

## SWEEP-affiliated PhD projects continuing beyond 2022/23

Below is a brief description of the research being undertaken, and impact either delivered or anticipated, from three of our SWEEP's part-funded SWEEP PhD projects.

The first of these has been delivered as part of the wider SWEEP [Coastal Change Management Areas project](#) and has been captured as part of that work. The remaining two are ongoing and will be completed over the next few years.

**Josie Alice Kirby: Application of Coastal Change Management Areas (CCMAs) for coastal adaptation to climate change impacts in South West England** - working with: [Dr Kit Stokes](#) and [Dr Tim Poate](#)

### The PhD

With the UK coastline retreating up to a metre every decade due to erosion, landslips, flooding and shifting sediments Local Planning Authorities (LPAs) have the difficult task of managing future developments along these unstable coastal and estuarine margins.

To inform planning and management decisions, the UK's National Planning Policy Framework requires LPAs to identify Coastal Change Management Areas (CCMAs) - where shorelines are likely to change significantly over the next 100 years. LPAs, however, often lack the ability to do this and uptake has been minimal.

Working in partnership with the University of Plymouth and the Environment Agency, Josie's research ran alongside, and fed into, the SWEEP Coastal Change Management Area project, contributing to the evidence base for a new scientifically robust methodology for demarcating CCMAs.



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PhD Impact Summaries

Specifically, Josie's PhD reviewed current UK and international CCMA practices and policies, and assessed current and future coastal erosion rates and flood risk in the South West, with the aim of better defining CCMAs around the South West coast.

### Impact delivered

Josie has worked alongside coastal planners and management bodies to increase consideration and implementation of CCMAs across the region with the aim of strengthening community resilience along the changing coast.

Josie's work has fed directly into the SWEEP CCMA project and has contributed to the range of impacts this has successfully delivered, including using the SWEEP CCMA methodology to map the coast lines of two areas in North and East Devon.

This is being used to strengthen planning decisions that will lead to enhanced environmental, economic, and societal benefits for local areas, and wider discussions and plans for further uptake of CCMAs across and beyond the region which, it is anticipated, will ultimately influence coastal planning and management policy in this area.





**Cara Patel: Antimicrobial Resistance Research: An interdisciplinary approach to studying the impact of pollution on antimicrobial resistance (AMR) at the river catchment scale - working with: Prof Will Gaze and Dr Anna Leonard**

**The PhD**

Antimicrobial resistance is one of the greatest health threats we face today. Each year more than 700,000 deaths occur globally due to resistant infections that can't be treated with antibiotics and other antimicrobial drugs, and it is feared this could rise to 10 million by 2050.

Funded by the Medical Research Foundation and the University of Exeter, Cara's PhD aims to understand the impacts of pollution on antimicrobial resistance (AMR) at the river catchment scale. Employing an interdisciplinary, natural capital approach to her work, and considering future climate change scenarios, Cara is examining catchment scale processes, including wastewater treatment and agricultural practice, to better understand the role human activity plays in the spread of AMR bacteria in the environment.

Cara's research aims to quantifying the drivers of environmental AMR prevalence and human exposure risk at a river catchment scale, and better understand the efficiency of mitigating interventions.

**Anticipated impact**

Through her research, Cara anticipates being able to provide evidence to support better decision making and environmental policy and practice that minimises environmental AMR, supports better health and enhances river catchment natural capital.



**Hannah Forbes: Blue Prescriptions: using wetland visitor centres and reserves for site-based social prescribing - working with: Dr Ben Wheeler and Dr Becca Lovell**

**The PhD**

There is growing evidence to support the health and wellbeing benefits of nature-based physical activities. Social Prescribing is used by the NHS to encourage individuals to undertake 'social' activities as part of their healthcare. Nature-based activities is one form of social prescribing and there is growing demand for nature-based social prescriptions, with significant investment for understanding how best to provide for, and evaluate the health benefits, of these types of activities.

Working in collaboration with the Wildfowl and Wetlands Trust (WWT), and conducting fieldwork at their Sites in South West England and in London, Hannah's work aims to gain a deeper understanding of 'what works, for whom, in what circumstances, and how?' in relation to nature based social prescribing and its potential to reduce health inequalities.

**Anticipated impact**

Hannah's PhD is contributing to the implementation of the UK Government's 25-year Environment Plan in relation to

the adoption of social prescribing models that help alleviate burdens on health care budgets related to poor mental health, sedentary lifestyles, loneliness, and isolation.

Using realist methodologies, including working with stakeholders, evidence synthesis, and qualitative interviews, Hannah's work is helping to inform best practice around the design and delivery of effective and equitable prescription visits to nature reserves or wetland centres.

Her work will contribute to a broader programme of WWT work to deliver enhanced health, wellbeing, and conservation outcomes as part of the wider impacts successfully delivered via the SWEEP Investing in Nature for Health project.

It is anticipated that Hannah's work will also feed into policy decision making in this field, in particular contributing to the evidence base for NHS England's Common Outcomes Framework seeking to measure the impact of social prescribing as well as a Quality Assurance Framework aiming to build confidence amongst GPs and other commissioners.

It is also expected that Hannah's work will contribute to a wider understanding and debate on how society can effectively harness the natural environment for individual and community health and wellbeing, thereby increasing the value society places on wetland nature.

**About SWEEP**

The South West Partnership for Environmental & Economical Prosperity (SWEEP) is a partnership between the University of Exeter, the University of Plymouth, and Plymouth Marine Laboratory. Funded by the Natural Environment Research Council and stakeholders together to solve key challenges faced by those working with our natural resources. [www.sweep.ac.uk](http://www.sweep.ac.uk)

