JNCC Report 800A

Designing personalised feedback to inspire biological recorders and fill data gaps

A report from a workshop delivered as part of the 2024 UKTEPoP Autumn Festival

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Summary

Biological recorders contribute valuable biodiversity data; and extensive infrastructure exists to support dataflows from recorders submitting records to databases. However, we lack infrastructure dedicated to providing informative feedback to recorders in response to the data they have contributed. Providing feedback is useful in the context of supporting citizen science activity for environmental monitoring at a local scale.

This report describes the format and outputs of a workshop undertaken as part of the 2024 UKTEPoP (UK Terrestrial Evidence Partnerships of Partnerships) Autumn Festival. This interactive workshop engaged with the TEPoP community with two objectives: to promote the role of feedback in environmental monitoring and to get participants to consider how they could use feedback in their own work.

The workshop was structured with an informational section where the report authors presented current work on feedback in citizen science environmental monitoring. The core of the workshop was an interactive session whereby participants, split into 4 groups, designed the format for a data-driven feedback item that could meet the needs of environmental monitoring.

The groups produced a diverse range of concepts from focusing on priority habitats, effective notifications, reporting tools for data managers, and a monthly newsletter.

The format of the workshop took participants through a design ‘sprint’ allowing them to experience an abridged journey from a user story to designing content for a feedback item. This equipped them with tools to consider about how feedback could be applied in their own circumstance.

Overall, this workshop helped promote this area of work within the TEPoP community, generated ideas for feedback that could be further developed and provides useful direction for employing feedback to improve environmental monitoring.

Contents

1. Introduction

1.1. Motivation for a workshop on recorder feedback

The need for high-quality biodiversity data to support monitoring efforts and facilitate nature recovery has become more critical than ever. Citizen science plays a vital role in collecting data at scale, but challenges such as inconsistent data quality and gaps in coverage limit the usability of these datasets. Feedback loops, where participants receive insights based on their contributions, could play a much greater role in improving data accuracy and fostering volunteer engagement. This feedback could be data-centric (e.g. the feedback is provided with a view to improve data quality), or recorder-centric (e.g. the feedback is provided with a view to enhance the recorder experience).

Biodiversity monitoring is important for understanding ecosystem health and change at local and national scales. Data-centric feedback could be used in a targeted way to support monitoring at local scales by improving the accuracy and reliability of data collected by citizen scientists. By providing participants with insights and guidance based on their contributions, feedback mechanisms can help identify and correct errors, fill data gaps, and enhance the overall quality of the datasets. This ensures that local monitoring efforts produce robust and actionable data, which is essential for effective conservation and management strategies tailored to local conditions. Additionally, recorder-centric feedback could be used to grow local community efforts for monitoring by increased volunteer engagement, motivation and expertise.

Work being is being carried out by the Joint Nature Conservation Committee (JNCC) and the UK Centre for Ecology and Hydrology (UKCEH) to look at how feedback can support biodiversity monitoring through recent work such as a project delivered under Natural Capital and Ecosystem Assessment (NCEA) and the Biological Recording, Verification, and Interpretation (BReVI) project.

This workshop was run as part of the 2024 UKTEPoP Autumn Festival. UKTEPoP (or TEPoP) is the UK Terrestrial Evidence Partnerships of Partnerships, a collaborative effort aiming to unify and strengthen efforts of volunteer-based biodiversity monitoring. The TEPoP Autumn Festival is a series of events designed to engage the community and share the latest work. We wanted to bring others along with this journey and engage with the TEPoP community with two objectives: to promote this area of work and to get participants to consider how they could use feedback in their own work. Therefore, we designed and delivered a creative and interactive workshop.

This report provides a summary of the workshop, its attendees, how it was structured and delivered. We show the outputs of the workshop which participants generated through the course of the workshop. We reflect on the successes and challenges of the workshop, and how the outcomes of the workshop will inform future work.

This work was funded by the UK Government through Defra's Natural Capital and Ecosystem Assessment programme.

2. Workshop summary

This is the description of the workshop as it was advertised to potential participants:

Event name: Designing personalised feedback to inspire biological recorders and fill data gaps

Event aims and benefits (why would somebody want to attend): Biological recorders contribute valuable biodiversity data, and by providing them with informative, personalised feedback we could: boost engagement to get more data, inform to improve data quality, or 'nudge' recorders to collect data that is of greatest need. In this interactive workshop we will outline the need and objectives of feedback then hand over to workshop participants to conceptualise personalised feedback to achieve certain objectives. You will then share your ideas with the rest of the group. From this session you will gain insight into the role of feedback for improving data and which may help you consider how you could use feedback in your work. The generated ideas will be captured and shared with participants so they can be used as starting points for development of these ideas going forwards.

Who the event is aimed at engaging: This event is for anyone who works at the interface of biodiversity data and people who generate and/or use that data such as citizen scientists, survey organisers, land managers.

Key speakers/highlights: Solène Marion, Simon Rolph, Michael Pocock

Date of the event: 7 November 2024

Start time and duration of the event: two hours

3. Workshop

3.1. Attendees

- Six Facilitators.
- 18 Participants (Note this was a lower number than originally signed up to participate).
- Range of organisations include: UKCEH, JNCC, British Trust for Ornithology, Natural England, Nature Scot, Local Records Centres, Amphibian and Reptile Conservation, Bat Conservation Trust.

3.2. Structure

The flow of the workshop was as follows:

1. Introduce key topics and relevant recent work through presentations.
2. Do a short creative exercise to prime participants to be thinking creatively.
3. Split into break-out groups with participants introductions. Groups are assigned a particular goal for their feedback.
4. Groups come up with many ideas to meeting their goal.
5. Groups use a prioritisation exercise to focus on one idea.
6. Groups generate a visual representation of their chosen feedback idea.
7. Break-out groups finish and there's an opportunity to share their work with all participants.

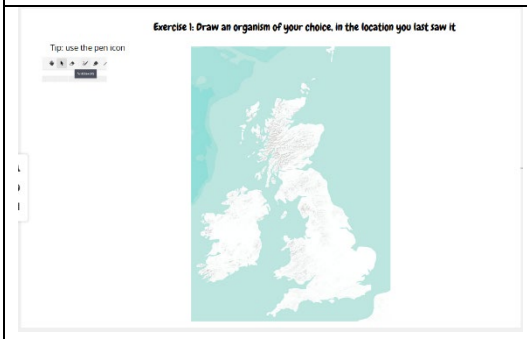
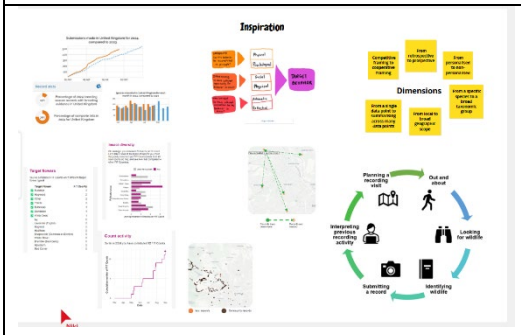
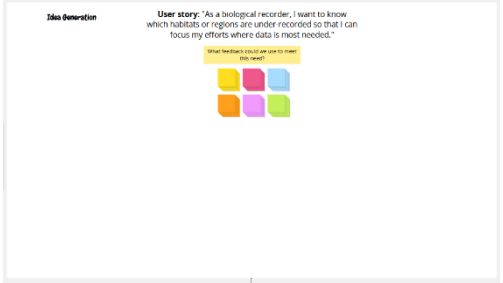
Table 1: Timing used for the workshop.

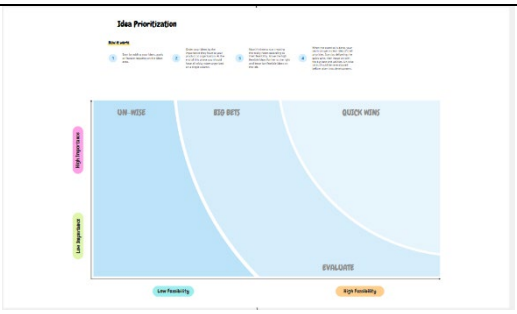
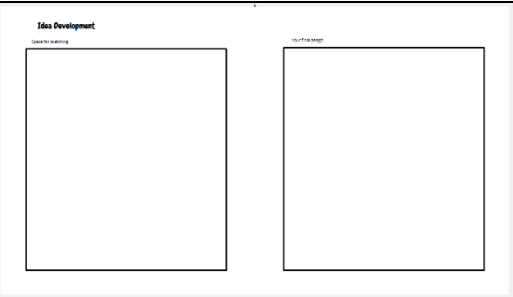
Time	Event
14:00	Start, wating for participants to log in and introducing the workshop organisers.
14:10	Solène presented an overview of the importance of feedback. Content was adapted from an internal JNCC report on feedback.
14:20	Simon presented recorder feedback from results from BReVI + recorder feedback (see appendix).
14:30	Creative exercise.
14:35	Outline the activity.
14:40	Breakout groups (45 minutes). 15 mins – hellos and ideation. 10 mins – prioritisation. 15 mins – design.
15:25	Share with the group.
15:40	An 'expert voice' from Diana Bowler, providing a different perspective and putting the workshop into the context of broader biodiversity monitoring.
15:50	Wrap up and next steps.

3.3. Workshop delivery

The workshop was delivered online using Microsoft Teams using ConceptBoard (https://conceptboard.com/) for whiteboard activity. Several facilitators from UKCEH and JNCC supported the break-out group activities.

Table 2: Main activity workflow.

Activity	Description
	**1. Creative exercise** Before the break-out we did a short creative exercise to get people used to concept board where they can draw an organism on the map.
	**2. Breakout groups** In break out groups the role of the facilitator was to support the ideation, prioritisation and design of feedback resulting in a single concept for feedback. Each group was provided with a scenario, this is listed on the concept board on the part 1 section of each group's section. The break-out group activity was in three sections, and it was the facilitator role to move the group through these sections are appropriate pace. The times allocated for each section were indicated in a schedule. The concept board timer functionality was used to keep these timings. We also provided an 'inspiration' section (see left) from which people could draw ideas from.
	**3. Hellos and ideation** The first section ("hellos and ideation") was to get participants to (very briefly) introduce themselves. This was done by each person in the group adding a post-it with their name and 1 sentence summary of their role + interest in this area. They then started to come up with some ideas captured via sticky note on the types of feedback a recorder could receive to meet the needs of the scenario.

Activity	Description
	**4. Prioritisation** In the next section the participants went through each of their ideas and placed them on the prioritisation board. The aim here was to help participants choose one of their ideas to take to the next section.
	**5. Development** In the development section, participants produced a visual representation of the feedback concept. They used the concept board features (lines, text, sticky note, pasting images from the internet). The section had two boxes: the left was intended for sketching out ideas, and the right was for their ‘final’ design that was to be shared with the other participants in the “bring and share” final part of the workshop.

4. Workshop outputs

4.1. Group 1: Priority habitats

Prompt: *"As a biological recorder, I want to know which habitats or regions are under-recorded so that I can focus my efforts where data is most needed."*

This group designed a monthly 'most wanted' notice for a target habitat. In the final design, this example was 'grassland'. It included a button linking to a species list followed by two sections. The first provided a data visualisation of why this was an important habitat to target based on whether it was under sampled compared to other habitats in the area. Once it has been established that there was a motivation for why the target habitat was high priority, the next step was to highlight where recording effort is required. The second section was a map colour coded with which grid squares are sufficiently/insufficiently recorded with further information about whether a site was locally and/or regionally important.

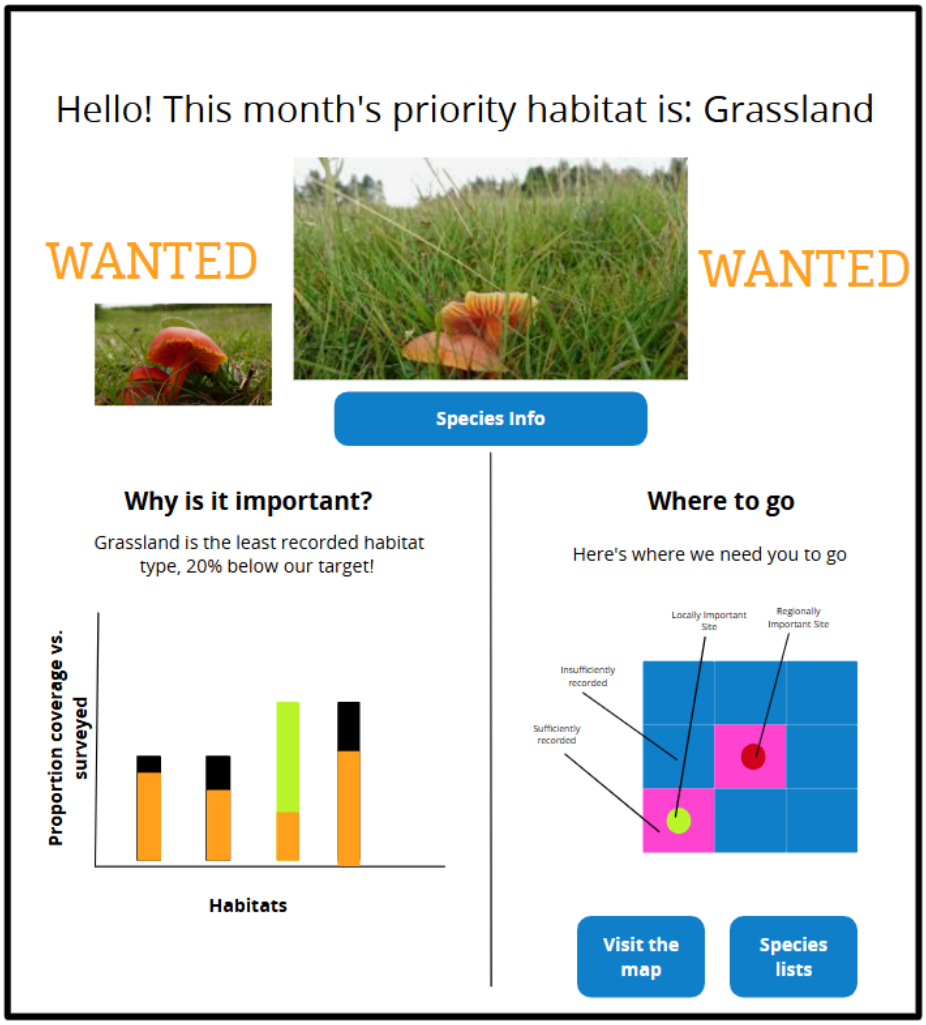


Figure 1: A screenshot of a web page showing a prompt for recording species.

4.2. Group 2: Effective notifications to encourage action

Prompt: *"As a biological recorder, I want reminders about recording throughout the year, so I can help fill in seasonal data gaps and contribute to understanding changes over time"*

This group didn't produce one design but explored various ideas around the use of notifications as a means of delivering feedback. This journey starts with reminders/prompts for a specific action. They identified that these notifications need to be multi-channel through different communication media and combined with engaging language, images, and positive tone (e.g. happy encouraging images of the species being recorded). They further explored the role of activity trackers to provide a shared goal, possibly operating at regional/county scale. They identified the importance of celebrating success at milestones such as the end of a season and in-person events.

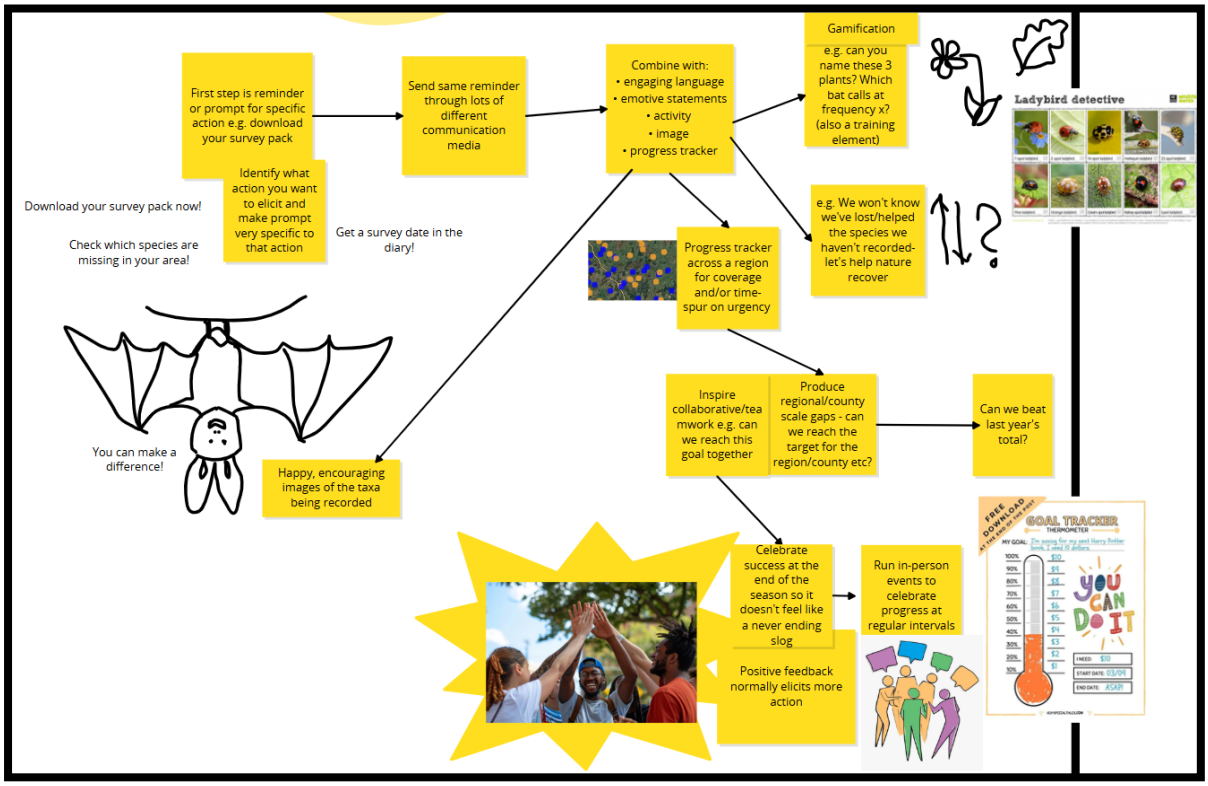


Figure 2: Whiteboard content produced during group discussion.

4.3. Group 3: Records reporting

Prompt: *"As a data manager, I want to provide feedback that highlights the importance of observations of rare or threatened species to recorders so that we can prioritise and monitor species of conservation concern.*

This group designed a periodic reporting format with a focus on communicating the impact of the recording done by volunteers by highlighting when records had been incorporated into broader conservation initiatives. This included linking to an envisaged database which captured information about what conservation actions have been taken locally. The idea was that by linking recording activity to conservation actions they can communicate the importance of recording activity, therefore encouraging more recording. Use of images and linking to external resources were highlighted as important or mentioned as key aspects.

Figure 3: Rough example of a monthly or annual record report.

4.4. Group 4: Monthly newsletter: trends and data issues

Prompt: *"As a data manager, I want to provide feedback to recorders on common data entry errors so that we can reduce inconsistencies and improve the overall quality of incoming records."*

This group designed a periodic newsletter/report with a focus on data quality, reporting on trends in errors and common issues. They chose to deliver this feedback at population level rather than individuals, so that individuals did not feel targeted. The report places the spotlight on a focal species with relevant other information ('fun facts'). The group designed a data visualisation to highlight which issues are occurring and then provides some actionable guidance on how to resolve these issues, and whether the recorders' data are having an impact.

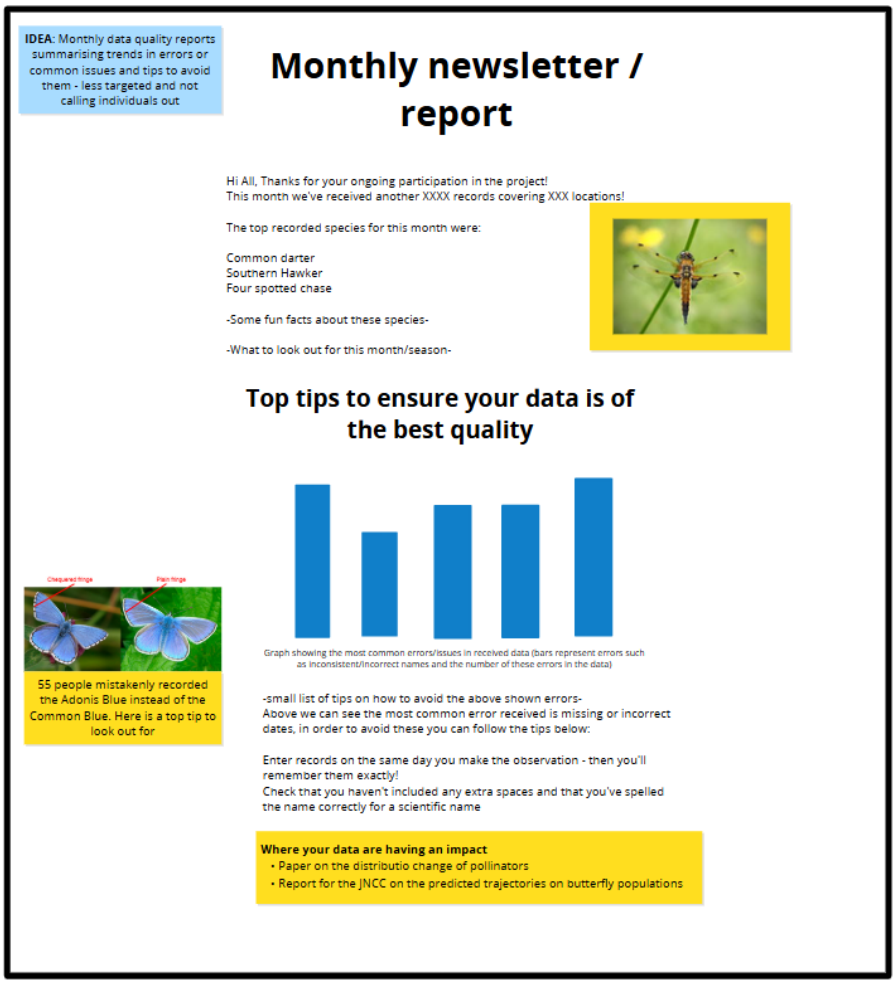


Figure 4: An example of a monthly newsletter or record report.

5. Evaluation

5.1. Evaluation – from the perspective of participants

Successes:

- The workshop successfully took participants through a 'sprint' that took them from a prompt to designing a means for delivering feedback to recorders. This fulfilled our aim of helping TEPoP members explore ideas about how feedback could support biodiversity monitoring. Participants reported that the workshop was creative and allowed them to think 'outside the box'.
- Each group came up with interesting designs relevant to their prompt, with some overlapping themes, but sufficiently different from each other that a variety of themes were explored across each of the groups.
- Participants reported that participating in the workshop will inform how they communicate and feedback to their recorders. They mentioned they will consider the use of a celebratory tone and engaging text and images. It prompted participants to consider how they can communicate to their recorders about how their data is used.
- Five (noting the small sample size) feedback forms were submitted:
    - 60% said the activity was perfect length, 40% said it was too long.
    - On scoring the workshop for whether it was interesting (1–10), minimum was 2, maximum was 10, average of 6.8.

Challenges:

Table 3: Challenges encountered in the running of this workshop and our suggested improvements if we were to run it again to overcome these challenges.

Challenge	Suggested improvement
Some participants did not feel their prompt was relevant to their work or area of expertise.	Ask for ideas before the workshop, pre-assign groups based on preferences (gathered by questionnaire or survey).
More than expected drop-off from sign-up to participation resulted in 4 break-out groups rather than the planned 6. We had capped sign-ups at 40. We sent a reminder email prior to the workshop that it was interactive which may have dissuaded people who would prefer a seminar over a workshop.	Be extra explicit in the workshop promotion that this is interactive. If a sign-up cap is applied, set it with the expectation of a drop-off in sign-ups, but ensure the activity is scalable in case of higher turnout, but also scalable in the case of lower turnout. Potentially ask users to submit information in advance to gauge which participants are already active and invested in the activity. Alternatively, we could run this as an event for invited attendees from specific recording schemes, to ensure representativeness rather than general promotion and organic sign-ups.
In the whiteboard in the development step, we provided an idea's space and a 'final' design space. 50% of groups did not use the 'final' version of their idea.	Streamline the activity and just provide one space for both sketching and designing. This encourages participants to start designing straight away.

Challenge	Suggested improvement
Some participants reported that interacting with the online whiteboard whilst simultaneously having verbal interactions was overwhelming.	Allow time for participants to contribute to the board whilst not talking, before going into discussion. Alternatively, designate a note-taker who adds content to the board as it is discussed so participants are not required to write and talk at the same time. This activity would be well suited for an in-person event.

5.2. Evaluation – from the organiser's perspective

Did we achieve our objectives?

- Yes, this workshop achieved our objectives of promoting this area of work and provided an opportunity for participants to consider how they could use feedback in their own work.
- The workshop provided a broadcast that recorder feedback was an area of interest for UKCEH, JNCC and TEPoP and an opportunity to disseminate recent and ongoing work being delivered under the Natural Capital and Ecosystem Assessment (NCEA) programme. This amplified the impact of that work and primes the TEPoP community for further developments in this area.
- The findings from this workshop are highly relevant to local biodiversity monitoring. The community-focused feedback developed by participants offers valuable guidance for shaping effective local monitoring efforts.
- Running a workshop like this did require more preparation and design but by choosing to run a workshop with the interactive process of designing personalised feedback, we provided a memorable way of getting participants to explore this area of work.

How will it inform our work going forwards?

- **We will continue to engage with the TEPoP community:** The TEPoP community, in general, sees recorder feedback as a useful tool to improve data quality and volunteer engagement, and they have ideas about how it might be employed effectively. The strong level of engagement we observed from participants at the workshop was encouraging. Based on the engagement in this workshop we expect that the same group would be willing to work with us on further developing recorder feedback. This should include key partners such as BTO and their experience running platforms like BirdTrack. We could also use the TEPoP community for running co-designed workshops to develop recorder feedback or using the group as testers for trialling prototype versions of the feedback.
- **The workshop generated ideas we could take forward:** Interactive 'sprint' workshops are effective ways to generate ideas for recorder feedback in the space of a few hours. It was not expected that the group's outputs would be ready for implementation, nonetheless the ideas explored were diverse and every group provided new ideas that we had not previously considered. The ideas from the workshop will be collated into a newly created recorder feedback repository. The workshop informed the development of the repository as it needed to capture more conceptual outputs about recorder feedback such as those generated by the outputs.
- **As well as recognising use-cases for feedback, we also need to recognise the risks:** In the workshop participants readily came up with lots of ideas, but within these

ideas were ways to work around risks. These included not always providing feedback on a personal level in the case of reporting errors to prevent the risk of recorders feeling criticised. Similarly, maintaining a positive tone in the feedback was recognised as being important as there could be a risk of the feedback being discouraging and therefore having the opposite of the desired impact.

- **To provide meaningful feedback, we need to align developments in feedback with ongoing work on biodiversity dataflows:** In the concepts generated in the workshop, the data requirements were not straightforward. For example, group three's feedback required data on the links between biodiversity records and the conservation actions taken locally. In another example, group one's feedback required spatial models of recording priority and regional importance. Therefore, to deliver the types of feedback envisioned within this workshop we need supporting dataflows to be able to gather relevant information.
- **The output of the workshop is also useful for future work undertaken by Terrestrial Surveillance Development and Analysis (TSDA) and NCEA:** this includes increase volunteers' retention, improve data flow across for the different monitoring schemes and increase data quality and quantity.