



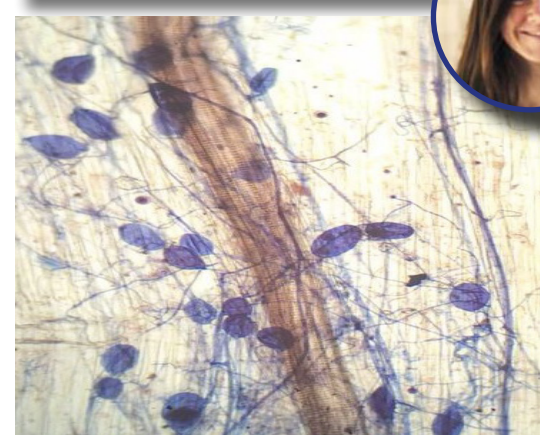
NEWSLETTER



STUDENT SPOTLIGHT

EMILY DURANT

My PhD is concerned with the impacts of veterinary pharmaceuticals on mycorrhizal symbioses. After investigating the impacts of three pharmaceuticals on the structure and function of the symbiosis, I have received funding from **NEOF (NERC Environmental Omics Facility)** to perform DNA sequencing on plant roots and soil. This will hopefully allow me to uncover the reason behind the observed impacts.



FROM THE EDITORS



We hope to include content from project partners and **ECORISC** students, whether that be progress in their own projects and placements or opinions on matters in the wider scientific community. Our cross-cohort editors are from Cardiff University, with collaboration across the other host universities Exeter, Sheffield, York, and Lancaster. We hope this provides an informal and easy way to see the impact the CDT is making as well as how partners can get involved in ongoing or future work and where to find us at upcoming conferences.

This first edition has been produced prior to the Society of Environmental Toxicology and Chemistry (SETAC) 34th European annual meeting in Seville, Spain, with a following issue due in the autumn. We welcome any comments and feedback on the newsletter and can be contacted at any of our editor's email addresses.

Happy reading from our editors,

Eve Tarring (tarringec@cardiff.ac.uk)
Chessie Mason (masonfc@cardiff.ac.uk)
Joe D'Souza (dsouzajm@cardiff.ac.uk)
Holly Hulme (hulmeh@cardiff.ac.uk)

Welcome to the new and updated edition of the **ECORISC** newsletter. This student led newsletter is designed to be the interface between our partner organisations, the staff and students of the NERC funded **ECORISC Centre for Doctoral Training (CDT)**. Recently, the three cohorts of the CDT came together for the first time to discuss research impact, how to engage with project partners and, most importantly, to meet new friends!

This event highlighted to us the need for communication and project design that involves stakeholders from the beginning, resulting in the production of a new updated newsletter and website.

PARTNER SPOTLIGHT

A quote from Dr Susan Zappala from JNCC on the ECORISC impact event 2024 -

"What a great day of connecting with students and getting energy from science and making a difference together; thanks for inviting us!"



ECORISC IMPACT EVENT 2024



Comments from our partners:

Event Highlights from Dr Suzie Qassim, Natural England

- Meeting the ECORISC students and learning about their projects and putting in place new collaborative relationships.
- Promoting Natural England's work and opportunities for students to engage (e.g. through mentoring, volunteering, placements, or internships at NE).
- Sharing what Natural England consider to be **impactful and robust science**, and engaging students on what impactful science could look like for them.
- Engaging the ECORISC partners, reflecting on the benefits of this unique CDT and what the next steps might look like for future work.

Feedback from Dr Steph Jones, Environment Agency

"UK environmental regulators and policymakers build on the latest research from academia and elsewhere. It was great to be involved with the workshop to highlight to students how their research could help inform our work, enabling them to improve their outputs and identify potential pitfalls that could be easily avoided. I'm sure that the impact of the CDT will be far wider-reaching than it otherwise would have been had the workshop not taken place."



In February 2024, the **ECORISC CDT** held a network event which brought together all three cohorts, the management team and a number partners for the first time. The aims were to **brainstorm ideas for extending the research impacts of the CDT beyond academia, and to form connections between the cohorts and stakeholders.**

A busy three days were spent discussing project impacts, identifying common themes, and developing practical steps for applying research outputs to real-world challenges in sustainable chemical use. Ideas generated at the event have been formulated into an ECORISC CDT Impact Action Plan which will soon be published on our website.

Stay tuned for updates on our progress!

LUCY HART, LANCASTER UNIVERSITY



OPINION PIECE



LOWENNA JONES, UNIVERSITY OF SHEFFIELD

A PERSONAL REFLECTION FROM COP28



In early December 2023, myself and five other University of Sheffield delegates attended COP28 in Dubai, UAE. I, along with just over 3000 other delegates (a record breaking 100,000+ delegates attended COP28), were attending COP28 as representatives of RINGO (Research and Independent Non Governmental Organisation) - the second largest constituency to the UN Framework Convention on Climate Change (UNFCCC). COP (or Conference of the Parties), now in its 28th iteration, serves as the largest, annual formal meeting of the UNFCCC parties to assess progress in dealing with climate change.

COP28 acted as the halfway point between the signatory of the landmark Paris Agreement in 2015 (COP21) and 2030 (the point at which targets set out in the Paris Agreement should be met). The primary goal of COP28 was to take stock of progress, and set out how countries (i.e., UN Nations) can accelerate action to meet commitments made in the Paris Agreement. Whilst I will not go into the detail of this year's outcomes (or lack of) - [see Carbon Brief for a detailed overview](#) - I will instead reflect on my own experience of attending COP28, and outline three crises I believe underpin governance and decision making processes at the national, regional and international scale, not just on the issue of climate, but also biodiversity and pollution.



(Image credit Lowenna Jones)

#1 CRISIS OF GOVERNANCE AND FAILED DECISION MAKING

We are at the 28th iteration of COP and yet the climate crisis is escalating. 2023 saw global annual temperatures exceed 1.5 for the first time since the Paris Agreement, breaking records to become the warmest year on record, globally. Some commentators - particularly small island nations - suggest COP is no longer working, with the rate of jargon filled, painful consensus building and snail-paced developments that can be broken by a single country's veto, too little to slow the rising tide of irrevocable change facing those at the front lines of climate change.

The science is clear. However it is not clear how science, and evidence is considered (or not) in decision making processes. Science itself, is a process of hypothesising, testing, finding solutions, creating knowledge, yet typically knowledge from indigenous voices, children, women, those already experiencing the impacts of climate change is ignored. Effective and evidence based decision making demands that all available and relevant evidence (including alternative forms of knowledge and science) is used, and has its role in the decision making process.

#2 CRISIS OF LEADERSHIP AND POWER

Processes and forces of power were playing out across the conference venue. This is nothing new, however this year elements were seemingly more visible to the uninitiated observer. COP28 was the first year the summit reported on the 'who's who' of delegates, with a record number of representatives from oil and gas outnumbering any other delegation (except Brazil and the UAE). Big and polluting economies from the global north held power in the negotiating rooms, and restrictions on protest and free speech (with one young climate activist - Licpriya Kangujam - being 'debadged') created an environment of fear, and distrust both within, and beyond the walls of the negotiating room.

We cannot ignore the fact that COP28 was being held in Dubai - a petrostate built on the production and export of oil and gas, with the COP28 president Sultan Al Jaber, himself CEO of the Saudi owned oil firm Adnoc. It is not clear what influence, or power the host country has on proceedings.

To ensure the location of COP does not create a conflict of interest, it is essential that the agreement between the UNFCCC and host country is made public, with stronger rules to minimise the influence of representatives from polluting industries - alike that of the intergovernmental science-policy panel on chemicals, waste and pollution prevention currently in negotiation.

#3 CRISIS OF JUSTICE, EQUALITY, DIVERSITY AND INCLUSION

“Climate change affects the whole world, not half of it” - a phrase spoken regularly across the conference venue. Typically, this is referring to the lack of women involved in decision making processes however could make reference to the lack of voices from indigenous groups, marginalised communities, children, youth, and the Global South. Evidence suggests women are disproportionately impacted by the climate crisis yet continue to be grossly underrepresented. Only 36% of COP delegates were women, with only 5 of the 29 COP presidents being women (notably all 5 have links to oil and gas). Yet, women's leadership matters. We know that when women have a seat at the table - at any stage of the decision making process - we create policies and solutions that are more effective, more sustainable and more beneficial to the community. Progress was made in Dubai. 63% of the COP28 presidency committee were women. However as we look to COP29 in Azerbaijan, women (initially) made up 0 of the 29 committee members. 12 women have since been included, however remain less than 30% of the representation.

The climate crisis is the crisis of our time. To ensure COP does not become (or perhaps continue to be) a shiny showpiece of inaction at the end of each calendar year - where those most affected by climate change cry for help, and those polluting commit empty promises to cut emissions - we must learn to listen to the calls for urgency that have been spoken time and time and time again. We must learn to listen to the science, evidence, and knowledge of those outside the negotiating room, and we must learn to stand up, and lead not with our heads or our pockets, but our hearts for sustainable, long term, rapid solutions.

SETAC CONFERENCE

The 34th annual meeting of the **European branch of the Society of Environmental Toxicology and Chemistry (SETAC)** is taking place in Seville, Spain this year. The focus of the conference is “Science-Based Solutions in Times of Crisis: Integrating Science and Policy for Environmental Challenges.”

This issue is key to many, if not all, of the CDT projects, with **17 presenters** attending this year, covering 17 posters and 3 presentations. Presentation topics range from ecotoxicology and analytical chemistry to ecosystem level effects, ecology, environmental frameworks and regulation.

Scan the QR code below to see a full timetable of our presentations and please come and talk to us about our work. **We look forward to seeing you there!**



Photos from last year's conference



SCAN ME
OR CLICK [HERE](#)

CHARLOTTE ROBISON-SMITH, CARDIFF UNIVERSITY

PUBLICATION HIGHLIGHT

Year on year, global food security becomes more reliant on the aquaculture industry, but disease epidemics plague fish and shellfish farms, significantly inhibiting productivity. Intensive chemical use and high stocking densities facilitates the occurrence of infectious diseases. Concurrently, aquaculture farms are also significant sources of water pollution, where waste generated from the industry inputs alarming amounts of recalcitrant chemicals into the surrounding environment.

ECORISC PhD student **Charlotte Robison-Smith**, supervised by leading parasitologist Prof. Jo Cable, discuss how these issues can be tackled with a One-Health approach for the benefit of farmed aquatic animals, humans, and the environment, in their recent **Reviews in Aquaculture** opinion piece titled **'Invisible plastics problem in intensive aquaculture: The case of polyvinylpyrrolidone'**.

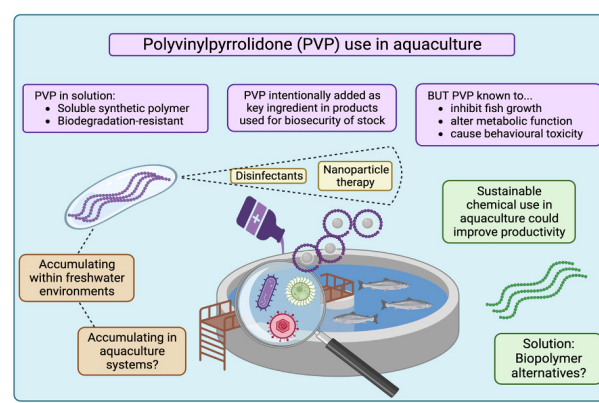
Within aquaculture, the same antimicrobial agents have been applied for 70 years; an additive ubiquitous in these prophylactic/therapeutic agents is the water-soluble synthetic polymer polyvinylpyrrolidone (or povidone). Recently recognised as an emerging contaminant of freshwater ecosystems, povidone is environmentally stable and does not readily biodegrade, hence its regular use in aquaculture practices implies that farms may accumulate

levels known to cause behavioural toxicity, reduce growth, alter metabolic function and increase disease susceptibility in commercial fish species.

The authors draw interdisciplinary evidence to argue that transitioning towards more sustainable chemical use in the industry, starting with the substitution of povidone for biopolymers such as those used in human medicines, can help safeguard food security through improved productivity of the fish farming industry.

Now seeking opportunities to carry on this work into a postdoctoral research position, Charlotte's future research aims to determine concentrations of povidone polluting aquaculture farms to further investigate how exposure impacts a range of host-pathogen models and evaluate whether biopolymer alternatives would benefit fish welfare and industry productivity. Read more about the review [here](#).

Graphical abstract:



Robison-Smith, C. and Cable, J., 2024. Invisible plastics problem in intensive aquaculture: The case of polyvinylpyrrolidone. *Reviews in Aquaculture*.

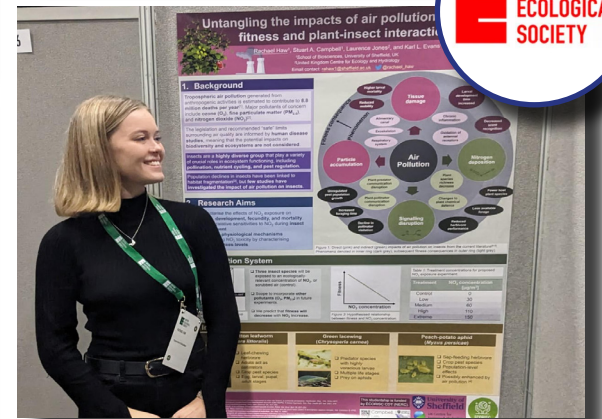
STUDENT SPOTLIGHT

RACHAEL HAW

In December 2023, I presented at the **British Ecological Society (BES)** conference in Belfast. My poster, titled “Untangling the impacts of air pollution on insect fitness and plant-insect interactions”, garnered considerable interest from a broad range of researchers who shared their own valuable experience – such as how to successfully breed ladybirds!

The areas of ecotoxicology and chemical pollution have been typically underrepresented at BES in the past, but this appears to be changing, with plenty of talks last year on topics such as heavy metals, microplastics, and pollution modelling. I would therefore encourage ECORISC students with an interest in ecology to consider attending the next meeting in Liverpool, December 2024.

BRITISH
ECOLOGICAL
SOCIETY



NEW PUBLICATION

ELEANOR PHILLIPS

I've recently had a paper, **'Dietary restriction extends lifespan across different temperatures in the fly,'** accepted by the BES journal, *Functional Ecology*. Read more [here](#).

This follows on from work I did as a research technician, before joining ECORISC, on understanding the mechanisms of Dietary Restriction (DR) – a dietary intervention that has been shown to delay ageing and extend lifespan consistently across numerous species. Our study challenges recent reports that DR does not extend lifespan at lower temperatures in *Drosophila*, suggesting the DR response is an artefact of benign lab conditions and would not be applicable in the wild. We retested this hypothesis under cold stress, with greater sample size and range of test conditions, and found that the DR longevity response is robust, extending lifespan regardless of temperature.

Phillips, E.J. and Simons, M., 2023. Dietary restriction extends lifespan across different temperatures in the fly. *bioRxiv*

