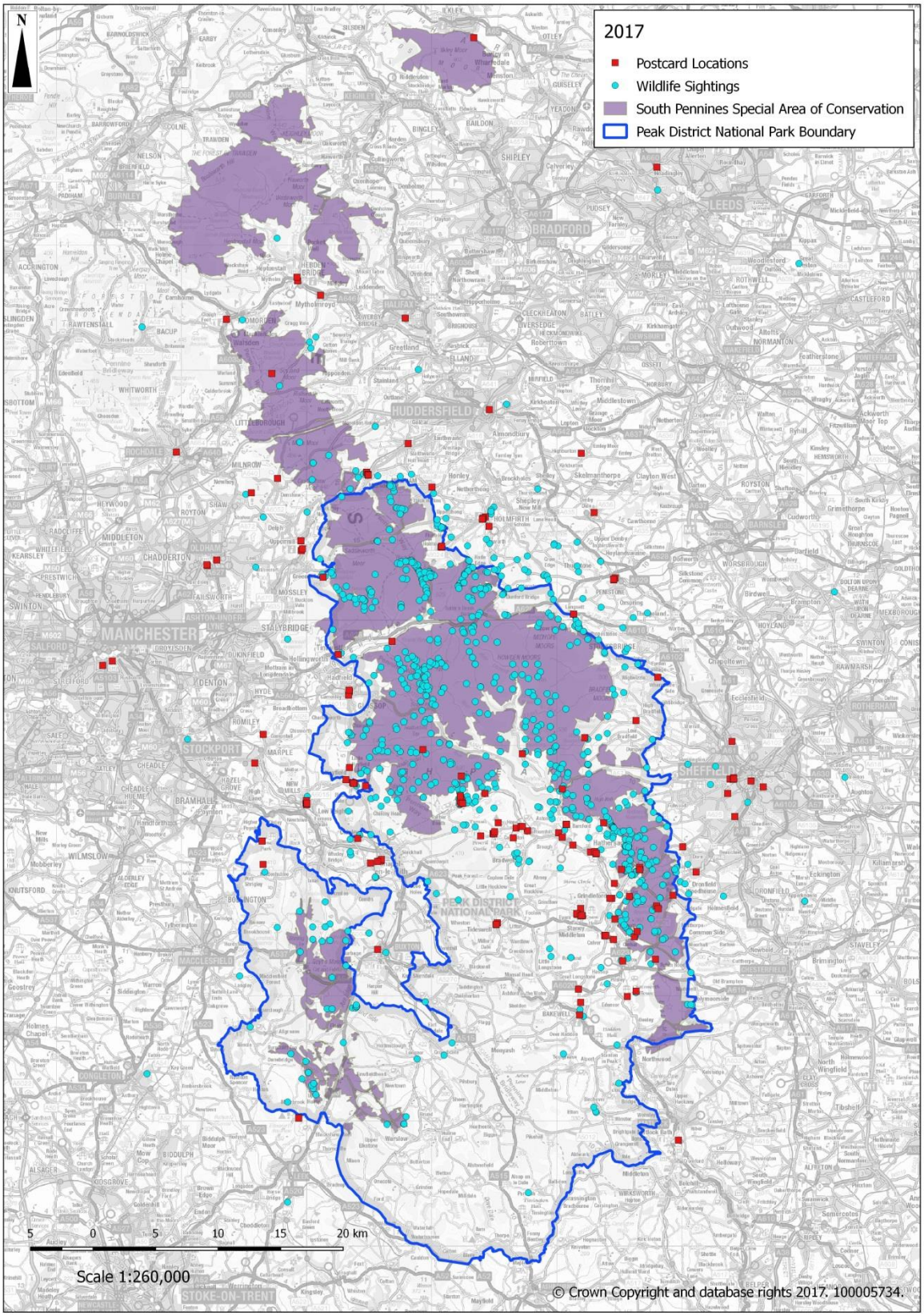
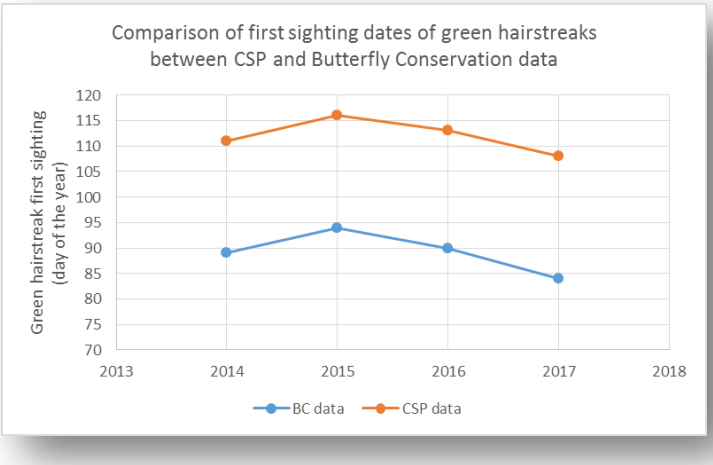


Figure 34: Opportunistic postcard distribution locations and wildlife sightings.

Butterfly survey

117 butterfly records were submitted in 2017, slightly down from 137 in 2016, but again substantially higher than the 63 submitted in 2015. This equated to 263 individual butterflies – of these individuals were sightings of 164 green hairstreak; 50 of peacock and 49 of orange-tip butterflies – these represent four times as many records of green hairstreaks in 2015. There were also significant increases in the number of individual green hairstreaks reported via these records (twice as many as 2016 and fifteen times as many as 2015) as well as mean increases in the number of individuals reported per record from 1.1 in 2015 to 3.8 in 2017.

A marginally lower number of peacock butterflies records were submitted in 2017 compared to 2016, and the individuals reported for this species fell by 16 giving a slightly lower individual per record rate of 1.2, down from 1.5. There was a similar story for orange-tips, with a dip in records and individuals, and the number of individuals reported per record falling from 2.6 in 2016 to 1.5 in 2017.



Our butterfly records were again verified by the Derbyshire county recorder, and included in Butterfly Conservation's county updates.

The first Community Science butterfly record of 2017 was again a peacock, 15 days earlier than 2016 on the 21st March. The first orange-tip sighting of 2017 was submitted on the 1st of April, they were recorded until the 1st of June.

Figure 35: Initial analysis by SEI show a 98% correlation of Community Science green hairstreak records with UK wide emergence records – giving us a high degree of confidence in the accuracy of the records.

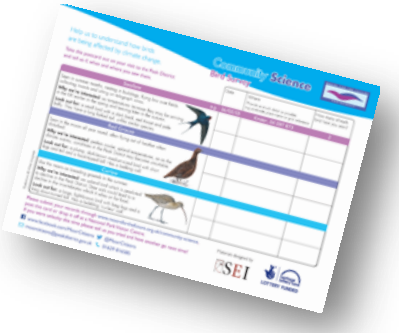
Green hairstreaks were reported between the 18th of April to the 25th of May – a very similar flight period to 2016. The last butterfly sighting reported in 2017 was a peacock on the 24th November.

Stockholm Environment Institute (SEI) began preliminary statistical analysis of our butterfly records. They assessed how confident we can be in these records by comparing Community Science emergence times to UK wide data collected by Butterfly Conservation.

Figure 35 shows Community Science green hairstreak records which display a 98% correlation with UK wide emergence records – giving us a high degree of confidence in the accuracy of the records.

A map of where butterfly sightings have been reported is provided in the Appendices (see Appendix 1) and is available on request along with the data.

Birds



334 records were received of curlew (157), red grouse (115) and swallow (62) sightings in 2017. All of which were slightly fewer than what were submitted for each species in the previous year. However there was an increase in the number of individual animals seen in 2017 for curlews (645 up from 504 in 2016), increasing the mean number of individuals per record to 4.1 from 3.1 in 2016. Individuals per record remained similar for red grouse, but increased for swallows – up to 4.6 from 3.8.

The first curlews were reported on 2nd Feb 2017 and were reported regularly until the middle of August (16th). The first swallows were reported regularly from the 28th of March (1 day earlier than 2016) until the 28th of September (2 days earlier than 2016). Red grouse were recorded all year round as expected.

The British Trust for Ornithology's *The State of UK's Birds 2017* report was published on Dec 5th and is available from https://www.bto.org/research-data-services/publications/state-uk-birds/2017/state-uk-birds-2017

The report had a climate change focus, and headlines included the fact that "Migratory birds are arriving earlier and egg-laying dates have advanced such that swallows, for example, are arriving in the UK 15 days earlier, and breeding 11 days earlier, than they did in the 1960s".

Meanwhile, it was reported that curlews have declined by 65% between 1970 and 2015, and that between 1981 and 2000 their wintering distribution in north-west Europe has shifted nearly 120km to the north-east – associated with a trend for milder winters. Whilst the Community Science study area includes the summer breeding grounds of curlew rather than the coastal wintering grounds, this nevertheless demonstrates that the species is being impacted by climate shifts, and the data being collected now by Community Science volunteers could help to detect such changes in the medium to long term.

Maps of where these bird sightings have been reported are provided in the Appendices (see Appendix 2,3 and 4) and are available on request along with the data.

Hares

During 2017 we have received 339 lagomorph records – comprised of mountain hare (227), brown hare (68) and rabbit (44) records - reporting 342; 90 and 98 animals respectively. Mean number of animals reported per record for all three species was marginally lower than 2016. In 2017 an average of 1.5 mountain hares were reported per record, 1.3 brown hares and 2.0 rabbits.

A map of where lagomorph sightings have been reported is provided in the Appendices (see Appendix 5) 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. Figure 36 illustrates the mismatches between mountain hare sightings of animals in their white winter coat against snow cover with a large number of mismatches (shown in blue) where white mountain hares stand out against a brown snowless landscape. If winters become increasingly milder, with less snow, there may be a selective advantage to mountain hares not transitioning into a fully white coat.

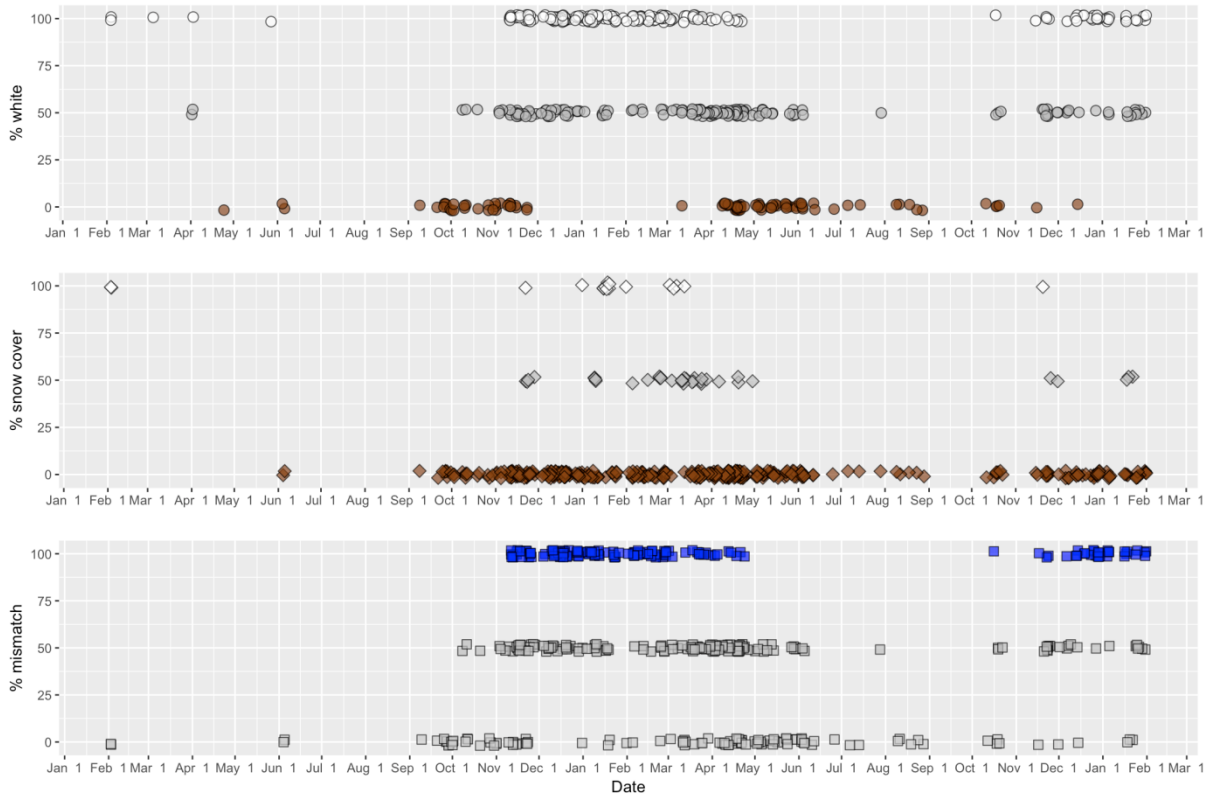


Figure 36: Mismatch of mountain hare coat colour and snow cover - courtesy of Marketa Zimova of the Univeristy of North Carolina shows:

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. During 2017, the first sighting was reported on the 7th of March (24 days earlier than in 2016) after which 84 (up from 78) records were received - reporting 138 sightings (a decrease of 8 birds). On average 1.6 birds were reported per ring ouzel sighting. Sightings were recorded until the 14th September.

This year our close work with Eastern Moors Partnership – who manage key ouzel breeding areas in and around the Burbage valley – continued. Eastern Moors Partnership promoted our survey as the main method for submitting ouzel sightings. This generated a lot of publicity for the survey including a feature on BBC's Springwatch. In turn we were able to pass our results to them to assist in their detailed survey of bird breeding success. More information can be found on their website: https://www.visit-eastern-moors.org.uk/wildlife/birds/ring-ouzels.html

A map of where ring ouzel sightings have been reported is provided in the Appendices (see Appendix 6) 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 was much lower at a mean figure of 16 birds per sighting. Records were received in 2017 reporting 409 birds though 26 reports. We look forward to seeing more records come in through-out the winter, into 2018.

Scales and Warts

2017 saw the launch of our 'Scales and Warts' survey of common lizards, adders and common toads. The survey was developed in close partnership with several organisations including Derbyshire Amphibian and Reptile Group (DARG), a representative of whom has been acting as verifier for the records we have collected. Both amphibians and reptiles are known to be under-reported compared to other groups of animals, so this survey provided the opportunity to add to the knowledge base about their distribution and emergence times in our project area.

This year 12 records of adders represented 15 individual snakes, seen during the period of 16th March to 28th August. This relatively low number was expected – adders are thought to be absent from most parts of the project area aside from a few known strongholds.

63 common lizard records of 72 individuals (1.1 animals per record) were seen between 25th of March and 6th October and were much more widely distributed than adders. 24 common toad

records of 97 individuals (adults and spawn) were seen between 26th February and 19th October. Toads had a much higher rate of individuals per record (4) due to the fact that they are at their most conspicuous during spring when they gather in large numbers in ponds to breed – 70% of the toads reported were seen between February and April.

A map of where adder, lizard and toads were reported can be seen in Appendix 7 and is available on request along with the data.

Targeted Monitoring (TM)

These suite of surveys are designed to collect more robust scientific data to enable us to understand more about the changes in the distribution, abundance and / or timing of natural events of selected species including bumblebees; Sphagnum; moorland plants and otter, mink and water vole. These surveys are ideal for regular users of the moorlands, as they require revisiting a set route (a transect) or point multiple times – the frequency of revisits varies between surveys. Free training including information about why our Uplands are important, what the purpose of the surveys are, how to identify the target species and how to conduct the surveys are provided.

Bumblebee survey

Bumblebees are extremely important pollinators, in part due to the wide variation in the length of their tongues – meaning they can pollinate a large number of flowering plant species. However, they are also known to be in decline globally. One of the barriers to taking successful conservation measures is the knowledge gap in identifying local causes of decline and tracking population increases or decreases. Collecting an accurate picture of the status of a species is a key first step in its conservation. As such Community Science bumblebee surveys echo the 'Beewalk' survey method devised by Bumblebee Conservation Trust, enabling and equipping amateur scientists to record long term population and distribution trends.

During 2017…

- 94 volunteers attended 14 bumblebee survey training sessions.
- Of the 14 sessions, 5 were one-to-one sessions led by volunteers, and 2 were 'train the trainer' sessions.
- 7 of the training sessions were to groups, with an average of 12 volunteers attending each.
- 188 transects were surveyed between March – October 2017.
- 2161 bumblebees were recorded in total. Of these 152 were bilberry bumblebees; 49 tree bumblebees and 85 red-tailed bumblebees.

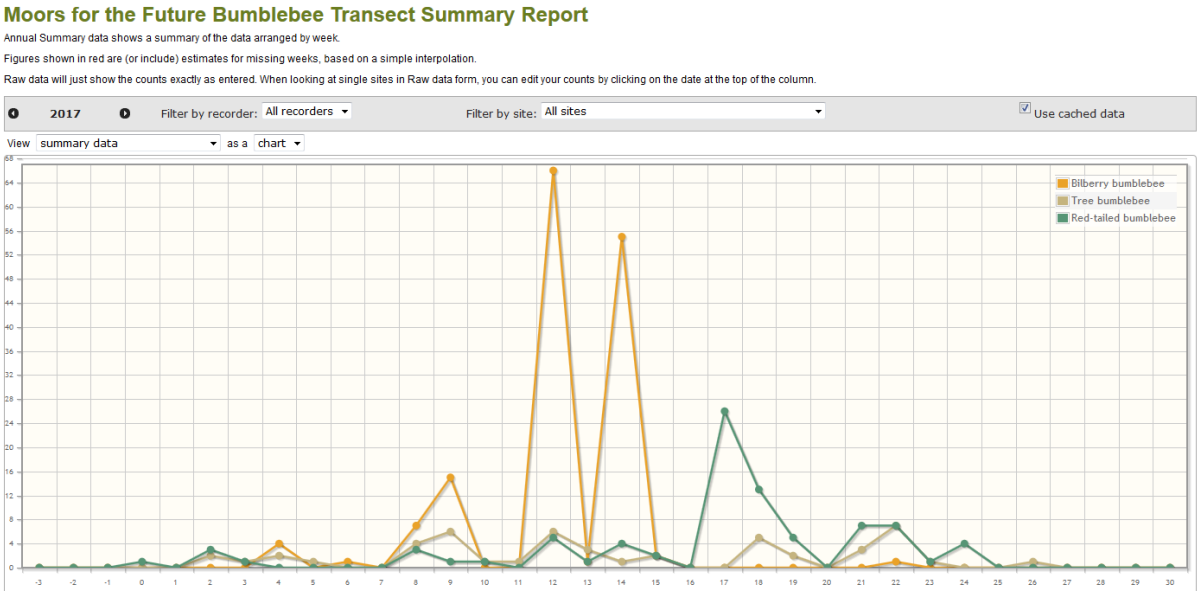


Figure 37: 2017 Community Science targeted monitoring of bilberry, tree and red-tailed bumblebees. Data submitted by, and visible to, volunteers on iRecord.

Detailed analysis of 2014 – 2017 Community Science bumblebee data is currently being carried out by Stockholm Environment Institute at the University of York.

Three additional transects were established this year - Pexwood Hillside near Todmorden, Langsett and Wyming Brook near Sheffield – the latter adopted by a Wild at Heart group from Sheffield and Rotherham Wildlife Trust. This was part of a Big Lottery Funded project working with older people and vulnerable and isolated adults in Sheffield and Rotherham to improve health and wellbeing. Community Science also continued to work closely with HLF project Pollinating the Peak – sitting on their steering group and keeping in close touch to share knowledge and resources.

Figure 38. Bumblebee training for Wild at Heart group

Figure 39. Locations of transects including 2017 additions

Buds, berries & leaves survey

Our Buds, berries and leaves survey – focusing on phenology – joined our suite of wildlife monitoring last year. The survey is designed to capture the timings of natural events such as the opening of leaves or the ripening of berries, to see if they are shifting in the long term as the climate changes. Not only that, but the survey was designed to be carried out on the same transects as the bumblebee surveys – adding more context to each survey.

During 2017…

- 38 volunteers (23 of whom were under 25 years in age) attended 11 buds, berries and leaves training sessions.
- Of these, 6 sessions were one-to-one training led by volunteers.
- The group sessions were attended by an average of 6.4 volunteers

- Volunteers walked 202 transects throughout the year, up from 76 in 2016.

Communication about this survey was aided by one volunteer who took a photograph of the same rowan tree each month throughout the year. This enabled us to build a time-lapse sequence of the tree changing, which was used to help promote the survey on social media.

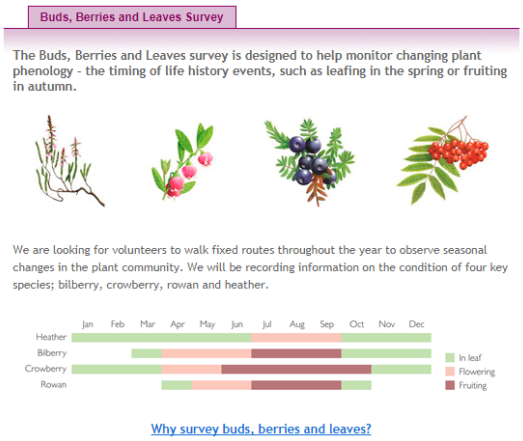


Figure 40. Still from time-lapse captured by volunteer

Sphagnum survey: The Big Moss Map

Sphagnum is one of the key bog-building plants, and is a moss with amazing properties which allows it to preserve organic matter and capture carbon by forming peat. Therefore, re-establishing it on the degraded blanket bogs of the Peak District and South Pennines is an important focus of Moors for the Future Partnership's conservation efforts.

The Big Moss Map survey was designed to produce a snapshot of where Sphagnum can be found across the region, and whether this is changing.

During 2017…

- 109 people attended 7 Sphagnum training sessions.
- Of these, 16 were aged 25 or under.
- There was an average of 15.6 trainees per session.
- 67 survey routes were walked
- Volunteers recorded 266 patches of Sphagnum

Sphagnum records continued to be verified by a volunteer, who was also able to take microscopic images of some samples to help with species identification.

Figure 41. Microscopic view of Sphagnum stem taken by volunteer

A system developed in 2016 for allocating map 'squares' to individual volunteers which continued to be used successfully (albeit with a southerly bias) , and provided a more attainable goal than the open-ended structure of the initial survey design. The first volunteer to 'complete a square', that is to survey all the paths within it, walked 16.5 kilometres of footpath and searched an area of 66,000 square metres. This was celebrated in the Dec 2017 Community Scientist newsletter item seen below.

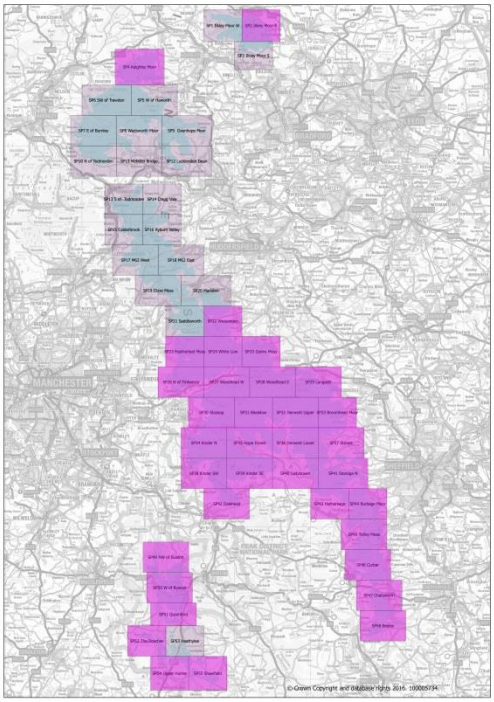


Figure 42. Survey square allocation 2017

Figure 43. Newsletter celebration, Dec 2017

Tails of the Uplands

Our newest survey, launched in 2017, was 'Tails of the Uplands'. This survey was designed to track the distribution of three mammal species in and around the project area. Otters are a charismatic riparian mammal, pushed to the edge of extinction in England by the 1970s, but are now making a dramatic recovery. The Peak District is thought to be one of the last areas to be re-colonised by expanding otter populations, making this the ideal time to track its return to the area. Our volunteers have been surveying historical Environment Agency (EA) otter survey sites; which have not been surveyed since 2010 and are not planned to be surveyed again by the EA in the foreseeable future.

The uplands meanwhile have recently been found to be one of the last remaining strongholds of the water vole, a mammal in sharp decline elsewhere in the UK. Monitoring the water vole populations in the area, along with the non-native invasive American mink (which is a predator of water vole and thought to have played a large role in its decline) will help to build a picture of the status of these mammals in the project area, and feed into baseline datasets which could evidence the impact of climate change in the future.

During 2017…

- 117 volunteers attended 11 training sessions.
- 13 of these volunteers were aged 25 or under.
- An average of 10.6 individuals were trained per session.
- Volunteers carried out 62 surveys.
- Positive signs of otters were identified on 12 occasions, and 5 possible mink signs were found.
- 2 mammal rafts were launched, and positive signs of water vole were collected on 14 occasions.

It is planned that during 2018 up to 20 more mammal rafts, which have now been built by the Peak Park Conservation Volunteer's 'Fit for Work' programme (a project aimed at breaking the cycle of criminal reoffending through volunteering), will be placed in additional locations.

Figure 44. Training session with Experience Community – a project providing leisure activities for disabled people.

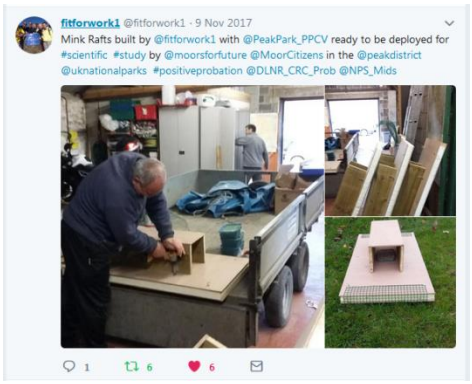


Figure 45. Fit for Work Twitter post about building mammal rafts

We have also been collaborating with the Molecular Ecology Lab at the University of Sheffield, who will be providing DNA analysis for our otter spraint samples, enabling us to learn additional detail about the individual otters in the area and their diet. Otter data collected by Community Scientists has also now been shared with the Joint Nature Conservation Committee (JNCC) through our partners at the EA, who are due to report to the European Union on the current status of the UK's otters.

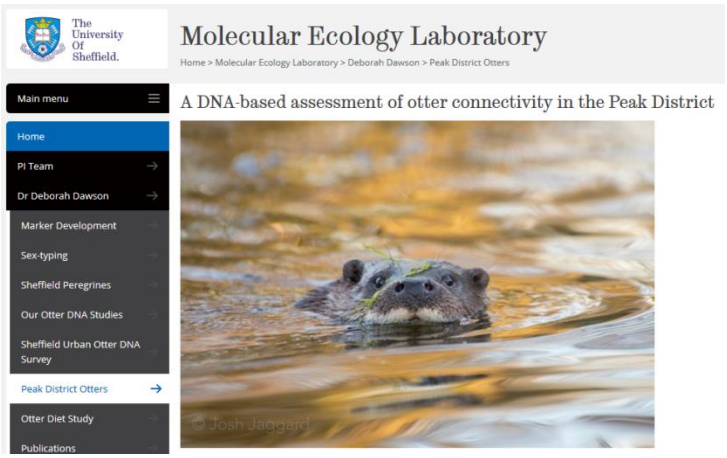


Figure 46. University of Sheffield Peak Otters Project website

Environmental Monitoring (EM)

A network of sites have now been set up across the South and West Pennine Moors to monitor the long term impact of climate change on upland habitats. As uplands in the heart of the UK, the South Pennines is located at a geographical cross roads where many upland species are at the south easterly limit of their range boundaries. As such monitoring the impact of environmental changes in rainfall across west to east gradients and temperature across north to south gradients is of particular interest here. Community Science has now set up seven sites (see Appendix 10) at which environmental data is collected to monitor moorland health and the effects of a changing climate well into the future. These sites have been situated in relatively intact blanket bog and complement the Moors for the Future Partnership's Science and Monitoring programme, which predominantly focuses on degraded blanket bog that has received treatment, allowing us to build a picture of habitat changes across the South Pennines and Peak District moorlands. The environmental surveys provide opportunity for community scientists to learn how to record variables such as water table height, peat depth, vegetation cover and rainfall, before taking ownership of the long term monitoring at these sites.

An eighth site is due for installation in Spring 2018.

Legacy strategy and business development

Building on last year's evaluation of the project, work in 2018 will focus on implementing improvements to communication, engagement and monitoring elements of Community Science; strengthening and increasing sustainability of the volunteer network, long term wildlife and environmental monitoring. Legacy planning will explore opportunities to expand MFFP's portfolio of citizen science.

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 reserved for ensuring timely support and management of the team through-out 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.	We have now reached 100% of our project total for volunteer time. Registered volunteer figures for our current volunteer roles (http://www.moorsforthefuture.org.uk/community-science/volunteering-opps) continue to grow. 11 one –to-one wildlife training sessions have been run by Wildlife Survey volunteers. One more Project Assistant for the new Tails of the Upland Survey and an increased number of Wildlife Survey Trainers are needed to increase resilience in future. Following feedback from volunteers at a facilitated evaluation workshop we will be reviewing the volunteer recruitment process in line with a new PDNPA system and have actions to improve sustainability which will be highlighted in our legacy planning and volunteer strategy.	80
Identify and establish Environmental Monitoring on the Moors on 6 sites plus 2 sites in reserve.	Existing Environmental Monitoring sites continue to be monitored by volunteers. A new EM site has been installed and is being actively monitored at Holcombe Moor, Stubbins Estate near Rossendale in the West Pennines. The final EM site has been identified on Peaknaze. Conversations are ongoing with the Landowner (United Utilities) and Agricultural tenant to ensure long-term sustainability of the site pending an Access Agreement. Should installation of this site not be possible before March 2018 (before Bird Breeding Season) this deliverable will be revised with HLF to a network of 7 not 8 EM sites – as discussed with our HLF Mentor.	83
Work with groups using the moorland and establish Targeted Monitoring.	43 TM training sessions have been run this year for 358 volunteers including 54 under 25 year olds. Training sessions included two train the trainer sessions and 11 one-to-one wildlife survey training sessions. Not including these the average attendance is 11 people per session. The total training sessions delivered were as follows: Bumblebees (14); Buds, berries and leaves (11); Sphagnum (7) and	95

	Tails of the Uplands (11). Transects continued to be monitored through-out this quarter with the following records submitted: 19 bumblebee transects; 13 Sphagnum routes; 28 Buds, berries and leaves transects and 23 Tails of the Uplands points.	
Create and deliver Opportunistic Surveys for tourists and day visitors.	2,677 OM postcards were distributed this quarter at static locations and events, bringing this year's total postcard distribution to 21,743. Please see attached Events log for more details. 81 OM records were submitted this quarter taking the project total to 2,417 OM records yielding a 5.5% return rate.	95
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.	The Partnership was delighted that Community Science received the Campaign for National Parks Park Protector Award for improving and enhancing National Parks in England and Wales. Community Science was also short-listed for the National Biodiversity Network's Group Award for Wildlife Recording this quarter. The Chief Executive of the Peak District National Park, Chair of Moors for the Future Partnership and Partnership Manager joined our Annual volunteer celebration in December to pass on their appreciation to Community Science volunteers. UK National Parks continue to support the project with an additional income of £1,500 towards the inclusion of Moorland Indicators of Climate Change Initiative in our Environmental Monitoring programme. External evaluation of the project continued this quarter with the report due in January. A facilitated volunteer workshop was delivered in November to allow volunteers opportunity to contribute to the project evaluation as well as an opportunity for the CSP team to feedback to volunteers on this year's activities. The CSP team also under-took a critical appraisal of the project. Contributions from the Steering Group, MFFP staff, CSP team and volunteers will be collated into legacy planning and a volunteer strategy. SEI continue to work on data analysis and the provision of data analysis manuals. The 2017 Photo-competition, 'Adventures in the Uplands' closed on 31st December with 440 entries. Prize giving will take place in March 2018.	75

Table of Figures

Appendices