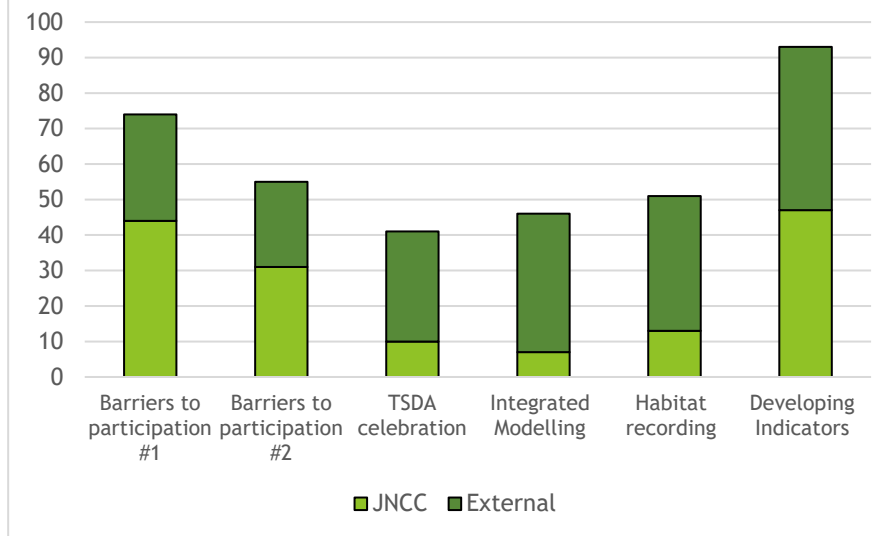


TEPoP Festival 2021 Summary



This year we celebrated the 5th birthday of the UK Terrestrial Evidence Partnership of Partnerships (TEPoP). This was celebrated with a series of six events over a two-month period and for the first time, three events were merged with the JNCC Science Talks. TEPoP consists of 18 organisations involved in terrestrial monitoring engaging volunteer recorders. A total of 220 different individuals participated at one or more of the events, with participants attending per event shown in figure 1.

Figure 1: Participants per event



Feedback following the festival from a range of participating organisations revealed that most attendees found the events relevant, useful and interesting. The most common route by which attendees heard about the festival was by TEPoP emails, followed by the TEPoP bulletin and being forwarded the information from a colleague. 70% reported they would prefer future TEPoP events to take place through online webinars and workshops. YouTube recordings of events were rated as the most useful output following TEPoP

events. All recordings from the festival are available on the [JNCC YouTube channel](#). For future events, participants mentioned an interest in further discussions on equality, diversity and inclusion, supporting volunteers, data quality and applications of TEPoP data.

Participating organisations:

Aberystwyth University, Amphibian and Reptile Conservation, Bat Conservation Trust, British Trust for Ornithology, Buglife, Bumblebee Conservation Trust, Butterfly Conservation, Chilterns Conservation Board, Cornwall Wildlife Trust, Department for Environment, Food and Rural Affairs, Department of Agriculture, Environment and Rural Affairs, Environment Agency, Forestry Commission, National Biodiversity Network, National Museums Northern Ireland, Natural Aptitude, Natural England, Natural Resources Wales, Nature Scot, People's Trust for Endangered Species, Plantlife, Royal Society for the Protection of Birds, Science and Advice for Scottish Agriculture, The Mammal Society, UK Centre for Ecology and Hydrology, Wildfowl & Wetlands Trust

Sessions 1 & 2: Breaking down barriers to inclusion in biological recording

The first TEPoP workshop on the topic of barriers to inclusion was in autumn 2020. This highlighted the aim to increase inclusivity and diversity in biodiversity recording. One of the conclusions of the workshop was that it would be valuable for other organisations to share their experiences in this area.

The first talk began with **Kate Merry and Megan Lowe from Butterfly Conservation**. The organisation has been working on engagement projects targeting new and underrepresented audiences by focusing on specific areas and identifying appropriate audiences. A 2019 survey revealed 93% of members and 91% supporters identified as white. They highlighted the importance of having a variety of recording schemes to enable the engagement of individuals with varying

backgrounds and experience. Covid-19 provided a surprising opportunity to reach new audiences, and participants felt that moving the workshops online made them more accessible. This resulted in increased participation from younger people, those from deprived areas and women. The organisation is working on an EDI policy and have recruited a Head of People and Culture to support this.

Karen Haysom and Owain Masters from Amphibian and Reptile Conservation explained the importance of education, awareness, and training programmes to increase the diversity of participants by helping to overcome misconceptions about the species in question. They have been working in partnership with organisations to engage specific groups of individuals, including young people from under-represented groups, and children with learning disabilities. These activities have received excellent feedback from the participants and have resulted in improved conservation outcomes.

Sarah Shuttleworth from Plantlife demonstrated that inclusivity is considered in all areas of the organisation and project planning. As part of the Dynamic Dunescape project, Plantlife engaged a group of older participants with dementia, developing a toolkit to support other site managers and organisations to involve individuals with dementia. In a 2017 survey of volunteers taking part in the National Plant Monitoring Scheme, there were more females than males, 75% lived in rural areas, and less than 10% were younger than 40. Following investigation into barriers to inclusion, Plantlife have co-designed recent schemes with the needs of volunteers in mind. This involves making resources clear and accessible, a mentor scheme for volunteers and using additional media including videos and tailored social media posts.

Philip Briggs from the Bat Conservation Trust spoke about the Count Bat Project (2008-2012) which engaged individuals who were visually impaired, hard of hearing and ethnic minorities by working with partner organisations. The National Bat Monitoring Programme includes surveys for all levels of experience, enabling a more inclusive opportunity for involvement. The Trust have found success in reaching more diverse audiences using social media and online events. They have recruited two young employees using the Kickstarter scheme. One of these individuals is looking into reaching younger and more ethnically diverse audiences by contacting influencers and colleges to promote volunteering. The Trust found that in the recent three months, there has been an increase in younger volunteers signing up to the NBMP. Two workshops targeting individuals from ethnic minorities have successfully engaged a more diverse group of participants, with 65% identifying as white compared to 90% in a previous survey. The Trust has also been reviewing its recruitment process to make it more inclusive.

Common barriers to involvement:

- Location and transport
- Confidence and skills
- Fitness
- Weather
- Facilities
- Cultural fear/dislike of relevant species
- Difficult to locate and identify relevant species
- Technology

Lessons learned:

- Important to enthuse audience before trying to build survey skills
- Flexible approach is required, tailoring according to groups needs
- Partnership working enhances ability to successfully engage specific groups
- Long term support for volunteers and participants improves likelihood of further engagement
- Online events are more accessible and provide an opportunity to reach a wider audience
- Social media sites such as Instagram enable targeting of younger audiences
- Participating in Wildlife and Countryside LINK's EDI working group enables sharing between organisations

Session 3: Celebrating 5 years of Terrestrial Surveillance Development and Analysis (TSDA)

Anna Robinson opened this session by introducing TSDA which was set up in 2017 and is led by JNCC, UKCEH and BTO. This was followed by a series of [10 short presentations](#) introducing different aspects that TSDA has focused on. Representatives from BTO included Rob Robinson, Stuart Newson and Gavin Siriwardena. From UKCEH, presentations were given by Michael Pocock, Nick Isaac and Rob Boyd.

In terms of development, TSDA aimed to review evidence needs, existing monitoring and gaps, and identify improvements, including making data products more FAIR (Findable, Accessible, Interoperable and Reusable). The project considered improvements to existing schemes including analyses combining structured and unstructured records and targeting revisits to particular locations to improve trend analyses. Additionally, the project investigated collecting new types of evidence, with a focus on acoustic technologies and habitat recording.

In terms of analysis, TSDA looked at quantifying the impacts of invasive species on taxonomic groups, improving predictive species distribution modelling, addressing policy questions with analytical techniques and the impacts of protected sites on a range of taxa.

The project has resulted in a variety of outputs for a wide range of audiences, including scientific papers, JNCC reports, policy notes and guides, presentations and webinars. A JNCC webpage is being prepared which will link to all of the TSDA project outputs.

Session 4: Integrated modelling workshop

Maddie Harris from JNCC introduced the workshop, which focused on the content of the integrated modelling user guide developed by TSDA. **Michael Pocock from UKCEH** explained the differences between structured and unstructured data collection by volunteers and the advantages and disadvantages of each. Structured data collection involves a standard protocol with repeat visits, leading to high quality comparable records. However, this places a high demand on volunteers and therefore limits the amount of data available. Unstructured or opportunistic data collection occurs when and where people chose, or the metadata describing the design has been lost. This results in large data sets with good coverage in space, time and taxa. However, it can be difficult to verify records as the skill of the recorder is unknown, and there are still some issues with spatial coverage. Semi-structured sampling still has the flexibility but involves documentation of additional aspects of the recording process.

Francesca Mancini from UKCEH explained how integrated distribution models can combine structured and unstructured data to generate abundance estimates. This type of modelling enables the inclusion of more data to identify trends, reducing uncertainty, increasing reliability and providing more precise estimates.

Philipp Boersch-Supan from BTO introduced a case study involving regional bird trends. The Breeding Bird Survey (BBS) is a structured survey designed to generate national trends. BTO are increasingly asked to generate regional trends for smaller areas, and the BBS data is not designed to provide this. The BirdTrack scheme enables unstructured data recording via an app or web portal. This has no fixed recording protocol and provides a large quantity of data. BTO used an integrated distribution model to combine data from both of these schemes to identify trends for Corn buntings in the South Downs. They found that the integrated model could account for the bias in the BirdTrack data and achieve higher precision in integrated trends than when using one data source.

Session 5: Habitat recording workshop

Ailidh Barnes from BTO introduced a framework for recording habitats with TEPoP scheme volunteers designed by BTO, UKCEH and JNCC. This consists of six questions which should be addressed to enable successful habitat recording by volunteers. The framework encourages consideration of aspects such as the clarity of the question and instructions given to volunteers, their motivation, how they have been engaged, the amount of effort required and the scale and complexity of the recording protocol.

Izzy Hassall from JNCC spoke about evaluating the potential to collect habitat information via volunteer recording schemes for use in Earth Observation (EO) applications. Habitat data is used to train and validate habitat extent maps at a local and national scale. Additionally, more recent developments facilitate more complex analyses such as monitoring change over time, assessing habitat condition and monitoring land management activities. The team consulted with EO experts to identify requirements and the minimum information needed was deemed to include GPS location, habitat classification and date. This habitat information is already collected in some TEPoP schemes, but a more standardised approach could enable more data to be utilised. The project identified various collection pathways including asking volunteers to confirm if previously recorded habitats are still present, submitting photos, changing protocols to include habitat recording, using an app to record habitat and starting a new habitat recording initiative. They also considered how best to engage volunteers and encourage habitat recording, including providing access to EO products or raw data, celebrating individual achievement and reports. Attendees discussed the advantages and disadvantages of possible data collection pathways and gave their views on possible feedback mechanisms to engage volunteers in habitat recording.

Richard Lucas from Aberystwyth University introduced EarthTrack, an app used for the Living Wales project which is looking at land cover change. The aim of EarthTrack is to provide ground truth information to support the classification of land cover, habitats and change over time.

Session 6: Developing indicators for NPMS and the CBD global biodiversity framework

Oli Pescott from UKCEH started the session by introducing a new indicator of UK habitat quality generated using data from the National Plant Monitoring Scheme (NPMS). The NPMS was launched in 2015 as a robust and rigorously designed citizen-science scheme with an aim to record habitats using a structured approach to minimise bias. Data from this scheme has been used to develop a new habitat statistic; C7 plants and the wider countryside. This contains four broad habitat indicators: arable field margins, broadleaved woodland and hedges, bog and wet heath and lowland grassland. However, structured schemes such as the NPMS are still susceptible to sampling bias, which is often linked to human population density. To help assess and reduce bias, a team developed the first Risk of Bias tool specific to ecology; Risk of Bias in Temporal Trends (ROBITT).

James Williams from JNCC spoke about developing the UK Biodiversity indicators for the new Global Biodiversity Framework (GBF). The GBF has 4 goals with 21 targets with an aim to guide action by governments and society and contribute to the Convention on Biological Diversity objectives. A monitoring framework has been developed to enable progress in achieving targets to be measured from the start of the process. Targets will be measured using evidence, including official statistics. JNCC is involved in generating official trend statistics for birds, bats, butterflies and biodiversity indicators. The monitoring framework is split between headline indicators, component indicators and complementary indicators. The UK biodiversity indicators were published by JNCC on the 20th of October 2021, with almost 100 organisations contributing data to generate these 24 indicators. Going forwards, there is a plan to review these indicators, identifying any gaps and potentially publishing a new set of indicators next year.