

Annual Report from the Leverhulme Centre for Nature Recovery

1 June 2023 to 31 May 2024



Our year at a glance 2023-2024

Research outputs

20 publications/journal articles

10 research reports

9 preprints

5 research-explainer videos

3 evidence submissions

Cultural engagement

film festival

nature recovery art exhibition

3 film screenings and director Q&As



Community building

Nature seminar series

32 seminars

2000+ attendees

21,000+ views online

Public debates

4 public debates

500+ attendees

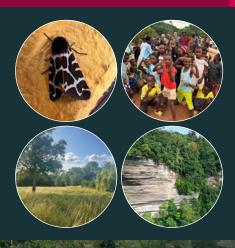
17,000+ views online

Podcasts

14. episodes

46 countries

2151 downloads



Outreach/engagement

40+ partner organisations

32 research staff

6 research themes

4. case study landscapes

Social media



9000+

new website users



2000+

X / Twitter followers



in 1000+

LinkedIn followers



500+

YouTube subscribers



podcast subscribers

Tech deployed

100 audiomoth/camera traps to Scotland

60 audiomoth/camera traps to Ghana

3 drones used in research

Research and activities	4
Update on vision and goals	4
Budget narrative	11
Complementary funding	12
Recruitment details	13
The year ahead	14
Appendix: Publications and outputs	15



Research and activities

Year 2 has been exceptionally productive. We progressed from three published outputs in Year 1 to six published papers, five pre-prints, alongside seven research-based reports. Many of these stem from projects initiated in Year 1. Due to the time lag in academic publishing, our current year's research will contribute to publications in Year 3 and beyond.

Update on vision and goals

Our vision is: to understand and support what it takes to deliver effective, inclusive and scalable nature recovery.

This year, we successfully defined 'nature recovery' to communicate our work more clearly to the public:

Nature recovery is the activity of helping life on Earth to thrive by repairing human relationships with the rest of the natural world.

This definition will feature in our upcoming website revamp and be a focus for communicating our work beyond academic communities.

The work on defining our vision and goals has resulted in greater conceptual coherency across the themes. While our outputs are far broader than the three goals below, they help frame our work in the context of what we want to achieve.



Goal 1: Understand the societal, biophysical, policy and systemic factors that enable or challenge nature recovery

This is the most challenging goal for the Centre to engage with, yet potentially it may yield the greatest long-term impacts.

- **Society Theme**: How societal attitudes towards the aesthetics of nature recovery shape what is acceptable, and how governance affects the sustainability of nature recovery.
- **Ecology Theme**: How do we measure nature recovery, and what are the catalysts and inhibitors of ecological recovery?
- **Finance Theme**: How financial flows impact nature recovery outcomes, and the complexity of constructing markets that deliver the best outcomes for nature.
- Health Theme: How our relationship with nature impacts our physical and mental health, and the potential for delivering improved societal health outcomes through nature recovery.
- **Integration Theme**: Systemic factors in global supply chains, and modelling land use decisions to see the impact for nature, the food system and wider societal needs.
- Scale Theme: Cutting-edge technologies enhance the temporal and geographic scale of measuring and monitoring nature recovery, allowing us to look to the past and model the future to understand the systemic impacts to our natural world.

We know this goal requires engagement outside our core themes, and we are exploring collaborations with the Environmental Humanities team at the University of Oxford, as well as new partnerships which focus on the cultural and spiritual dimensions of nature recovery.



This goal also requires understanding and influencing the policy sphere, which we have approached at different levels:

Local:

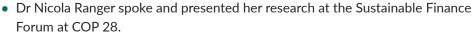
- Advising Oxfordshire's Local Nature Recovery Partnership.
- Involvement in two flagship Landscape Recovery schemes in Oxfordshire.
- Collaborating with the University estate and partners to monitor and restore local landscapes.

National:

- Contributing to UK policy briefs.
- Advising policymakers on nature-related issues.

Global:

- The Centre Director will attend the Biodiversity Conference of the Parties (COP 16) this year.
- Engaging in global projects, including advisory roles with senior World Bank officials.









Selected related outputs

- Caitlin Hafferty and Mark Hirons presentation to <u>DLUHC seminar series</u>: How to build standards of trust, accountability and inclusion for sustainable places | 21 July 2023
- Martha Crockatt met the Green Infrastructure Lead for Natural England (Thames Solent) on greenspace research
- <u>Aoife Bennett video</u> on co-created / delivered research in Amazonian peatlands | 9 April 2024

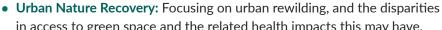
Goal 2: Collaborate with partners in case study landscapes to test and enhance frameworks, technologies, and tools to deliver effective, inclusive, nature recovery that also provides for society and its wellbeing

We have had significant success in this area. Highlights include:

- Oxfordshire: Data rich baselines established across a large number of interconnected projects.
- Ghana: Combining remote sensing with indigenous knowledge, and establishing baselines to prepare the way for exciting interventions such as the country's first rewilding project.











Selected related outputs

- Highlands Rewilding third natural capital report features the collaboration with LCNR | 2 December 2023
- Parish councils cited the Oxfordshire Treescape Project as helpful in developing their Nature Recovery Plans | 10 April 2024

Goal 3: Develop a community of nature recovery at the University of Oxford that draws on its intellectual capital and convening power across disciplines, to examine key debates and challenges in nature recovery

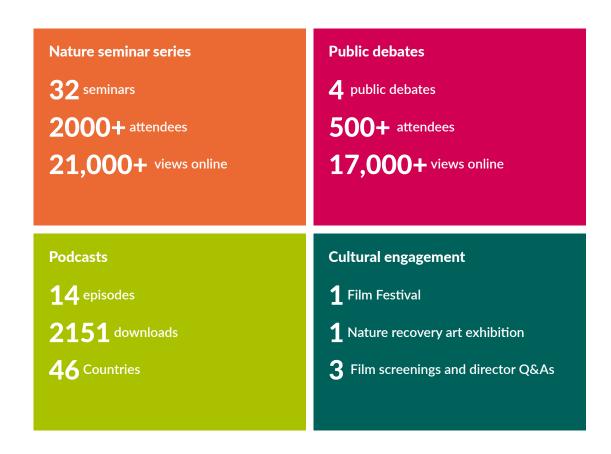
We are surpassing our own expectations in this area. Our varied schedule of interdisciplinary networking opportunities has facilitated a lively, supportive network of professionals from diverse backgrounds, all involved in nature recovery, who regularly meet and interact, both formally and informally, and which has already resulted in strong collaborations and outputs.

Our Nature Seminar series attracts renowned speakers such as <u>Dame EJ. Milner-Gulland</u>, <u>Justin Adams OBE</u>, <u>Professor Hugh Possingham</u>, <u>George Monbiot</u>, author and environmental campaigner, and <u>Dr Mike Morecroft</u>, head of climate change science at Natural England. While our debates shine a spotlight on timely issues such as <u>England's Biodiversity Net Gain policy</u> and The Planetary Boundaries Framework.

In addition to hosting regular conferences, workshops, symposia, writing retreats and social events, we have a thriving social media offering:

- X / Twitter 2000+ followers
- LinkedIn 1000+ followers
- YouTube 500+ subscribers
- Website 9,000+ new users
- Podcasts 200 subscribers

Key initiatives in 2023/4



From worms to flowers | Video Fungi: Web of life | Film

Conservation Optimism | Film festival







Screenings included 'We are Guardians', 'Why not Scotland?', and 'Fungi: Web of Life' as well as supporting the Good Natured: The Conservation Optimism film festival.

Media appearances on BBC's Countryfile



Presenting the programme website

Nature recovery | Art event

Yawanawá Amazonian Indigenous People | Visit







Next year, we plan to collaborate with partners offering nature-related activities to coproduce events, aiming to attract a larger and more diverse audience. Creating a community of nature recovery is essential in order to attract talented individuals to our Centre, and to focus attention on these key debates.

- The Biodiversity and Conservation MSc course at Oxford University is to be renamed
 the Biodiversity, Conservation and Nature Recovery MSc. Course content will be closely
 aligned with our Centre's programming with students expected to attend seminars and
 visit field sites. We expect a number of graduates will go on to PhD positions within the
 Centre's ecosystem.
- Nature Positive Universities launch led by EJ Milner-Gulland | 22 August 2023
- Financing Nature Recovery in Oxon report generated interest from the Forestry Commission and Sussex County Council | September 2023
- LCNR response to the <u>Environmental Audit Committee call for evidence (Role of natural capital in the green economy)</u> with Sophus zu Ermgassen invited to informal evidence session with the Committee in January 2024 | 22 September 2023
- Caitlin Hafferty presentation DHLUC (science seminar) on community participation in decision making & nature recovery | 30 October 2023
- <u>Intelligent Earth</u> AI Centre for Doctoral Training at Oxford. Steve Reece is involved and attended kick-off meeting | 20 November 2023
- LCNR webinar to support roll-out of Recipe for Engagement developed under the Agile programme (Caitlin Hafferty). 272 registrations, 140+ participants, 23 countries, and very positive feedback on webinar content | 20 February 2024
- Co-produced video <u>From Worms to Flowers</u>. Story Museum / LCNR / Oxford Botanic Garden | March to April 202
- EJ Milner-Gulland and Sophus zu Ermgassen were external reviewers on the <u>National</u> <u>Audit Office report into Biodiversity Net Gain implementation</u> | 1 May 2024



Budget narrative

In line with our planned growth, overall spending increased in Year 2. We improved budgetary forecasting and tracking on the previous year through enhanced internal financial reporting. However, despite our overall spend being closer to our forecasted budget, we observed an overspend in associated costs and an underspend in research staff costs. This discrepancy arose due to delays in recruitment in order to uphold high academic standards, which impacted the allocation of research salaries.

- 1. Associated costs exceeded forecasts primarily because of the significant investments in fieldwork, equipment, and coordination efforts necessary to establish our key landscapes. To address the long-term requirement to allocate 75% of funding towards research salaries, we have implemented the following measures:
 - Stricter budgetary controls for Year 3 and a more robust approval process for associated costs.
- **2.** Development plan to find extra sources of funding to cover fieldwork, equipment and other core costs.

We aim to continue our strategy of early investment in landscapes and field sites, confident that as we produce research outputs, we will attract new funding opportunities. Culturally, we want to remain expansive and ambitious during the first five years, and so we are balancing the needs for financial controls against the need to pump-prime exciting new initiatives.



Complementary funding

In Year 1, we secured £45,330 from the North Cotswolds Farmer Cluster. In Year 2, through the Leverhulme Centre for Nature Recovery's initiatives, we significantly increased complementary funding.

Funding amount	Source
£245,000	Natural State Co-funding for 2 postdoctoral positions in our Kenya Landscape
£147,000	NIHR Imperial Biomedical Research Centre (BRC) funding for a 2.5 Year post-doc to work in our Human Health and Wellbeing Theme
£150,000	Oriel College Benefactor has funded a studentship for a Ghanaian student to pursue a DPhil focusing on the Ghanaian landscape
£150,000	PhD scholarship provided by Oxford India Centre for Sustainable Development for research in our landscapes
£80,000	Oxford Martin School funded visiting fellowships of Professor Erle Ellis and Professor Sandra Diaz to work with the Centre
£80,000	Defra funded research project into farmer uptake of the sustainable farming initiative

This co-funding is in addition to the funding raised in Year 1 and the contributions obtained at the launch of the Centre. This brings the total amount of co-funding secured by the Centre to: £1,670,800



Recruitment details

We have now almost completed our first wave of recruitment with 32 out of 37 planned roles filled. We have four roles which are currently being advertised / shortlisted and one final role in development. Once finalised, we will be supplementing with casual staffing, but no major additional recruitment is planned in the year ahead. Given the fast-moving nature of our research, we may need to recruit in addition to our plans. If this situation arises, we will communicate with the Trust accordingly.



The year ahead

The Leverhulme Centre for Nature Recovery stands poised to continue its tradition of excellence. In the coming months, we will expand our partnerships, enhance our research capabilities, and aim to surpass our current achievements and ambitions.

- We are facilitating high level conversations to ensure access to nature is embedded into the human development index.
- We hope to coordinate Oxfordshire first Citizens Assembly for Nature.
- We will also be developing exciting new initiatives to track and monitor biodiversity commitments at COP 16.
- We will begin work on a multidisciplinary book on nature recovery covering a range of perspectives from our varied landscapes and our conceptual themes.

We plan to enhance our Diversity, Equity, and Inclusion responsibilities and create ever more inclusive spaces and communities. Each year, we broaden our connections and partnerships, while strengthening relationships with existing partners. As the threats to nature rise up the political agenda our work becomes ever more urgent and impactful.



Appendix: Publications and outputs

Journal articles

The global impact of EU forest protection policies

Cerullo G; Barlow J; Betts M; Edwards D; Eyres A; França F; Garrett R; Swinfield T; Tew E; White T | 01/08/2023. *Science* (New York, N.Y.), doi: 10.11 26/science.adj0728

Native diversity buffers against severity of non-native tree invasions

Delavaux CS; Crowther TW; Zohner CM et al. 23/08/2023. Nature, doi: 10.1038/s41586-023-06440-7

Positive effects of tree diversity on tropical forest restoration in a field-scale experiment

Veryard R; Wu J; O'Brien MJ; Anthony R; Both S; Burslem DFRP; Chen B; Fernandez-Miranda Cagigal E; Godfray HCJ; Godoong E; Liang S; Saner P; Schmid B; Sau Wai Y; Xie J; Reynolds G; Hector A. | 15/09/2023. *Science Advances*, doi: 10.1126/sciadv.adf0938

'Nature positive' must incorporate, not undermine, the mitigation hierarchy

Maron M; Quétier F; Sarmiento M; ten Kate, K; Evans MC; Bull JW; Jones, JPG; zu Ermgassen SOSE; Milner-Gulland EJ; Brownlie S; Treweek J; von Hase A. | 21/09/2023. *Nature Ecology & Evolution*, doi: 10.1038/s41559-023-02199-2

Valuing the functionality of tropical ecosystems beyond carbon

Aguirre-Gutiérrez J;Stevens N; Berenguer E. | 06/10/2023. Trends in Ecology & Evolution, doi: 10.1016/j. tree.2023.08.012

Young mixed planted forests store more carbon than monocultures - a meta-analysis

Warner EC; Cook-Patton SC; Lewis OT; Leimu-Brown N; Koricheva J; Eisenhauer N; Ferlian O; Gravel D; Hall JS; Jactel H; Mayoral C; Meredieu C; Messier C; Paquette A; Parker WC; Potvin C; Reich PB; Hector A. | 09/11/2023. Frontiers in Forests and Global Change, doi: 10.3389/ffgc.2023.1226514

The Anthropocene condition: evolving through social-ecological transformations

Ellis EC. | 13/11/2023. Philosophical Transactions of the Royal Society B, doi: 10.1098/rstb.2022.0255

Integrated global assessment of the natural forest carbon potential

Mo L; Zohner CM; Reich PB et al. | 13/11/2023. Nature, doi: 10.1038/s41586-023-06723-z

Contestations, counteractions and equitable conservation—a case study of Ghana's Krokosua Hills Forest Reserve

Kumeh EM. | 12/2023. Forest Policy and Economics, doi: 10.1016/j.forpol.2023.103090

More than 17,000 tree species are at risk from rapid global change

Boonman CCF; Serra-Diaz J.M Hoeks S; Guo W-Y; Enquist B.J; Maitner B; Malhi Y; Merow C; Buitenwerf R; Svenning J-C. | 02/01/2024. *Nature Communication*, doi: 10.1038/s41467-023-44321-9

How agroecology can help build dynamic cocoa agroforests in Ghana

Kumeh EH. 02/02/2024. Agroforestry at Work, doi: 608907/1/608907.pdf#page=124

Large invertebrate decomposers contribute to faster leaf litter decomposition in Fraxinus excelsior-dominated habitats: Implications of ash dieback

Dahlsjö CAL; Atkins T; Malhi Y. 06/02/2024. Heliyon, doi: 10.1016/j.heliyon.2024.e27228

Rewilding in the British policy landscape. A qualitative analysis of policy documents related to rewilding

Cary E; Wartmann F | 01/03/2024. Scottish Geographical Journal, doi: 10.1080/14702541.2024.2322653

The power of citizen science to advance fungal conservation

Haelewaters D; Quandt CA; Bartrop L; Cazabonne J; Crockatt ME; Cunha SP; De Lange R; Dominici L; Douglas B; Drechsler-Santos ER | 22/03/2024. *Conservation Letters*, doi: 10.1111/conl.13013

Contrasting carbon cycle along tropical forest aridity gradients in West Africa and Amazonia

Zhang-Zheng H; Adu-Bredu S; Duah-Gyamfi A; Moore S; Addo-Danso SD; Amissah L; Valentini R; Djagbletey G; Anim-Adjei K; Quansah J. | 01/04/2024. *Nature Communications*, doi: 10.1038/s41467-024-47202-x

Tree growth and survival are more sensitive to high rainfall than drought in a seasonal forest in Malaysia

O'Brien MJ; Hector A; Ong R; Philipson CD. | 05/04/2024. *Communications Earth & Environment*, doi: 10.1038/s43247-024-01335-5



Bringing nature into decision-making

Malhi Y; Daily GC. | 22/04/2024. *Philosophical Transactions of the Royal Society B*, doi: 10.1098/rstb.2022.0313

Global trends and scenarios for terrestrial biodiversity and ecosystem services from 1900 to 2050

Pereira HM; Martins IS; Rosa IMD; Kim H; Leadley P; Popp A; van Vuuren DP; Hurtt G; Quoss L; Arneth A. | 25/04/2024. *Science*, doi: 10.1126/science.adn3441

Reimagining the language of engagement in a post-stakeholder world.

Reed MS; Merkle BG; Cook EJ; Hafferty C; Hejnowicz AP; Holliman R; Marder ID; Pool U; Raymond CM; Wallen KE; Whyte D. 29/04/2024. *Sustainability Science*, doi: 10.1007/s11625-024-01496-4

Financing Ecosystem restoration

Zu Ermgassen SOSE; Löfqvist S. | 06/05/2024. Current Biology, doi: 10.1016/j.cub.2024.02.031

Pre-print

The Nature Positive Journey for Business: A research agenda to enable private sector contributions to the global biodiversity framework

White T; Bromwich T; Bang A; Bennun L; Bull JW; Clark M; Milner-Gulland EJ; Prescott G; Starkey M; zu Ermgassen SOSE. | 08/09/23. doi: 10.31219/osf.io/nya52

Why models underestimate West African tropical forest productivity

Zhang-Zheng H; Deng X; Stocker B; Ding R; Thomson E; Gutiérrez JA; Adu-Bredu S; Duah-Gyamfi A; Gvozdevaite A; Moore S. | 01/01/2024. doi: 10.21203/rs.3.rs-4133186/v1

The distribution and drivers of tree cover in India

Gopalakrishna T; Rifai S; Ratnam J et al. | 09/01/2024. doi: 10.21203/rs.3.rs-3777003/v1

Energy flows reveal declining ecosystem functions by animals across Africa

Loft T; Menor O; Stevens N et al. | 06/02/2024. doi: 10.21203/rs.3.rs-3844832/v1

Biodiversity credits: learning lessons from other approaches to incentivize conservation

Wunder S; Fraccaroli C; Bull JW; Dutta T; Eyres A; Evans MC; Thorsen BJ; Jones JPG; Maron M; Muys B. | 26/02/24. doi: 10.31219/osf.io/qgwfc

Prioritising future evidence needs for marine and freshwater mammal conservation action

Hordern E; White T; Berthinussen A; Smith RK; Sutherland WJ; Christie AP. | 12/03/2024. doi: 10.31219/osf.io/4ad3x

Exploring the evidence base for reptile conservation actions: gaps, biases and research priorities

Speight O; Morgan W; White TB; Sainsbury K; Bouskila A; Rotem G; Smith RK; Sutherland W; Watson M; Christie AP. | 28/05/2024. doi: 10.31219/osf.io/rx4zq

Nature-based credit markets at a crossroads

Swinfield, T., Shrikanth, S., Bull, J., Madhavapeddy, A., & zu Ermgassen, S. | 29/05.2024. *Cambridge Open Engage*, doi: 10.33774/coe-2023-pl9xv-v3

Biodiversity credits: learning lessons from other approaches to incentivize conservation

Wunder S; Fraccaroli C; Bull JW; Dutta T; Eyres A; Evans MC; Thorsen BJ; Jones JPG; Maron M; Muys B; Pacheco A; Olesen AS; Swinfield T; Tegegne, YT; White TB; Zhang H; zu Ermgassen SOSE. | 2024

Reports

The potential contribution of revenue from Biodiversity Net Gain offsets towards nature recovery ambitions in Oxfordshire

Isobel Hawkins, Alison Smith, Prue Addison, Yadvinder Malhi, Matt Whitney and Sophus zu Ermgassen | June 2023

Large-scale social surveys on people and nature relations: report on the state of the art in the UK

Jasper Montana, Clare Ferguson and Tom Marshall | November 2023

Landscape connectedness under climate change in Oxfordshire: Implications of the bioclimatic ecosystem resilience index Oxford

Tom Harwood | April 2024

Natural capital assessment: Bernwood, Otmoor and Ray. Report for Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust and Natural England Alison Smith | 2024



Multifunctional landscapes in Scotland. Report for Rural and Environment Science and Analytical Services Division (RESAS), Scottish Government

Alison Smith | 2024

Book chapter

A political ecology and economy of key trends in international forest governance

McDermott CL; Burns SL; Brockhaus M; Bong IW; Hafferty C; Hirons M; Kumeh EM et al. | 06/05/2024. International Forest Governance: A Critical Review of Trends, Drawbacks and New Approaches, IUFRO World Series 43.

Interdisciplinary catalyst activities

Field Work Tennis and Object of Significance

These activities are intended for interdisciplinary research groups, organisations and classrooms to spark discussion and critical thinking around how to actively 'practice interdisciplinarity' in environmental research. Jasper Montana, Annie Welden, Lizzy McBain and Emma Webb | February 2024

Oxfordshire's greenspace-deprived neighbourhoods

Martha Crockatt | March 2024

Assessing the potential of AI for spatially sensitive nature-related financial risks

Reece S; O'Donnell E; Liu F; Wolstenholme J; Arriaga F; Ascenzi G; Pyewell R. | 26/04/2024. arXiv preprint, doi: 10.48550/arXiv.2404.17369

The Niche Mapper analytical framework - technical report

Leilai Immel-Parkinson and Emilie Vrain | May 2024

Mapping niches of extension service providers to support nature recovery – a policy briefing

Leilai Immel-Parkinson and Emilie Vrain | May 2024

Other outputs

Consultation response

The role of natural capital in the green economy (Environmental Audit Committee)

Sophus zu Ermgassen | September 2023. See also UK Parliament website: Written evidence

White paper on environmental principles, governance and biodiversity targets (Welsh Government)

Jed Soleiman | April 2024

Biodiversity metric for Scotland's planning system

Natalie Duffus, Joe Bull, Richard Grenyer, Owen Lewis, Alison Smith, Nell Miles, Lila Stewart-Roberts, and Thomas Atkins | May 2024

Podcasts

Ghana with Eric Mensah Kumeh and Emmanuel Tomude

June 2023

Emma Marris: 'It's a bit more complicated than that'

20 June 2023

Ash dieback special - ecology and hope with Dr Cecilia Dahlsjo and Dr Jo Clark

28 July 2023

Who gets a say and who doesn't? with Dr Alix Dietzel and Dr. Caitlin Hafferty

4 October 2023

Scales of fishing with Professor Christina Hicks

28 December 2023

Rewilding: People and participation

12 February 2024

If you believe... an alternative vision for the role of the state with Dr. Sophus Zu Ermgassen

14 March 2024

Anthromes with Erle Ellis

26 March 2024

Videos (explainers to accompany academic outputs)

Contrasting carbon cycle along tropical forest aridity gradients in West Africa and Amazonia

Dr Huanyuan Zhang-Zheng | 17 April 2024

Oxfordshire greenspace-deprived neighbourhoods

Dr Martha Crockatt | 8 April 2024

Mission driven public policy for nature recovery

Dr Sophus zu Ermgassen | 12 March 2024

Recipe for engagement guidance

Dr Caitlin Hafferty

Replanting logged forests with diverse mixtures of seedlings accelerates restoration

Prof Andy Hector | 7 November 2023

Leverhulme Centre for **Nature Recovery**

Leverhulme Centre for Nature Recovery

About LCNR

The ongoing loss and degradation of nature is one of the greatest challenges of our time. To halt and reverse this global biodiversity decline, the Leverhulme Centre for Nature Recovery was created as a hub for innovative research on nature recovery nationally and worldwide. It brings together experts from disciplines across the University of Oxford, including geography, ecology, social science, finance, economics, psychiatry, anthropology, artificial intelligence, statistics and earth observation. Our team collaborates on a range of projects, working with national and international partners.

Funder acknowledgement

The work of the Leverhulme Centre for Nature Recovery is made possible thanks to the generous support of the Leverhulme Trust.

LEVERHULME TRUST _____

Contact us



naturerecovery@ouce.ox.ac.uk



www.naturerecovery.ox.ac.uk



@NatureRecovery



Leverhulme Centre for Nature Recovery



Naturerecovery

Environmental Change Institute School of Geography and the Environment University of Oxford South Parks Road Oxford, OX1 3QY **United Kingdom**