

HEALTHY ECOSYSTEM RESTORATION IN OXFORDSHIRE
(HERO)

OCTOBER 25 2022

MAPPING ONGOING NATURE RESTORATION ACTIVITIES IN OXFORDSHIRE



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OXFORD

HERO WORKSHOP #7

ONLINE MEETING

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About HERO

Healthy Ecosystems Restoration in Oxfordshire (HERO) is a three-year programme (in the first instance) supported by the Oxford Martin School programme on Biodiversity and Society, and the Leverhulme Centre for Nature Recovery. HERO is exploring how Oxford University can play a role in efforts to restore ecosystems to health in Oxfordshire, by bringing the University's strengths in academic knowledge, research capacity and convening power to support ongoing and planned nature recovery activities by a range of local partners and stakeholders.

With its active network of nature recovery groups, Oxfordshire presents a compelling opportunity to test and showcase a portfolio of different ecosystem restoration strategies, to become a model county for nature recovery. HERO aims to build a community of practice between the University and local practitioners and will also form a resource for the University and its constituent Colleges within broader institutional sustainability goals.

The HERO network brings together researchers from the natural and social sciences with local authorities, environmental organisations, landowners and community groups who are already working on a range of initiatives to help support nature's recovery and enhance the multiple benefits that nature provides in Oxfordshire.

HERO aims to hold a regular series of workshops and seminars to examine key opportunities, challenges and evidence gaps around nature recovery in Oxfordshire, and also provides a limited amount of research resource to help fill evidence gaps.

Previous workshops have included:

1. Inception workshop (July 2021): identified the priorities for nature recovery across Oxfordshire and produced a strategic overarching plan for the HERO work.
2. Mapping workshop (September 2021): identified available mapping tools and challenges for reliable habitat mapping.
3. Evidence needs (November 2021): presented a summary of existing datasets on habitats and species, and defined further evidence needs for a nature recovery strategy.
4. Social science (February 2022): defined the social science research agenda of HERO and outlined the socio-economic and cultural barriers to effective change in Nature Recovery.
5. Monitoring and evaluation of biodiversity (March 2022)
6. Managing urban grassland (May 2022)

About this workshop

This note presents the outputs from the seventh HERO workshop, which was attended by 39 online participants on the 25th of October 2022.

HERO workshops 2 and 3 in late 2021 identified a need to collect data on where existing nature recovery activities are already taking place in Oxfordshire, so that we know where there are gaps or opportunities to build on existing work. Since then, HERO researchers have been working to compile this data from various sources, and integrate it with the existing natural capital map of Oxfordshire. The purpose of this workshop was to present and discuss the database and map; to identify any data gaps and consider how to fill them; to discuss how this evidence could be used to help shape nature recovery strategies; and to plan next steps for completing the map and keeping it up to date. HERO researchers first presented the database and map of nature recovery activities in Oxfordshire and then opened the floor to discussion. The main points of discussion focused on the content of the map and whether and how the map could be shared.

PRESENTATION OF THE DATABASE AND MAP OF NATURE RECOVERY ACTIVITIES IN OXFORDSHIRE

Alison Smith and Michaela Rychetska began the workshop with a presentation of the database and map of nature recovery activities – both how it was created and how it can be analysed. The purpose of the map is to compile information about current, past, and future nature recovery activities in order to provide an open resource for anyone interested in finding out more about nature recovery in Oxfordshire. By providing a picture of what activities are going on already, the map can help with targeting resources effectively and filling gaps to support the development of a nature recovery strategy.

1. CREATING THE DATABASE

To identify different projects, the HERO research team (Michaela Rychetska, Wallerand Bazin and Alison Smith) used various approaches:

- A Google form to invite direct submission of projects from HERO members and their contacts (16 projects),
- Direct emails from HERO members (5)
- Wild Oxfordshire newsletters and website (19)
- Wild Oxfordshire map of community group locations (144) – the map provides point coordinates of each project, but no further information such as habitat or species targeted, so the team had to research the projects individually using the internet
- TOE (Trust for Oxfordshire's Environment) database of their funded projects (102)
- HERO researchers' knowledge from work at the Environmental Change Institute (12).

A total of 298 projects were found, of which 12 were not relevant or duplicates and 97 partly overlapped other records. The team also incorporated maps of designated sites: Special areas of conservation (SAC), National Nature Reserves (NNR), Local Nature Reserves (LNR), SSSI, Local Wildlife Sites (LWS) and proposed LWS, and road verge nature reserves. AONBs were also included although it was noted that the designation does not mean that nature recovery is actively taking place within these large areas.

The team identified **multiple caveats**:

1. Projects overlapped, meaning that duplicates from different sources needed to be merged. These overlaps include spatial overlaps where multiple different projects cover the same polygon; temporal overlaps, such as multiple funding phases for the same project; or spatio-temporal overlaps, such as where follow-on funding for a project covers a smaller or larger area than the original project. Overlaps can also take the shape of projects with multiple sub-projects where we only have some of the sub-project locations.
2. Projects without data or exact locations.
3. Projects unrelated to nature recovery (e.g. carbon cutting groups) had to be filtered out.
4. Not all designated sites are undergoing nature recovery.
5. Issue of continuous updating. For instance, new points have already been added or removed to the Wild Oxfordshire map. Keeping track of ongoing changes is a challenge.
6. Analysing future habitat is a challenge since we currently only map current habitats covered by each activity area, not how they will evolve following the nature recovery activity.

For each activity, the database records the activity name, lead organization, and the habitats, species and ecosystem services targeted and whether there is community involvement. Figure 1. summarises some of the key data collected.

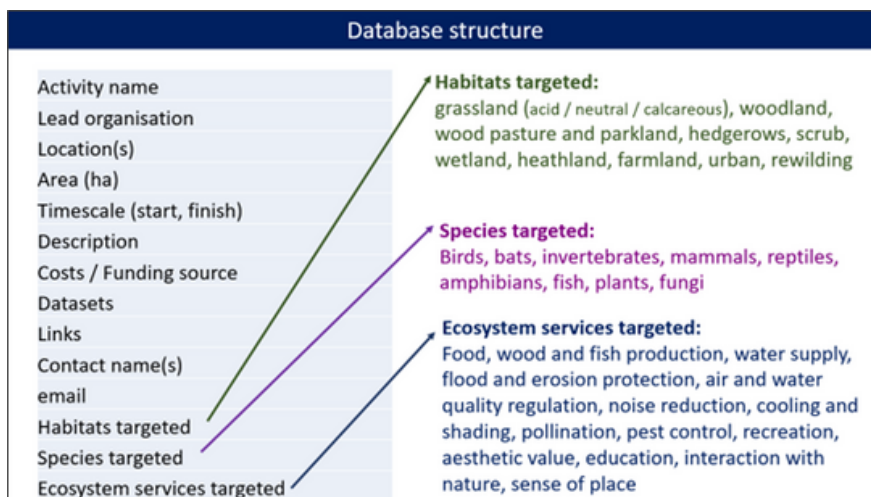
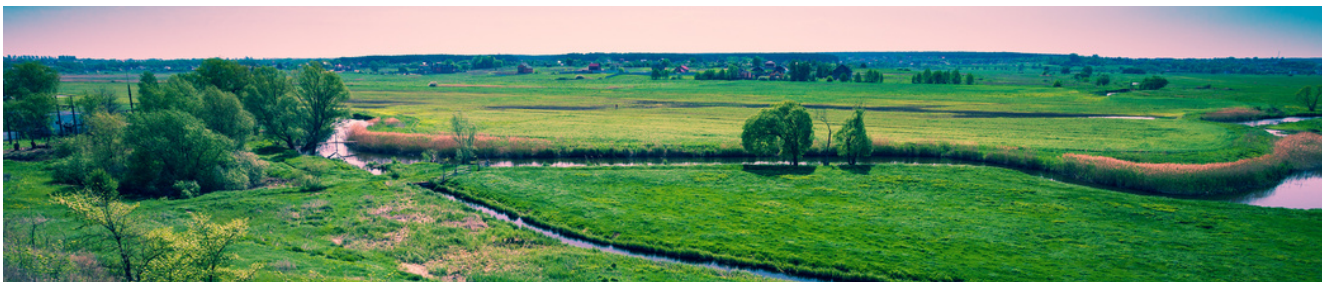


Figure 1 Database structure

2. ANALYSIS OF NATURE RECOVERY ACTIVITIES

In terms of habitats targeted for restoration, half of the activities targeted woodlands and/or grasslands (Figure 2). Where the type of grassland was specified, this was most commonly calcareous (chalk / limestone) grassland, with fewer targeting neutral grassland (such as floodplain meadows) and very few targeting acid grassland, perhaps because this is rare in Oxfordshire. Wood pasture and parkland, heathlands, and rewilding or natural regeneration were the least represented habitats. For species, the main focus was on birds, invertebrates, and herbaceous plants (Figure 3). For ecosystem services, there was a large focus on cultural services such as recreation and interaction with nature, followed by pollination. (Figure 4). Given that Oxfordshire is 70% farmland, it is perhaps not surprising that many projects also targeted food production as they involved various types of sustainable / regenerative farming. A number of projects also targeted carbon sequestration, flood protection and water quality.

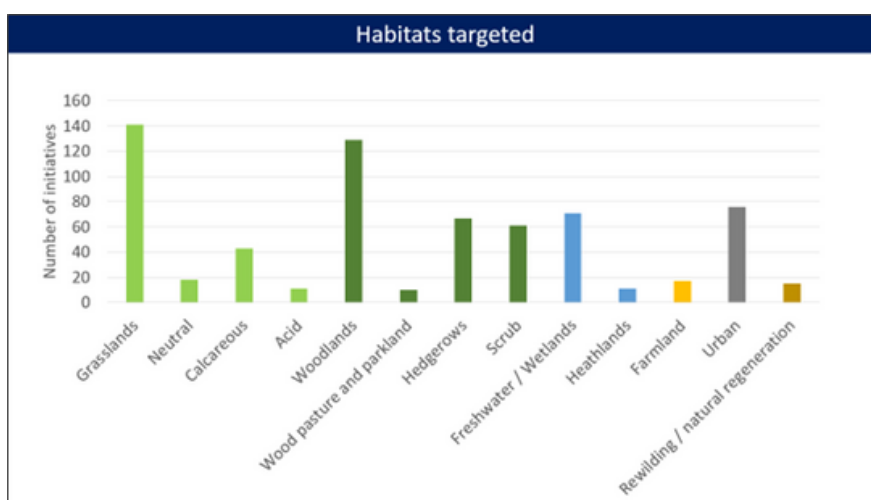


Figure 2 Habitats targeted by nature recovery activities in Oxfordshire

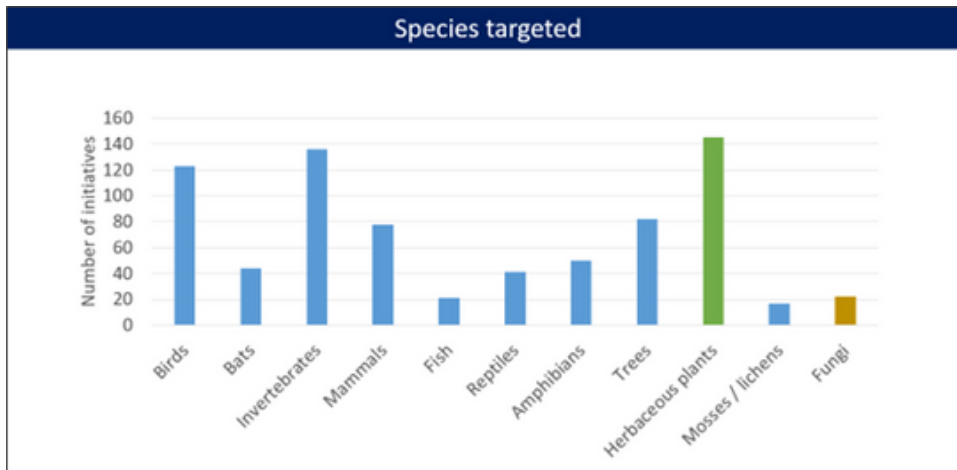


Figure 3 Species targeted by nature recovery activities in Oxfordshire

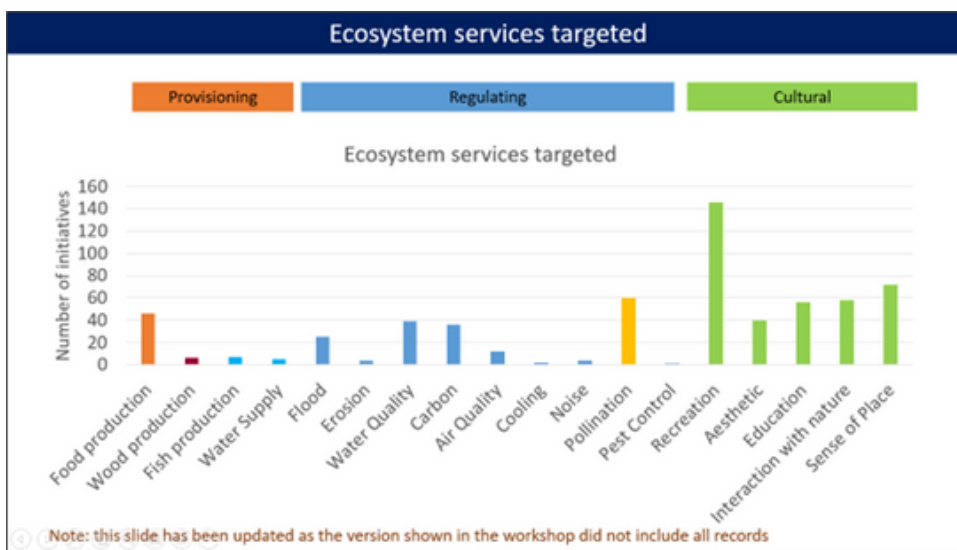


Figure 4 Ecosystem service benefits targeted by nature recovery activities in Oxfordshire

3. CREATING THE MAP OF NATURE RECOVERY ACTIVITIES

The data was then mapped spatially as polygons on the natural capital map of Oxfordshire. This required a lot of internet research to try to work out what polygons were covered under each activity, given that these were mainly recorded either as points (from the Wild Oxfordshire and TOE maps) or written descriptions (from the Google Form and emails sent in by HERO members). This research was carried out by Michaela Rychetska.

It was not always possible to be certain about the exact polygons covered. Therefore we developed a categorisation system to show how certain we were about the polygons mapped (Figure 5). We also recorded whether projects were in the past (i.e. completed), currently taking place, or plans for the future (Figure 5). Note that records categorised as 'N' (no restoration or management for nature is known) were not mapped.

Area status.	
0	No location information, not yet mapped, or record rejected or merged
1	Initiative applies to this specific polygon (902 ha)
2	Initiative applies to part of this polygon. We may or may not know which part. (8 ha)
3	This polygon is part of an area covered by a specific initiative or managed by a local group, but we don't know exactly which polygons or parts of polygons are included. (2,569 ha)
4	This polygon is part of a large area targeted for nature recovery but we don't know exactly where the activities on the ground are taking place or will take place (24,823 ha)
Timescale status	
C	Current management or ongoing restoration
P	Habitats were managed, restored or created in the past but project is completed, management has lapsed or current status not known
F	Plans for management or restoration in future
T	No known initiatives at present but this is a target area for restoration
N	No known restoration or management for nature

Figure 5. Coding spatial status and timescales of activities

The final map can therefore be presented with colour codes to indicate the certainty of the locations (Figure 6). This map includes nature recovery activities in shades of purple, with lighter shades for the less certain areas, and designated sites in green. The map shows a highly fragmented pattern with small projects and designated areas dispersed across the county. Notice the large light purple polygon for the Cotswolds AONB in the north-west - we recorded that this AONB has a Nature Recovery plan but there was no information about where activities might be taking place within this area. In fact, all AONBs now have such plans and therefore the Chilterns and North Wessex Downs AONBs could be mapped in a similar way.

The map can also be presented showing the existing habitat. Figure 7 shows a close up of one site, showing some of the information recorded for one of the polygons on the right.

Areas being managed for nature (activities or designations)

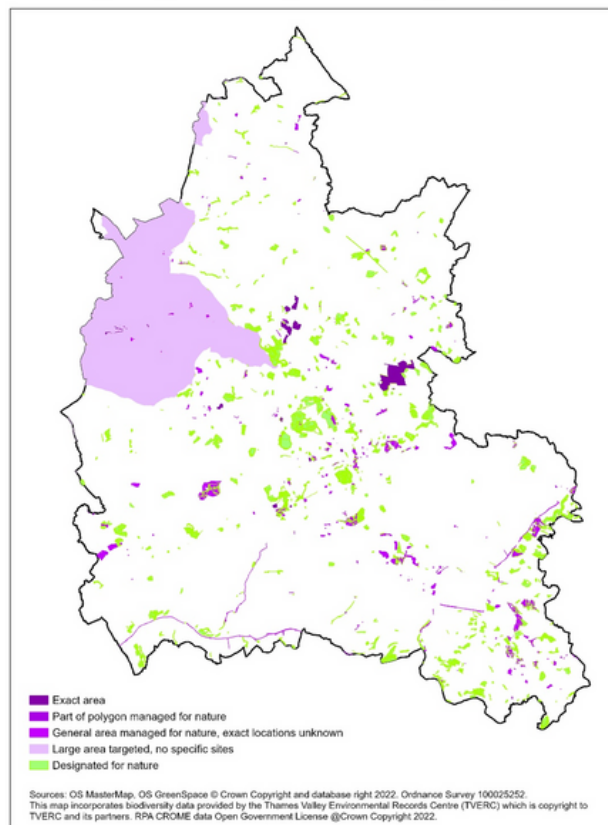
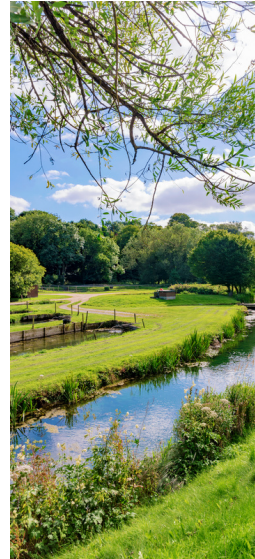


Figure 6 Map of nature recovery activities according to certainty of exact location



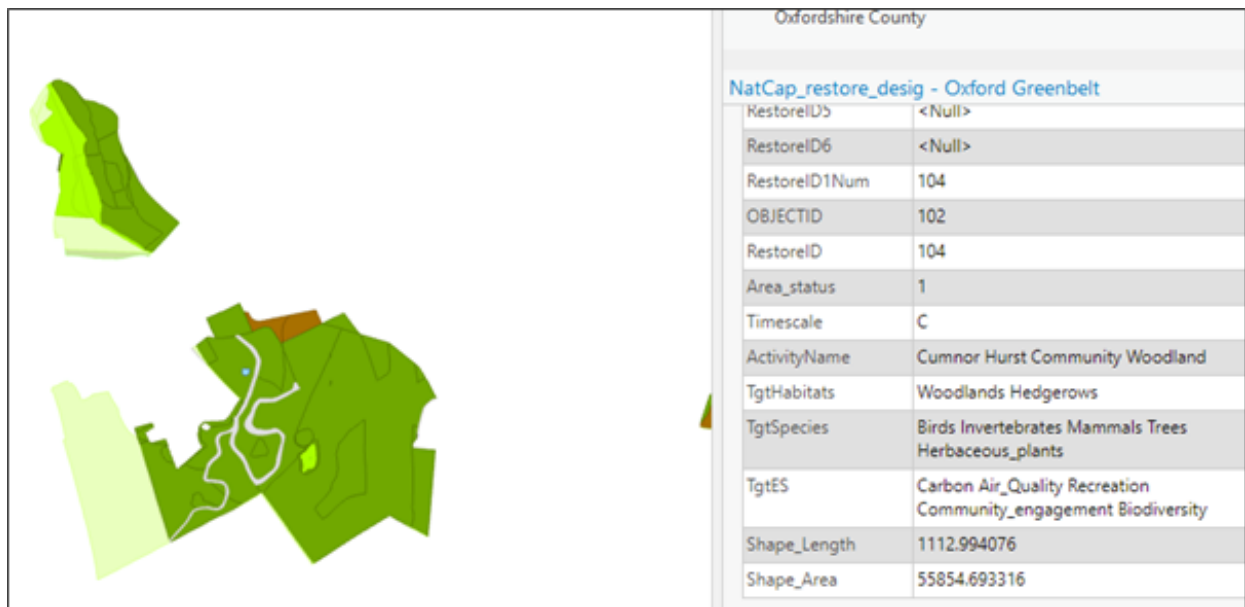


Figure 7 Close up of a nature recovery area showing habitat type (before restoration) with example of information recorded for one polygon shown on the right.

4. ANALYSIS OF THE MAPPED NATURE RECOVERY AREAS

The data was analysed to determine the extent and proportion of each type of habitat that is being restored (Table 1, Figure 8). This shows what is being done at the moment and can help to inform future priorities. For example, although there are only 6ha of heathland mapped, 79% are undergoing recovery or in designate areas. Over 60% of calcareous grassland, acid grassland and semi-natural woodland are also covered by activities or designations. However, only 28% of wetlands and neutral grassland and 29% of scrub and wood pasture is being managed for nature, showing that more action is needed for these habitats. Note that this analysis includes the Cotswolds AONB, although most of this area is not being actively managed for nature recovery, so these percentages may be optimistic. The analysis could be repeated in the future without the AONB.

Table 1. Analysis of percentage of each habitat type covered by nature recovery activities

	Recovery or designated	Other	% in recovery or designated
Arable	13,008	98,709	12%
Improved grassland	7,380	62,402	11%
Plantation, mixed and unknown woodland	3,650	12,972	22%
Semi-natural woodland	4,059	2,639	61%
Neutral grassland	1,587	4,086	28%
Calcareous grassland	854	369	70%
Acid grassland	46	12	79%
Marshy or unknown semi-natural grassland	1,285	4,191	23%
Wood pasture and parkland and scattered trees	928	2,255	29%
Scrub	451	1,094	29%
Heath	5	1	79%
Wetland	935	2,410	28%
Open mosaic habitats on previously developed land	97	170	36%
Water	732	2,358	24%
Green space & gardens	1,419	18,228	7%
Manmade	1,042	13,672	7%
Total	37,476	225,569	14%

Includes Cotswolds AONB

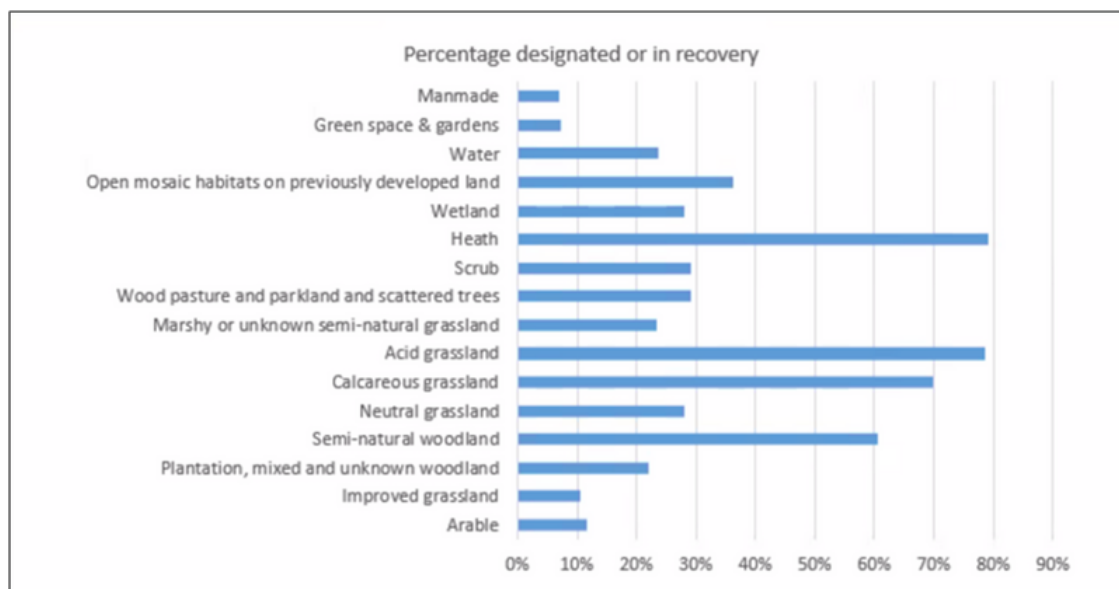
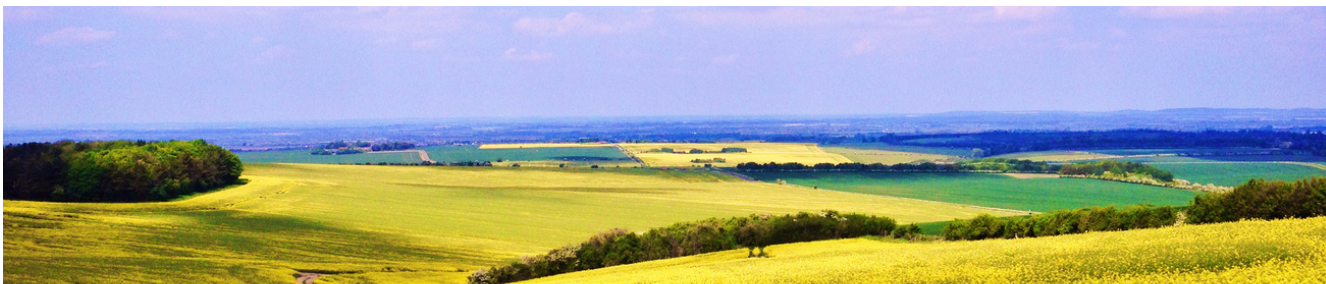


Figure 8 Bar chart showing percentage of each habitat being protected or restored

5. FUTURE ANALYSIS

As a guide for further action, the HERO team suggested the following plan to lead up to a project pipeline:

1. Listing target species and their habitat requirements (type of habitats; minimum core area for breeding/feeding; network requirements (county recorders could provide this information).
2. Analysing the existing area of habitat supporting the species:
 - a. How much habitat do we have?
 - b. How much is connected into a network?
 - c. What condition is it in? (Intact, degraded, being restored, protected/unprotected)
 - d. If it was all restored, would there be enough to support the targeted species?
 - e. If not, what scope is there for converting other land into that habitat type?

6. OVERLAP WITH NATURE RECOVERY NETWORKS AND AGRI-ENVIRONMENT SCHEMES

The team found that 58% of nature recovery areas are part of the draft Nature Recovery Network (NRN) core or recovery zones, which cover 38% of Oxfordshire. It is not surprising that these areas are concentrated in the NRN, given that most designated sites are 'core zones' of the NRN. However, this also means that 42% of activities are outside the NRN, showing the need to protect and integrate those sites within the Local Nature Recovery Strategy.

Finally, the team also mapped agri-environmental schemes using freely available data from government sources for the two schemes that still include active grants: Environmental Stewardship and Countryside Stewardship. Figure 9 shows that these schemes cover a large part of Oxfordshire. However, mapping only the grants that are still active and only the higher-tier or organic schemes, just 8% of Oxfordshire is covered (Figure 10). Note that the data only allows us to map the whole farm, not the exact area where activities are taking place, so that actual area covered could be far smaller than shown. For example, while some agreements might specify the use of cover crops on a whole field, others might only include planting wildflower mixes along certain field margins, managing hedgerows, creating a pond or adding a few beetle banks across fields.

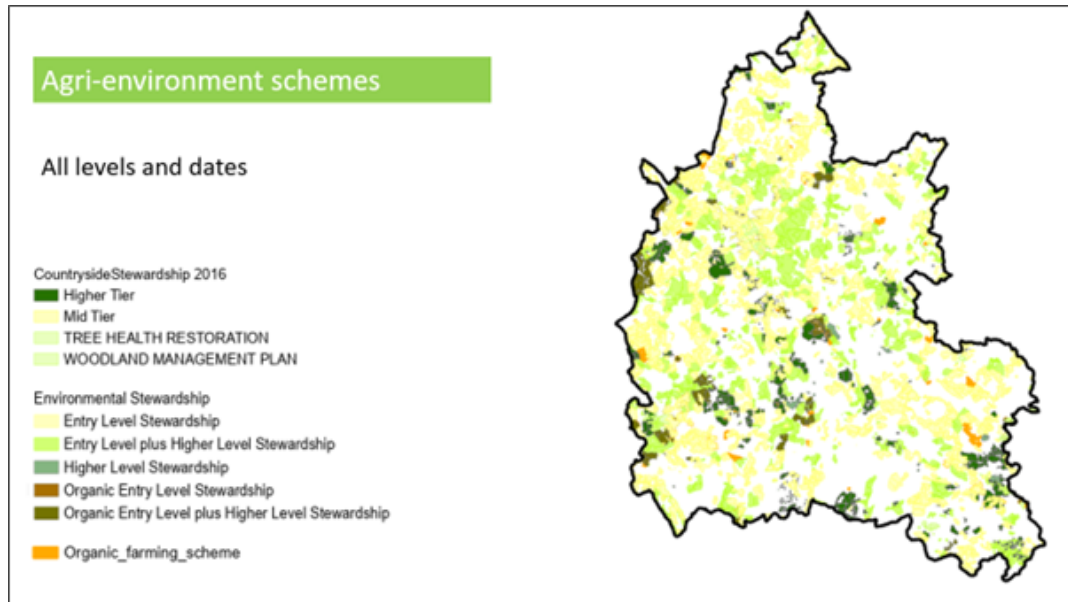


Figure 9 Agri-environment schemes in Oxfordshire (all levels of Environmental Stewardship and Countryside Stewardship, including expired schemes)

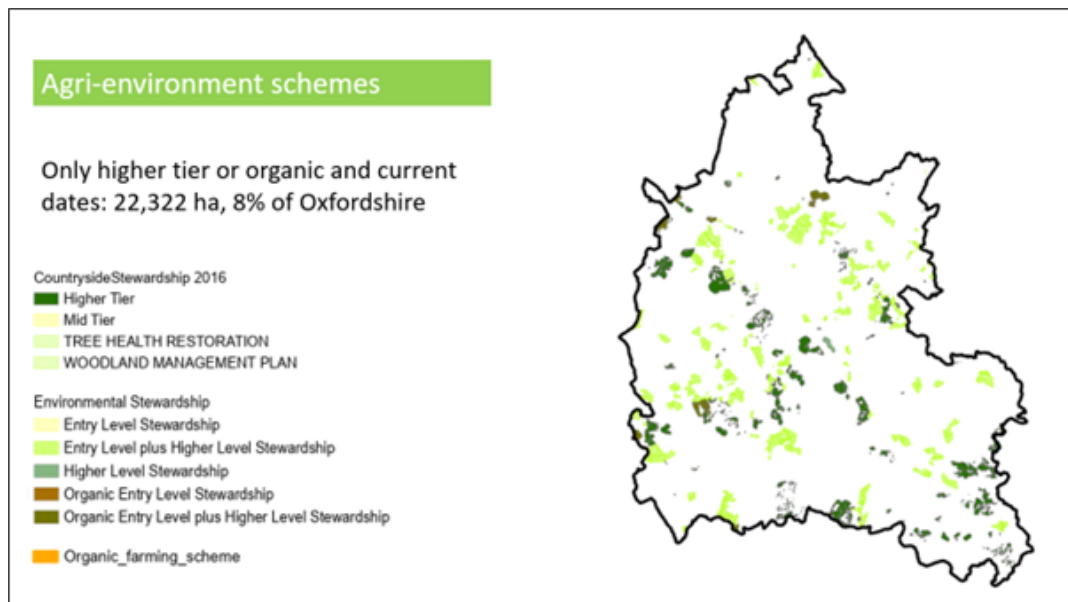


Figure 10 Area covered by current higher level stewardship or organic agreements

Finally, putting all the maps together, Figure 11 shows the areas covered by either nature recovery activities, designated sites (excluding AONBs) or current higher level or organic agri-environment agreements. These areas in total cover 12% of the county, 31,287 ha, when overlaps are removed.

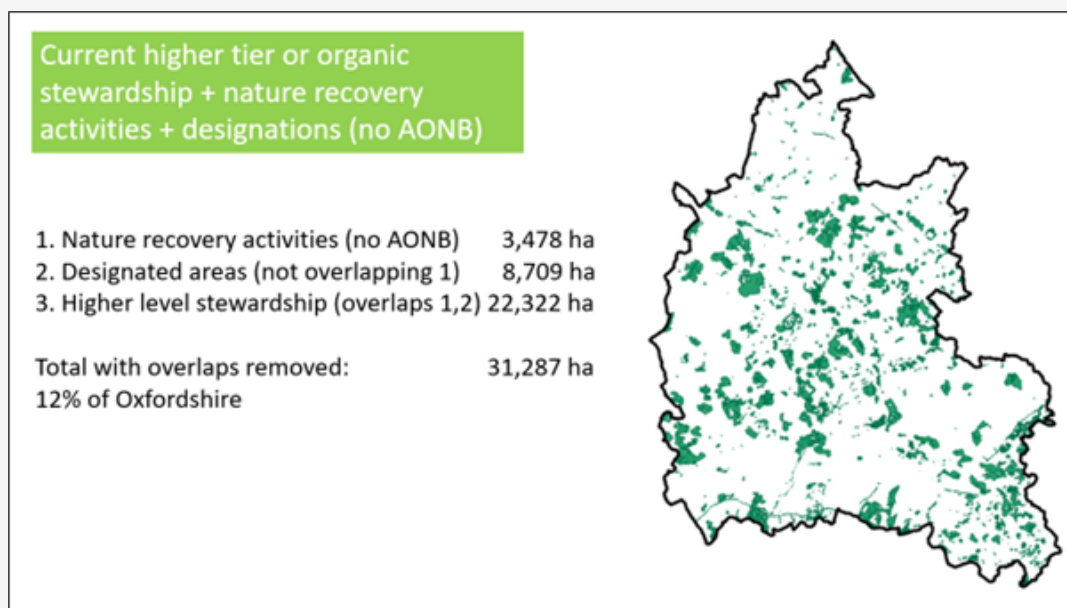


Figure 11 Nature recovery activities, designated sites and current higher tier or organic agri-environment schemes in Oxfordshire (not including AONBs)

DISCUSSION

Following the presentation, the HERO team opened the floor to a wider discussion around the content of the map and its wider communication. The guiding questions were as follows:

- What activities are still missing from the map? (e.g. some Evenlode catchment projects, Earth trust, Glorious Cotswolds Grasslands, Farmer Clusters, Bernwood-Otmoor-Ray, curlew recovery, etc...).
- Is it a good starting point for further contributions?
- Can we share this map more widely?
- How can we use the map to identify gaps, opportunities, and priorities for future nature recovery activities?

1. CONTENT OF THE MAP

Participants from different organisations lauded the efforts of the HERO team. Some expressed interest in checking the list of activities to provide a more exhaustive map of projects. TVERC offered to cross-reference the map against their information on local groups involved in nature recording.

A participant who is aware of many tree-planting and agroforestry initiatives on private land noticed that farmers and landowners were not directly surveyed and asked whether this was because they were outside the scope of the initial outreach programme. The HERO team responded that they were conscious that they did not want to take up too much of people's time by asking them to fill in the Google form, so they decided to start by creating an initial map based on existing public information that could then be shown to more people to encourage them to add further details of their own projects. However, this requires first discussing what this map should be used for. Participants then agreed that stakeholders should nonetheless be contacted 'earlier rather than later' since presenting them with an overly finished map may make them feel excluded from the research or detached from the project. One participant raised the point that approaching individual landholders is necessary to double-check stated and actual conditions on the ground – as the 8,000 hectares of SSSI and nature recovery areas is probably overstated.



Participants appreciated the efforts of including organic and regenerative agriculture but argued that deeper understandings are needed concerning what agricultural systems can and cannot contribute to. This reflection is timely given how ELMS will influence a nature recovery strategy. Although the map does include stewardship schemes, the HERO team should also do some analysis as to which schemes farmers have applied to and which nature recovery project these schemes are linked to. For instance, it would be interesting to identify the number of farmers enrolled in restoring hedges, to then map the hedges that are not included and then to work with the farmers on the ground to connect fragmented patches. Although this information exists, there is a notable mapping challenge in that datasets identifying stewardship options are single points per farm, and do not allow identification of where on the farm the options are implemented.

It was suggested that catchment partnerships and the Freshwater Habitats Trust could also contribute to checking and completing the map.

One significant challenge that the HERO project will face is linked to the updating of the map as nature recovery projects evolve. Also, habitat maps are not perfect - for instance, Natural England priority habitat maps are out of date and do not show all floodplain meadows. More generally, participants wondered if HERO could partner with landscape groups to engage people that could participate in keeping the map updated. Building on this point, one participant proposed a conceptual mapping of who is doing what and who has the relevant expertise (e.g. role of parish councils). Such a "master table" would put people as the nuts and bolts of the network and bring in a community angle. A participant spearheading a grassroot initiative on wetland meadow restoration emphasized that much of the work is about enabling connections between different actors and creating conversations. Participants agreed that multiple project officers are needed to interpret and translate projects on the ground into data. These officers can ensure that the connection is made between people who know and people with the enthusiasm to act.

2. ACCESSIBILITY OF THE MAP

The remaining discussion surrounded whether and how the map should be made available. The value of an open-access resource was largely agreed upon. There were no restrictions on sharing the database of project information as it was all taken from public sources, and the information collected via the Google form specified that the information would be shared. Nonetheless, there are challenges to sharing the map, since it contains Ordnance Survey Mastermap and TVERC data, both of which are not publicly available. TVERC said that the Local Wildlife Site locations could not be made publicly available because this would need individual landholders' permission, which may be time-consuming and may jeopardize the relationship with them (and even the future of the site). However, there is some possibility of synthesizing the information so that people can grasp trends, without breaching privacy. For instance, HERO could present the target habitat restoration as charts rather than maps, which could provide analysis and high-level information.

However, ecologists in the group reiterated the importance of accurate maps to support work in the field. Alternatively, they suggested satellite data for more straightforward stock-takes that would side-step data issues. One participant suggested reaching out to Ceri Lewis at the Environment Agency, who has been working on data sharing, as well as LNRS pilots at Natural England with their GIS team.

The Oxford Treescapes programme has showed that a considerable share of the county (5%) is owned by Oxford University colleges, with most of the landholdings resting in the hands of only four colleges. Participants having spoken with bursars of colleges noted the very different levels of motivation between colleges. For instance, one bursar expressed much goodwill but felt disempowered; feeling unequipped with the necessary skills to understand agricultural practices or even to persuade land managers. Hence, participants recognised the importance of effective communication amongst the colleges' executive members about the importance of renegotiating tenancies. One participant remarked that tenancy arrangements stipulate that the tenant farmer must give back their natural assets in as good a state as they were received. Hence, there must be an accounting system for the change in the quality of the land asset. This system may be used by colleges to establish natural baselines and track progress.

CONCLUSION

The HERO team took away a number of actions for further work:

1. Try to make both the database and map available, including top-level analysis, in a way that does not breach data-sharing agreements. Speak to Ceri Lewis and Natural England LNRS team about this.
2. Try to include detail of the type of action included within the agri-environment schemes.
3. Contact catchment partnerships and Freshwater Habitats Trust for feedback / adding projects.
4. The map can then be circulated to the wider community for comment and feedback.
5. HERO members will engage with colleges on how they can manage their land.

ABOUT HERO

HEALTHY ECOSYSTEM RESTORATION IN OXFORDSHIRE

HERO is a three year programme (in the first instance) supported by the Oxford Martin School, under their new Programme on Biodiversity and Society. HERO will explore how Oxford University can play a role in efforts to restore ecosystems to health in Oxfordshire, by bringing the University's strengths in academic knowledge, research capacity and convening power to support ongoing and planned nature recovery activities by a range of local partners and stakeholders, including land-owners and farmers.

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