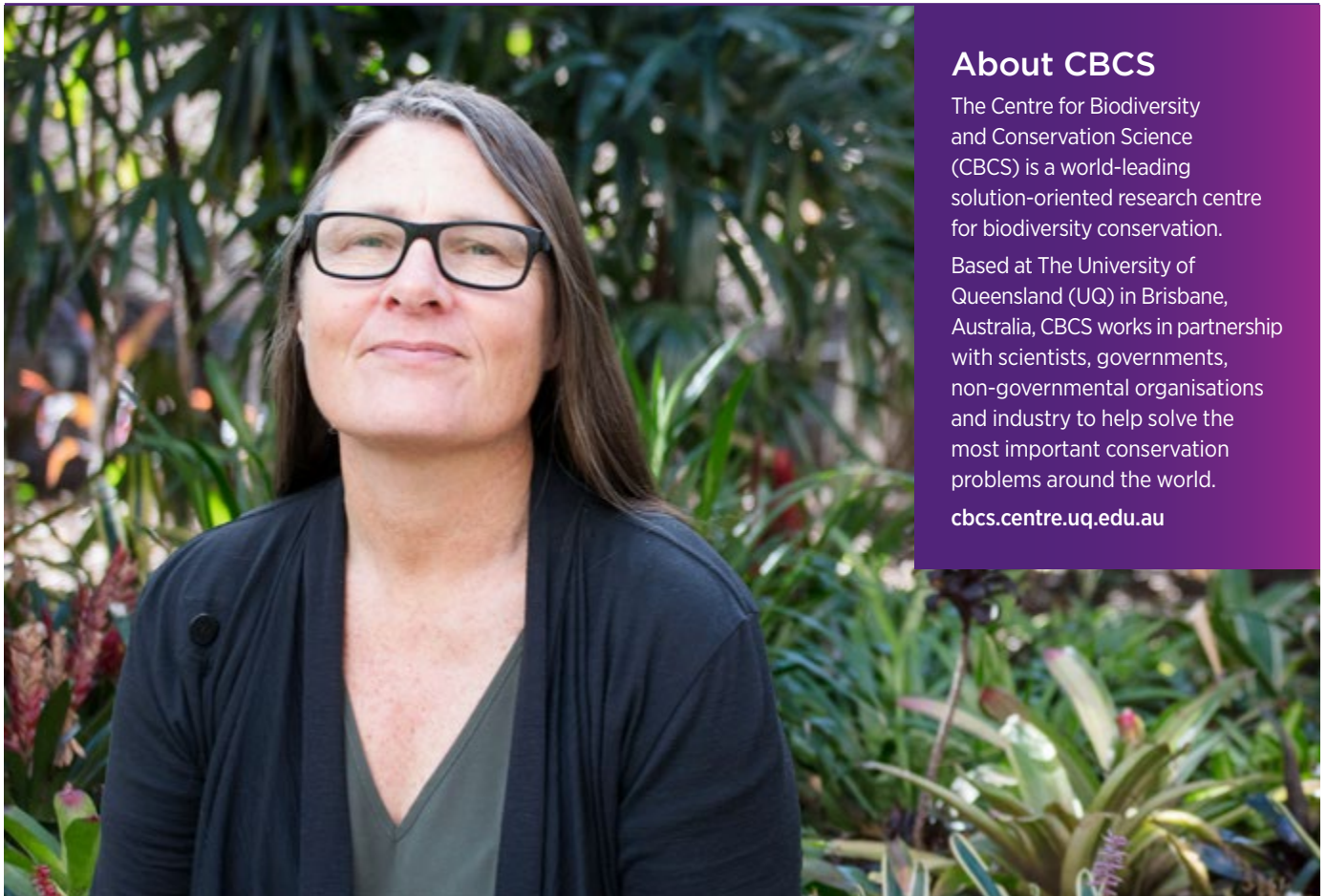


CBCS NEWS

A quarterly newsletter
Issue 14 — Winter 2023



About CBCS

The Centre for Biodiversity and Conservation Science (CBCS) is a world-leading solution-oriented research centre for biodiversity conservation.

Based at The University of Queensland (UQ) in Brisbane, Australia, CBCS works in partnership with scientists, governments, non-governmental organisations and industry to help solve the most important conservation problems around the world.

cbcs.centre.uq.edu.au

Professor Cath Lovelock awarded AAS Suzanne Cory Medal

Professor Cath Lovelock has been recognised for her outstanding contribution to science by the Australian Academy of Science, which awarded her the esteemed Suzanne Cory Medal in March 2023.

The Suzanne Cory Medal is an honorific award that is awarded in alternate years in the biomedical sciences and in all of the biological sciences excluding biomedical sciences. It recognises career-long achievement.

Cath is a leading global expert on the impacts of climate change on coastal wetlands and the role of coastal ecosystems in mitigating climate change.

She said she was pleasantly surprised to hear the news that she had received the medal.

"I'm so pleased to have the platform to talk about the importance of coastal wetlands and their conservation and restoration for the benefit of coastal societies," Cath said.

"It's fabulous to be recognised by my peers and wider community for my contributions to science."


Why coastal wetlands matter

Cath's research focuses on the influence of environmental change, namely climate change, on coastal and marine ecology, with a particular interest in plant communities, such as mangroves.

"I'm an ecologist, meaning I look closely at how ecosystems work and how all the different parts – whether it's plants, insects, frogs or crocodiles – work together," Cath said.

"I've been working to explore the vulnerability of mangroves and saltmarshes to climate change, and also how these ecosystems can help us adapt to climate change, particularly through their role as blue carbon.

"This acknowledgement reflects how science has propelled coastal ecosystems into being globally recognised as important for resilience of the coastal zone."

 ***Coastal ecosystems are being globally recognised as important for resilience of the coastal zone.***



Blue carbon innovation

Cath is a member of the International Blue Carbon Scientific Working Group. Blue carbon refers to carbon captured by the world's oceans and coastal ecosystem. Seagrasses, mangroves and saltmarshes all act as carbon sinks. They may be much smaller in size than forests but they sequester carbon at a much faster rate. Cath has played a key role in setting up a market-based blue carbon method in Australia.

"That means a farmer who has an under-performing paddock along the coast can turn that back into a coastal wetland, let's say a saltmarsh or a mangrove, and receive Australian carbon credit units that they can sell."

Cath cautions, however, that blue carbon is not a silver bullet and that the primary way to fight climate change is to reduce greenhouse gas emissions.

Close to home

"I love to work in Moreton Bay," Cath said. "Moreton Bay is right on our doorstep, and it's a fabulous place that has everything from dugongs to turtles to sharks all the way through to huge developments down at the Gold Coast for tourism. So, it all happens in this one area."

"And we've got the Olympics coming! What story do we want to tell about how wonderfully well Australia can manage its ecosystems such that we can have human activity and we can have those ecosystems and all the gorgeous creatures that are in them and around them at the same time?"



Watch this Australian Academy of Science video of Professor Cath Lovelock discussing her work

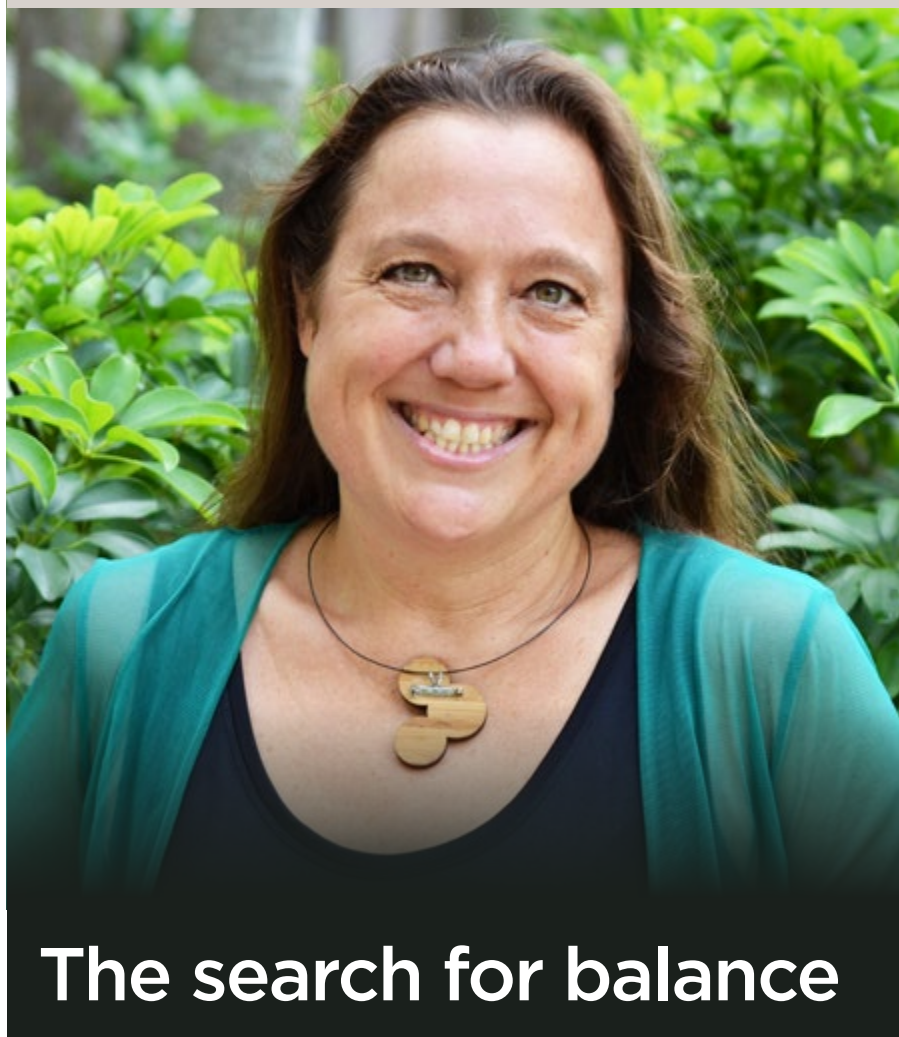
Beautiful Moreton Bay, on our doorstep, is also home to a huge range of wildlife and coastal ecosystems.

PROFILE

Dr Angela Dean

Lecturer, School of Agriculture and Food Science

CBCS Deputy Director – Community



The search for balance

After a few years at another university over the river, it's great to be back at The University of Queensland with all the wonderful people here, including all of you at CBCS. I am a conservation social scientist, and my research explores social dimensions of diverse conservation problems, with a focus on how to better work with people to support their engagement in conservation. The science-y bits of what I do focus on how people's experience (such as experiences in a place or emotional experiences) shapes engagement and opportunities for action.

It all started in a very different place ...

I always thought it would be great to work in an area related to wildlife and nature. However, as a kid in a country town, discussions about university education typically focused on vocational training. So I ended up doing a pharmacy degree.

I graduated and practised, but I was always curious about the social and behavioural aspects of this work. Why do people act in certain ways? Why does information not influence behaviour

as much as we would hope? How do emotions and experiences shape people's choices? So, I ended up doing a PhD in psychiatry and mental health.

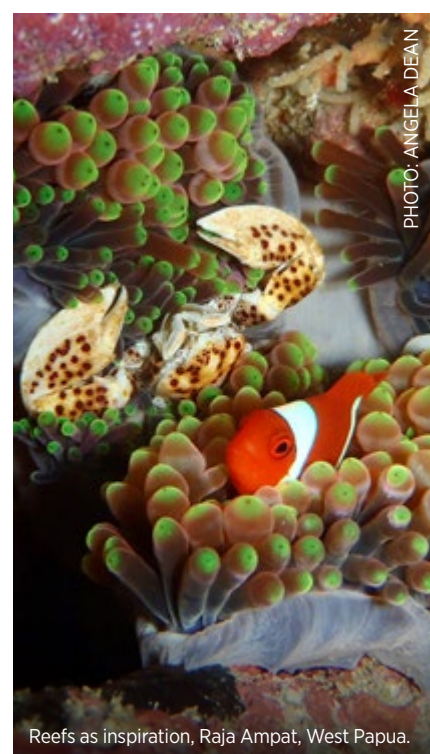
I spent my PhD working in drug and alcohol clinics in Sydney and Brisbane, exploring the interplay between emotions and behaviours in people with serious addiction problems. I followed this with postdoctoral work based in child and adolescent mental health services, exploring how we manage children and families with complex mental health problems.

But something wasn't right

Always during this period, I was fascinated by how we can work with people and social systems to create change (spoiler alert: it's not easy!).

But something wasn't right. I was increasingly disconnected from what I was working on. I still thought it was interesting and important, but it didn't connect with where my heart was. I asked my boss for a holiday – and he sent me to a life coach! And so began the career-changing journey. I volunteered for all sorts of things, helping researchers monitor everything from squirrel gliders to grass trees. But six weeks of coral monitoring in the Seychelles got me hooked. Now what was the next step – a new degree, or could I wiggle into a different type of job?

I eventually landed a job with [CoralWatch](#), UQ's citizen science program that monitors coral bleaching and promotes citizen engagement in reef conservation actions. And the transferable skill that enabled this to happen was writing, specifically, grant writing. The team and I would develop education materials and run events and workshops for community members or educators about reefs and how people can contribute to reef conservation. This role provided amazing experiences – but still something niggled. What happened when the people at our workshops went home? What type of impact were we having? It seems I was still a researcher after all ...



Reefs as inspiration, Raja Ampat, West Papua.

... and back to research

After a few false starts, I returned to research, first as an environmental social scientist here at UQ with Kelly Fielding and the **Cooperative Research Centre for Water Sensitive Cities** and then with the Centre for Environmental Decisions in School of Biological Sciences. Since that period, I have been able to build a research program focusing on how to work more effectively with communities to support conservation outcomes.

I work across a range of issues related to biodiversity conservation, from urban to agricultural settings, but reef conservation remains one of my favourite areas. The social aspects of my research also cover a range of areas, such as communication, stakeholder engagement, collaboration and conflict. Now that I am in a teaching and research position, my teaching also encompasses communication, stakeholder engagement and approaches to tackling social issues. I particularly love working with government partners and non-governmental organisations to contribute to change. It's exciting to have reached a stage where it feels everything is falling into place. And I continue to be surprised at how so many skills from my "old life" are useful and relevant across diverse settings, including ethics, survey design and grant writing.



I've come to realise how important it is to align your work activities with what is really important to you.



Discussing reef conservation activities on a CoralWatch stall.

PHOTO: CORALWATCH

The message?

Sometimes it's easier to say than do, but I've come to realise just how important it is to align your work activities with what is *really* important to you. I call it "work-work balance". There are always some parts of research that can be tedious, but to thrive, a core part of what we do needs to be aligned to the things we really care about. Sometimes it takes time (and friends, whiteboards and red wine) to figure this out. With all the tasks and deadlines piling up around us, we don't always make the time – but I can promise that it's worth it.

Running reef monitoring workshops with marine science students, Sulawesi, Indonesia.



PHOTO: CORALWATCH



Trying to redirect a glacier: informing the new treaty for biodiversity beyond national jurisdiction

Associate Professor Daniel Dunn

CBCS Director

Director, Applied Marine Biogeography Lab

In the realm of United Nations policy processes, where time moves at (pre-industrial) glacial rates, the negotiations over a new treaty for biodiversity beyond national jurisdictions has fit right in. Formal discussions on how to conserve and sustainably use the half of the planet that lies beyond any one country's jurisdiction began around the turn of the millennium and were formalised under the UN General Assembly in 2004. These discussions aimed to enumerate existing governance structures for biodiversity in the open ocean and deep sea, and to gauge whether they were sufficient.

A waiting game

At the time, anyone could have easily answered the question. There were literally no regional fisheries management organisations governing deep sea fishing beyond national jurisdictions anywhere in the southern hemisphere in 2003, and half of the Pacific high seas had no regional fisheries governance structure at all. Those were some big and obvious gaps, but there was also clear movement toward the establishment of fishery management structures. So, delegations waited and delayed and stalled ... and waited. By 2012, the vast majority of the globe was covered by fisheries management organisations, but their mandates were limited to fish, and they only managed about 3% of fish species in the high seas. Further, there was no governance of genetic diversity as there was on land after 2010 nor were there basic mechanisms in place to require environmental impact assessments or implement protected areas. Recognising that these major gaps still existed, and after a decade of discussions, the UN General Assembly resolved in 2015 to address the issue.

It was at this point, approximately 4000 days after the UN began discussing the issue, that I first had the opportunity to engage directly with the process. Astonishingly to none, my participation did nothing to increase the pace. From 2015 to 2017, a series of Preparatory Committee meetings paved the way for consensus-building and confirmed the need for a new treaty. To bring scientific information to bear on those four

meetings, I edited a series of eight policy briefs and organised or participated in six side events to help inform delegations on subjects ranging from area-based management tools to the impacts of fisheries. Reflecting on that leap into the treaty negotiations, it was a heart-warming and fulfilling journey, where scientists and policy-makers worked together towards a more sustainable and equitable future. Just kidding. A fairy tale it was not. It was a lesson in humility. Trying to inform a process that was not just glacial in speed, but also in momentum and direction, was humbling. You could erect some roadblocks and hi-vis signage to indicate dangerous paths ahead, but the glacier eventually just seemed to slide over any obstacle and the information was subsumed into the whole ... or buried underneath it.

In 2018, the UN agreed to start true negotiations for a new treaty via four intergovernmental conferences. Six intergovernmental conferences later, 19 years of work came down to a last-minute 36-hour final weekend push, resulting in an agreed text for the new treaty in March 2023. Nineteen years. In that time, Australia has seen eight prime ministers, CO₂ concentrations in the atmosphere increased 30% more from preindustrial levels, fishing effort in areas beyond national jurisdiction increased by more than 20% and permits for deep sea mining exploration have quadrupled. We have waited a long time for this treaty, and we have lost a lot of ground in the wait.

Opening the door to 30 × 30

So, what does it do, and will it be effective? The new treaty provides ground rules for how the high seas can be protected, and how we will assess the environmental impact of activities there. Possibly most importantly, it articulates a new regime for access and benefit-sharing from marine genetic resources, which have already been used to develop extremely lucrative pharmaceuticals by corporations and countries who can afford to access these deep and distant areas. In addressing marine genetic resources, the treaty also enshrines for the second time in international maritime law the concept of areas beyond national jurisdiction being the “common heritage of humankind”, a critical concept that both equitably expands access to and responsibility for these areas.

There's been particular focus on how the new treaty will impact our collective ability to meet the goal of protecting 30% of the planet by 2030. Put simply, without this new treaty, the 30 × 30 goal would have been a fantasy. Before this treaty, there was no global mechanism to allow countries to implement marine protected areas in the high seas, essentially removing nearly half of the planet from the protection equation. While this treaty does not protect any part of the high seas today, it provides the means for doing so and opens the door to achieving 30 × 30.

While the treaty text has been agreed, there is still a long way for this glacier to go and the impact it will have on the broader suite of international marine governance structures remains to be seen. The effectiveness of the new treaty will be tested by entrenched sectoral and regional

organisations, and we may not fully understand what the new terrain looks like until the glacier has retreated from a few areas. I believe that, in surveying the new terrain, we will be able to identify the contours of how the efforts of a core group of scientists shaped it. From the inclusion of fish biodiversity to a recognition that area-based management will need to include dynamic measures, the imprints of our efforts have been carried forward – regardless of what we could see registering with delegations, or how we felt at the time. While humbled by my efforts to inform the development of the treaty, I am immensely proud for having tried. The treaty represents a seismic shift in how we govern and conserve the high seas, and I'm glad to have contributed a few tremors along the way.

“We have waited a long time for this treaty,
and we have lost a lot of ground in the wait.”



PHOTO: DANIEL DUNN

CBCS Director Daniel Dunn chairs a side event during the BBNJ intergovernmental conferences.

CBCS 2023 Small Grant Scheme: outcome announced

Every year, the CBCS Small Grant Scheme aims to promote research collaboration, inclusion, mentorship, leadership and teamwork within and beyond CBCS.

The scheme has been extremely successful, funding a range of activities largely led by early career researchers and HDR students. This year we received 11 proposals and, after careful consideration, decided to fund the following seven, presented here in alphabetical order by proposal title.

We can't wait to see how these exciting activities develop.

Collaborating with Moreton Bay's commercial fisheries to develop solutions to reduce trawling impacts on threatened biodiversity

Lead: [Leslie Roberson](#)

The proposed workshop aims to address pressing local conservation issues by bringing together industry, government and researchers to take a first step towards finding effective solutions. The workshop aims to: 1) promote collaboration among commercial fishers, industry representatives, researchers and managers to investigate the bycatch issue in Moreton Bay's prawn trawl fishery; 2) raise awareness of bycatch issues and determine which bycatch species are problematic and when, where and why they are problematic; 3) identify any bycatch reduction strategies that are already used by fishers; 4) discuss potential solutions and next steps required to advance those solutions; and 5) identify opportunities for research collaborations between UQ students and Moreton Bay fisheries, including upcoming funding opportunities.

Conservation visual storytelling and outreach using animation and documentaries workshop

Lead: [Karlina Indraswari](#)

Through two workshops, the first aim of this project is to broaden CBCS knowledge with regards to how visual tools such as animation and documentaries can be used to communicate science, engage the public, and even appeal to donors, increase visibility and changes for successful grant writing. The second aim is to allow CBCS members to have an interactive engagement with experienced animators and film-makers, where members can ask questions, request input, and even potentially develop collaborations with the speakers that can benefit any future needs.

Developing megavertebrate conservation research and teaching at Heron Island

Lead: [Lily Bentley](#)

This workshop will develop a new program of megavertebrate conservation research (and associated teaching activities) at Heron Island, southern Great Barrier Reef. It will develop a tracking and monitoring program covering sea turtles, seabirds, elasmobranchs and marine mammals. Key objectives include: 1) to identify opportunities for new research and collaboration between UQ marine vertebrate conservation researchers at the Heron Island Research Station; 2) to develop a draft program of work in megavertebrate tracking and monitoring on Heron Island; 3) to identify elements of the research program to develop into teaching and learning activities for undergraduate, visiting international, Honours, Masters and PhD students; and 4) to draft a large bid for central strategic funding to support the project moving forward.

Exchanging experiences in conservation between Mexico and Australia

Lead: [Evelyn Gómez Juárez](#)

The proposed conference will be organised through the coordination of two leading institutions in their countries, The University of Queensland and the National Autonomous University of Mexico (UNAM). The conference will: 1) facilitate a virtual space for an exchange of experiences in diverse areas of conservation between Mexico and Australia; 2) showcase cutting-edge projects in conservation that are creating a high impact in each country; 3) connect researchers and practitioners in conservation of two of the top 10 most biodiverse countries; and 4) break cultural and language barriers to foster communication and collaboration in conservation science.

Nature photography competition to showcase Australian nature and CBCS photographers

Lead: [Christina Zdenek](#)

The objectives of this photography competition within CBCS are not only to showcase Australian wildlife and promote learning about species but also to highlight the photography skills of CBCS members and beautify the indoor common areas in which we work. Such a competition will promote inclusion, leadership, aesthetic decoration beauty and community-building within CBCS.

Synthesising experimental design principles for understanding ecosystem service provision in agricultural landscapes

Lead: [Rhiannon Bird](#)

This project aims to develop experimental design principles for south-east Queensland that are broadly applicable outside our region. The workshop will develop experimental design principles to assess ecosystems services while accounting for confounding factors such as farming practices and landscape context. It will also train ECRs and HDR students in transferable skills, including organising and running a workshop, experimental design, leadership, grant writing, collaborative networking and liaising with people from diverse backgrounds.

Understanding the support needs of multicultural HDR students when studying in Australia

Lead: [Jaramar Villarreal Rosas](#)

This project will collect data to identify gaps in HDR students' support needs in Australia. This will serve as a baseline to understand the multicultural needs of students and tailor support systems accordingly. As an outcome, the project will propose a framework for university departments for the implementation of multicultural support system programs for HDR students.

Deqiang Ma shortlisted for Southwood Prize

Dr [Deqiang Ma](#), who completed his PhD in 2022 under the supervision of Professors [Martine Maron](#) and [Jonathan Rhodes](#), has been [shortlisted](#) for the Southwood Prize. This prize is awarded annually by the British Ecological Society for the best paper written by an early career researcher in the *Journal of Applied Ecology*.

Deqiang's paper, [The consequences of coastal offsets for fisheries](#), was one chapter of his dissertation.

Globally, ecosystem services are imperilled due to development, especially in coastal and marine areas. To achieve no net loss of ecosystem services through offsetting is critical to human wellbeing. However, typical biodiversity offsetting approaches such as restoration projects designed to offset losses of habitats fail to fully offset losses of ecosystem services. Knowledge about ecosystem services offsets is still quite limited due to a lack of systematic research.

Given this shortcoming, Deqiang and his collaborators investigated how different policy settings regarding locating offset sites for offsetting impacts on fish habitats could change net outcomes of a provisioning service of fishery resources, using a case study of mangrove and seagrass habitat offsets in Queensland. To do this, they developed a spatially explicit model that incorporated the supply, flow and demand of fishery resources to simulate the contribution of losses and gains of fish habitats to fishery benefits, including catches of species and fishery economic benefits, which could be applied to marine habitats globally.

They found that an offset ratio of 1:1 for impacted habitats under both offsetting scenarios of close proximity offsetting and spatially unrestricted offsetting failed to fully offset losses of catches for most fish species and fishery economic benefits. Locating offsets in close proximity to impacts tended to deliver better outcomes in offsetting losses for most species and fishery economic benefits, in comparison with spatially unrestricted offsetting.

These findings can contribute to framing a better fish habitat offsetting policy, which is urgently needed for marine conservation, as achieving no net loss of fishery resources is essential to achieve two of the UN Sustainable Development Goals: Goal 14 regarding the sustainable use of marine resources and Goal 2 of zero hunger.



Mangrove landscape in Brisbane, Australia.
Photo: Deqiang Ma

A surprising subgroup of “silent environmentalists” emerged from the survey.

Nicola Sockhill shortlisted for Rachel Carson Prize

CBCS PhD candidate [Nicola Sockhill](#) has been [shortlisted](#) for the [Rachel Carson Prize](#) for her paper [Beyond the ecocentric: diverse values and attitudes influence engagement in pro-environmental behaviours](#). The Rachel Carson Prize is awarded annually by the British Ecological Society for the best paper written by an early career researcher in *People and Nature*.

Nicola, along with co-authors [Professor Richard Fuller](#), [Dr Angela Dean](#) and [Dr Rachel Oh](#), found that large groups of the Australian population, including those who have traditionally been thought of as not caring about nature, demonstrated strong support for the environment through participating in pro-biodiversity behaviours and supporting pro-biodiversity policies.

We traditionally view certain groups as more likely to support the environment – left-leaning voters and ecocentric people (those who value nature for its intrinsic worth) – but Nicola’s research found that very strong support also comes from

right-leaning voters and anthropocentric people (those who value nature for its worth to humans).

People across the political spectrum, from both the left and right, show equal levels of pro-environmental behaviours and support for biodiversity policies. These findings challenge our preconceptions about who may be supporting nature with their behaviour, or their vote; Australia is experiencing political swings with environmentally focused political parties winning seats over right-leaning parties in recent elections.

Similarly, a large proportion of people who value nature for anthropocentric reasons strongly support the environment through their behaviour. Previous research indicates that only those who hold ecocentric values would undertake pro-environmental behaviours, but this is far from true; many anthropocentric people report a strong connection with nature and higher levels of pro-environmental behaviours than their ecocentric counterparts.



These misconceptions about right-leaning voters, and people who value nature for its worth to humans, mean that we are discounting the potential of huge groups of people to be strong proponents for the environment. Politicians and conservationists alike should reframe their view of how different groups of people can be engaged to support the environment.

Human-wildlife conflict: Emily Massingham reports

CBCS PhD candidate [Emily Massingham](#) attended the International Conference on Human-Wildlife Conflict and Coexistence in Oxford, UK, held from 30 March to 1 April.



Delegates of the HWC conference in Oxford, UK, at the conference venue, [Examination Schools](#). Photo: International Conference on Human-Wildlife Conflict and Coexistence

Human-orangutan conflict

At the conference, Emily represented CBCS and presented her research on “Community perceptions and experience regarding killing of orangutans in Kalimantan, Indonesia”. Emily has conducted this research with the support of her supervisors [Professor Hugh Possingham](#) and [Dr Angela Dean](#) from CBCS, and various external authors (Erik Meijaard, Marc Ancrenaz, Dino Mika, Julie Sherman, Truly Santika, Lengga Pradipta). This work involved 431 interviews in 79 villages across Kalimantan and is the first quantitative field study in more than 10 years to assess the state of orangutan killing. The findings will be published soon in a paper that is currently under review.

Emily and her colleagues’ research was well received at the conference in Oxford, stimulating engaging group discussions and generating plans for ongoing collaboration with other delegates.



This event was the first Human-Wildlife Conflict (HWC) conference, which coincides with growing acknowledgement of HWC as a key threat to biodiversity conservation and HWC being explicitly written into global convention for the first time (Target 4 of the Post-2020 Global Biodiversity Framework).

Above: The conference dinner was held at [Balliol College](#), one of the oldest colleges of Oxford University. Photo: International Conference on Human-Wildlife Conflict and Coexistence

Communities leading initiatives

This was an interdisciplinary event with presenters and attendees from a broad range of fields including ecology, animal behaviour, psychology, mediation, peace-building, international development, economics and others. Much of the work presented was very embedded in practice, with a lot of delegates involved in work on the front line of HWC issues. Some key themes included the importance of community-led initiatives, situating people at the centre of HWC management solutions, interdisciplinary collaboration and learning from each other and our failures.

The conference marked the launch of the IUCN SSC Guidelines on Human–Wildlife Conflict and Coexistence, a global resource on the foundations and principles for good practice. The Guidelines can be downloaded [here](#). Various other resources were presented during the conference, including the Human–Elephant Coexistence Toolbox, developed by Dr Lucy King and colleagues, which can be found [here](#).

There were also plenty of networking opportunities (including a conference dinner in one of the Harry Potter halls) and many valuable connections were made.

Images: Emily ended the trip by heading to the Cotswolds with her two-year-old daughter Olive to spend some time on a farm in a quaint little town. There were daffodils, horses, castles and Bruce the goose. Photos: Emily Massingham



Exploring the insect biodiversity of Norfolk Island

James Tweed

CBCS PhD candidate

Undoubtedly one of the greatest perks of being an ecologist and conservationist is getting to work in some incredible locations. For my PhD, I have been lucky enough to have beautiful Norfolk Island as my field site.

Norfolk's endemic richness

Norfolk Island is the largest island of a tiny group in the south-west Pacific Ocean. Norfolk itself measures roughly 35 km² while the whole island group measures just under 38 km². To put that in perspective, the whole group could fit into Minjerribah more than seven times! Not only is it tiny but also remote. Norfolk is almost equidistant from New Caledonia and New Zealand, which are just over 700 km to the north and south respectively, while it's approximately 1,400 km to mainland Australia.



What captivates me about Norfolk Island is its insect fauna.

This isolation has led to the evolution of a rich endemic flora and fauna. Norfolk's best-known endemic is the ubiquitous Norfolk pine which can be found growing in coastal areas all over the world. But the endemics don't stop there, with more than 60 endemic plants, 14 endemic bird species/subspecies (six of which are extinct), and more than 50 endemic snails, to name a few. Not bad for a tiny island group!

Image: Hunting for crane flies in one of Norfolk Island's coastal wetlands.





PHOTO: JAMES TWEED

Lamprima aenea (Fabricius, 1792), the only endemic insect species from Norfolk Island to have been listed on the IUCN Red List, where it has been assessed as Vulnerable

Unique island insects

However, the aspect that captivates me about Norfolk is its insect fauna. Before this study, no one had attempted to quantify the extent of the endemic insect fauna that we now know to encompass more than 200 species, with new species regularly being described. But there's still so many things we don't know about these species. At present, none of Norfolk's insects are listed under the EPBC Act, and only one, a charismatic stag beetle, has been assessed (as Vulnerable) by the IUCN. Norfolk has undergone intense land use change since European colonisation in 1788, with most of its indigenous forest cleared to make way for farmland. Numerous invasive plant and animal species have also been introduced, many of which are causing significant damage, including rats, cats, Argentine ants and cherry guava (though there are some excellent management programs in place). We know very little about the effects of land use change and invasive

species on Norfolk's endemic insects – but if the responses of the birds, plants, and snails are anything to go by then many of the insects are likely to be highly endangered.

To date, I have been fortunate to spend a total of roughly three months on the island, and will likely have several more visits out there over the coming years. Much of this has involved sampling the insect fauna in a standardised, quantifiable manner by setting various types of insect trap throughout Norfolk Island National Park. I'm interested in better understanding how insect community structure and composition differ between habitat types, particularly how areas invaded by invasive weeds compare to areas of primarily indigenous vegetation. This work is still ongoing, and I have many hours ahead of me in the lab, but initial results suggest the relationship is not necessarily straightforward.

Citizen science – and taxonomy

Additional projects include working with the community on citizen-science insect conservation projects as well as working on the taxonomy of some poorly known (and potentially new) species/groups of insects from the island. Taxonomy is an often-neglected science that underpins almost all aspects of biodiversity conservation. I hope to help improve our knowledge of some of the poorly known groups of insects from Norfolk Island, focusing mainly on the robber flies and crane flies. In addition to my own taxonomic research, I'm sending specimens to experts from various parts of the world to ensure we learn as much as we can.

Much of the research taking place on Norfolk is in some way related to the national park. This means that one of the greatest aspects of this project has been the opportunity to overlap with other PhD students and scientists working on subjects as varied as birds, spiders, snails, plants, sharks and bioeconomic modelling. I'm very lucky to work with the parks team as well as with many members of the local community, who are all incredibly passionate about the conservation of Norfolk's biodiversity and very generous with their time and knowledge. Being able to swap ideas with experts and enthusiasts from so many different fields and backgrounds is invaluable.

This project is a joint effort between Parks Australia, the team from Norfolk Island National Park and our team here in the Kark Group at The University of Queensland. I am supervised by [Professor Salit Kark](#) (UQ, CBCS), Emeritus Professor Myron Zalucki (UQ) and Dr Nicholas Macgregor (Parks Australia). We have made some big steps towards improving our baseline understanding of Norfolk's insects and their conservation requirements but there's still plenty more to do. Watch this space for future updates!



PHOTO: JAMES TWEED

A Malaise trap set in forest understory. These tent-like traps are designed to sample the flying insect fauna.

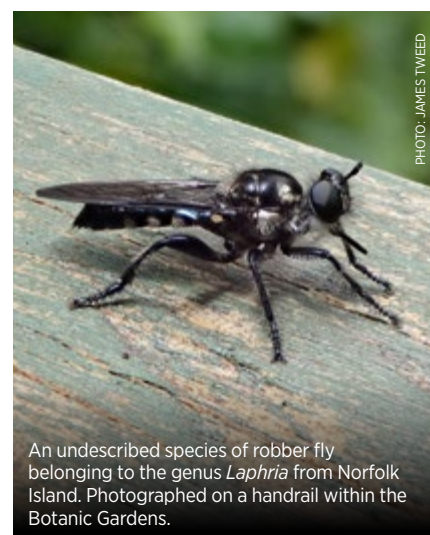


PHOTO: JAMES TWEED

An undescribed species of robber fly belonging to the genus *Laphria* from Norfolk Island. Photographed on a handrail within the Botanic Gardens.



PHOTO: PAT WHELAN/UNSPLOASH

The human footprint on our coasts

A view of Port Phillip Bay, Melbourne, a coastal city area with Australia's highest human footprint.

A recent paper published in *Ocean and Coastal Management* led by CBCS members [Hannah Allan](#) together with co-authors Professors Noam Levin and [Salit Kark](#) has quantified the human footprint in coastal areas around the globe. The team outlined the spatial extent and magnitude of 10 major land-based stressors and 10 major marine-based stressors. Their mapping has revealed the presence and extent of major land-based and marine-based stressors placed on coastlines globally – and found that 97% of global coasts had at least one major stressor.

Human population size, tourism and roads were some of the biggest terrestrial stressors, especially in Australia. Significant marine stressors creating pressure on coastlines include increasing sea surface temperatures, nutrient pollution and shipping.

“The threats human activity pose to coastal ecosystems and biodiversity come from both the land and sea, sometimes arising far from human activity”, Hannah said. “Therefore, coastal conservation must incorporate land-sea connections.”

Benefits of the coastal footprint mapping

The research will help decision-makers and managers identify where to mitigate specific impacts. For example, the mapping can help preparedness for coastal environmental disasters such as oil spills, by offering the information needed to prioritise decisions based on how widespread human pressures are in different coastal regions.

Looking at Australia, the researchers found the highest human footprint in the coastal cities of, in order, Melbourne, Sydney, Perth, Adelaide and Brisbane.

The coastal areas where most Australians make their home and beach activities support rich biodiversity and provide a wide range of ecosystem services. This mapping can therefore also help direct coastal conservation efforts.

The lowest coastal footprint scores globally were found in the coasts of Antarctica and the Arctic, while the coasts of Belgium, Monaco and Singapore showed the highest. Beyond the polar coastal areas, Hannah, Noam and Salit identified 160 areas around the world that still have low human pressure. Of these, 38 (24%) were in protected areas, while 63 (39%) were unprotected. This offers an opportunity to identify coastal areas for further conservation actions. This work highlights the need to create platforms targeting both marine and land-based threats to coastal environments in order to further address the gaps in coastal area conservation and management.

Read the paper [here](#).

“The research helps to identify coastal areas for further conservation actions.”



PHOTO: DAVID CLODE/UNSPLOASH

Parts of Australia's coastline, such as this Tasmanian coastal area, remain relatively untouched by human footprint, and support rich biodiversity.



26-27 July 2023 Brisbane & Online
TERN SCIENCE SYMPOSIUM
 A joint event with ILTER East Asia Pacific

The TERN Science Symposium 2023 is a forum for sharing ecosystem science research, technological development, data system innovation, collaboration and action.

The TERN 2023 Science Symposium is open to all ecosystem researchers and we are particularly pleased to welcome participation from members of the [International Long Term Ecological Research \(ILTER\) network's East Asia Pacific regional network](#)

When

26 -27 July 2023

Where

[Queensland State Library, Brisbane, Australia and online](#)

Symposium themes

In 2023, we are looking forward to exploring how your research or planned research help to address a range of current societal challenges, including the following:

- Land management for sustainable ecosystem services
- Evidence-based environmental decisions
- Net carbon and sequestration
- Biodiversity stewardship
- Technology for conservation, AI, ML and associated data challenges
- Environmental scenarios, forecasts and predictions
- Ecosystem monitoring, assessments and reporting
- Environmental standards, methods and protocols

Presentations that highlight the contribution of Indigenous knowledge would be particularly welcome. If you are looking for inspiration, or a reminder of the first TERN Science Symposium in 2021, the full proceedings, including five full papers given, and presentation recordings are available [here](#).

REGISTER TO ATTEND

Important dates

- 10 February 2023
Abstract submission opens
- 5 May 2023
Registration opens
- 2 June 2023
Draft program announced
- 12 June 2023 (midnight AEST)
Abstract submission final deadline
- 26-27 July 2023
TERN Science Symposium

SPEAKERS

Professor Hugh Possingham
The University of Queensland

Professor Andrew Campbell
Australian Centre for International
Agricultural Research

Professor Bronwyn Harch

SESSION CHAIRS

Professor Belinda Medlyn
University of Western Sydney

Professor Jamie Cleverly
James Cook University

Emerita Professor Megan Lewis
The University of Adelaide

Professor Tim Wardlaw
University of Tasmania

Dr Matthew Lusk
The University of Queensland

Dr Will Woodgate
The University of Queensland

Additional Chairs TBC



“This approach protects areas of importance to biodiversity today and into the future.”

Tin Buenafe has hit the ground running at CBCS.

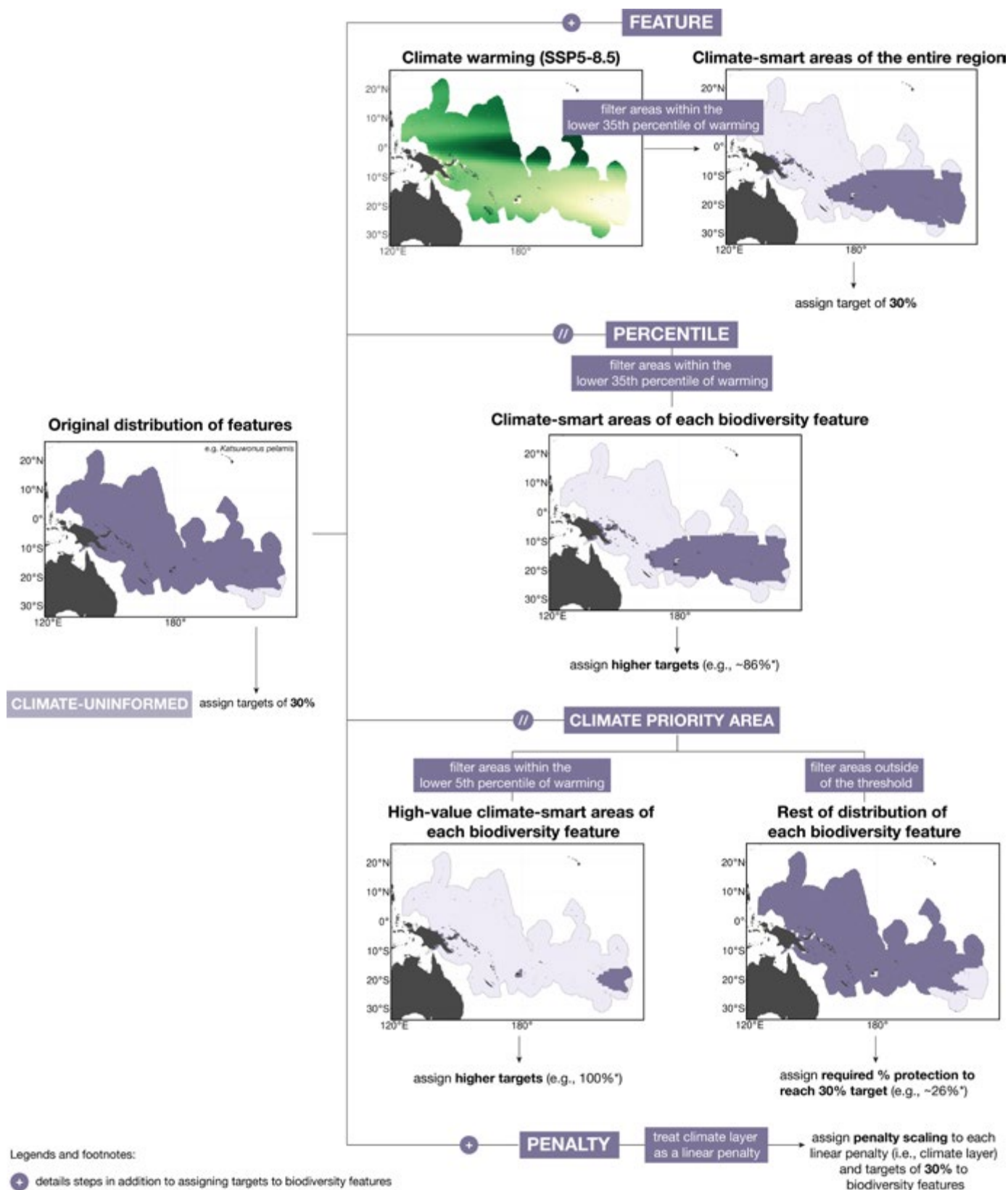
Making conservation planning climate-smart

Kristine (Tin) Buenafe started as a CBCS PhD candidate in April with **Professor Anthony Richardson** and **Associate Professor Daniel Dunn** – and led a paper published the same week in *Ecological Applications*, “A metric-based framework for climate-smart conservation planning”. The paper provides a framework for how to include climate change metrics in conservation planning. It examines choices across earth system models, emission scenarios, environmental variables, climate metrics and methods for including metrics in prioritisation software.

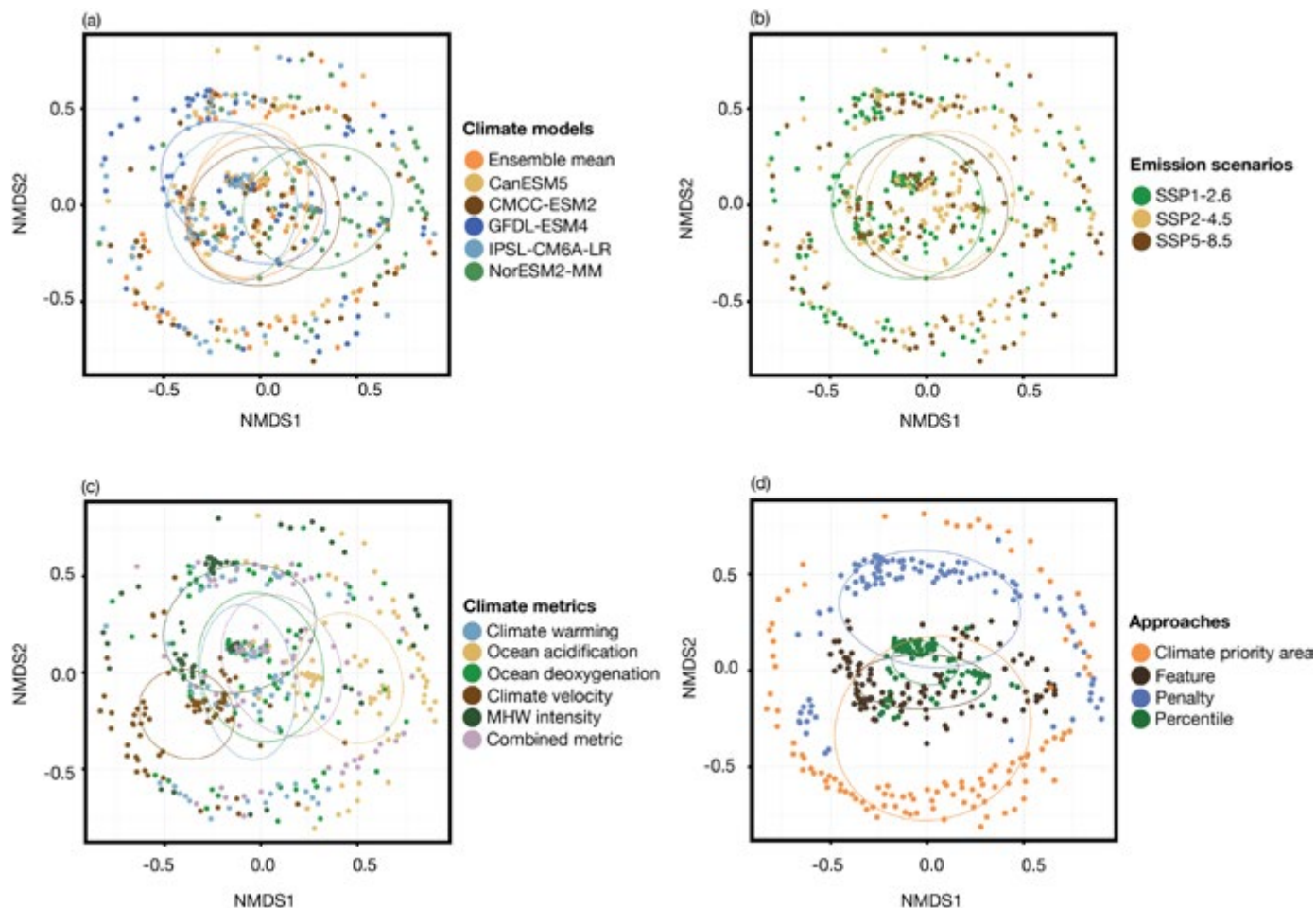
Protecting where it counts

Although climate change is already having profound impacts on biodiversity, there is still no consensus on how to incorporate climate change in designing area-based management tools used to conserve biodiversity such as protected areas. There are numerous “climate-smart” approaches to conservation planning, but the most common is using species distribution models (SDMs) that describe where species may live in the future. While this approach can account for species-specific responses to climate change, it can be time-consuming and data-intensive to incorporate SDMs for thousands of species into large-scale conservation planning exercises.

Tin and her co-authors propose a framework that utilises climate metrics that serve as robust generic proxies for species-specific responses to identify climate-smart areas. This approach is simpler and less time-consuming than building SDMs for hundreds or thousands of species for large-scale conservation planning exercises. The authors defined climate-smart areas as climate refugia – areas where climate is projected to remain relatively stable or where climate change might pose less of a threat to biodiversity. This approach protects areas of importance to biodiversity today and will still likely be important in the future.



The authors explored four different approaches to prioritising the protection of climate-smart areas (in this study: climate refugia) in spatial prioritisation: the “feature”, “percentile”, “climate priority area”, and “penalty” approaches. Each approach is unique and shows trade-offs between its efficiency in meeting biodiversity targets and the degree to which its resulting spatial plan is climate-smart. Conservation practitioners should use their expert knowledge on the region and the affected biodiversity and ecosystems to choose which of the approaches would best suit their conservation objectives.



Apart from looking at different approaches to identifying climate refugia, Tin and her co-authors also looked at how different aspects of climate-smart spatial planning could affect the resulting spatial plan, namely: climate models, emission scenarios, and climate metrics. They showed that the choice of climate metrics (c) and approaches (d) had larger impacts on the resulting climate-smart spatial plan than the choice of climate models (a) and emission scenarios (b).

Staying climate-smart

Apart from describing the framework, Tin and her co-authors detailed four key climate-smart aspects that could influence spatial plans: 1) climate models; 2) emission scenarios; 3) climate metrics; and 4) approaches to identifying climate refugia. They suggest using multiple emission scenarios and climate models to encompass uncertainty associated with climate change. They found that it may be sufficient to use the ensemble-mean (or median) of the climate models, instead of using them individually, to represent the generic climate signal from the ensemble. However, using them individually might be best done if a region is characterised by extreme or conflicting climate projections from a model that could render the ensemble-mean less reliable.

Practitioners should use their expert knowledge on the region and its species to choose the appropriate climate metrics and approaches to identifying climate refugia. The approaches explored in

the study showed trade-offs between the degree to which they are climate-smart and their efficiency in meeting conservation targets. Therefore, if a more climate-smart approach is chosen, then the resulting climate-smart spatial plan would be more expensive (often it constitutes a larger area).

Tin's framework represents a pragmatic approach to designing large-scale climate-smart spatial plans that consider hundreds to thousands of species, especially where species-specific information is lacking. While conservation planning is usually done at smaller, local and regional scales, impacts of climate change on ecosystems are more evident at larger spatial scales. Hence, regional or global conservation planning could determine climate-smart priority areas that then inform local conservation efforts. By complementing local, bottom-up conservation planning with regional, climate-smart conservation planning, conservation efforts could be more successful and efficient in the long-term amidst climate change.

The western Pacific – and beyond

Although Tin and collaborators used the western Pacific as their case study, the proposed framework could be applied to practical conservation planning exercises that deal with different ecosystems, species, study areas and conservation objectives. This metric-based framework can also be modified to design more connected, climate-smart protected areas that connect large protected areas, prioritising the protection of climate refugia with smaller stepping-stone protected areas or even dynamic closures. The authors hope that conservation practitioners could use the framework to transition to more climate-smart approaches to designing protected areas.

Read the paper [here](#).



Associate Professor Daniel Dunn says the *Shiny* app will empower island nations.

Waitt Foundation grants boost marine conservation in island nations

Supported by Waitt Foundation grants, two University of Queensland research projects are aiming to support marine conservation efforts in climate-stricken island nations.

CBCS Director **Associate Professor Daniel Dunn** said many countries in the developing world face disproportionate and devastating consequences of climate change and are the least equipped to deal with it.

"There is an increasing need for conservation planning support in many island nations as the push to protect 30 per cent of the ocean by 2030 gathers momentum," Daniel said.

"Many of these island nations are already feeling the devastating impacts of climate change and it's vital we address this issue robustly and develop approaches in partnership with them.

"For our project, we're engaging with island nations to conserve oceans by empowering policy-makers and stakeholders with a *Shiny* app for transparent spatial planning that allows them to quickly test different scenarios.

"The app reduces the complexity of prioritising areas for conservation and will incorporate climate change impacts in a manner relevant to the users."

***Shiny* and new**

Together with the Waitt Institute and the University of California, Santa Barbara, the team will also host a week-long workshop with island nation stakeholders to bring everyone together and develop consensus around an efficient and robust approach to addressing climate change.

"To meet the growing demand for ocean conservation efforts and to scale up planning efforts, practitioners need transferable skills," Daniel said.

"Specifically, the workshop will consider mechanisms for integrating different climate models, scenarios, and metrics into Waitt's conservation prioritisation planning software.

"The agreed approach will be included in the *Shiny* app, ultimately changing the way researchers and conservationists in island nations go about collecting and applying important conservation data moving forward."

“Many island nations are already feeling the devastating impacts of climate change.”

Tongan volcano eruption recovery

Another project is headed by Associate Professor Chris Roelfsema and Meredith Roe. They will help assess the impact and recovery of Tonga's coral reefs, following 2022's devastating submarine volcano eruption.

Chris said a collaborative field component would provide detailed field-based assessments of coral, invertebrate and fish abundance in selected priority areas by using benthic field and satellite image data to create maps over time.

"The Vava'u Environmental Protection Association (VEPA) and Ministry of Fisheries (MoF) established a need to assess impact and recovery of the reefs in the various priority and risk areas for aquaculture," he said.

"The aim of our project is to support VEPA and the Tonga Fisheries Department team by creating a series of maps of the bottom of the surrounding ocean from before, directly following, and a year after the tsunami.

"We will help assess the impact and recovery of selected coral reefs, share local knowledge, and provide field training and geographic information system support.

"This project will support our understanding of the nearshore recovery process and could be foundational for natural disaster recovery in similar geographies."



IMAGE: PLANET LTD

Before and after shot of Mango Island following the 2022 tsunami.

Oceanic conservation around the world

Executive Director of the Waitt Institute Dr Kathryn Mengerink said the projects would play an important role in supporting the Waitt Foundation's body of work in the global oceanic conservation space.

"The Waitt Foundation and Waitt Institute support work related to ocean conservation that is in harmony with local environmental, social, and economic needs," Dr Mengerink said.

"The Foundation supports individuals, organisations, and institutions at a variety of scales, from specific place-based projects to broader global programs, that benefit the ocean and the people that depend on it.

"Both of these projects are a perfect fit for these criteria and will have positive impacts on a region in dire need of continued support."

Dr Mengerink is closely overseeing the project in Tonga and is excited by its



IMAGE: CHRIS ROELFSEMA

potential to evaluate large-scale impacts on nearshore Tongan reefs in a non-invasive way.

"This is critically important after the eruption and tsunami last year, which caused widespread damage that may take decades to fully recover from," Dr Mengerink said.

This story was first published by UQ Faculty of Science Media.

Above: Associate Professor Chris Roelfsema and the project team showcase dateline imagery.
Image: Chris Roelfsema



Reflecting on Antarctica

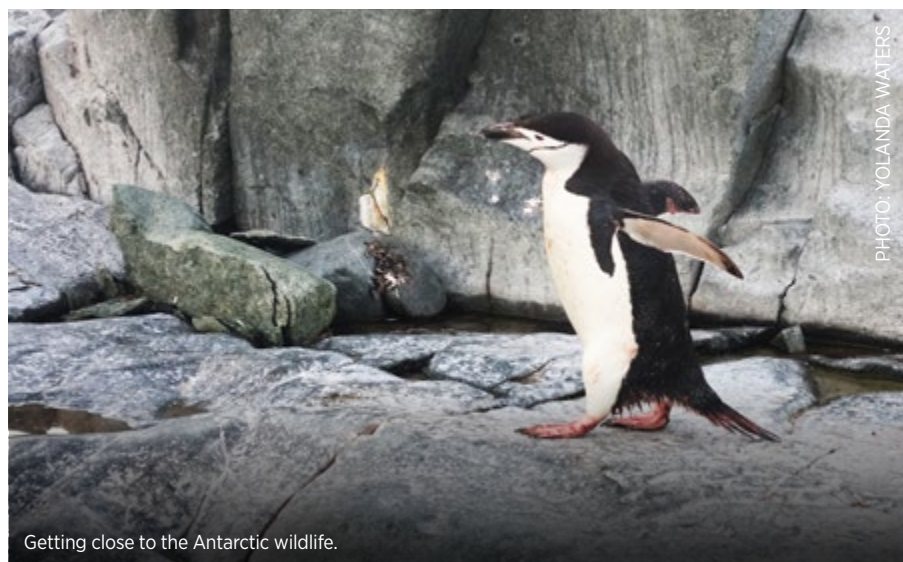
Yolanda Waters
CBCS PhD candidate

It's been almost two months since I returned from my trip to Antarctica. And in all honesty, it was an experience that I am still trying to process. But it's safe to say I learned a lot. For example, navigating through an iceberg graveyard in Lemaire Passage, I learned about the wonder of icebergs and how each one is different and tells a story. Different lines, shapes and markings can tell you where they have broken or flipped, where air bubbles and salt have escaped, where the tide has reached. You can tell how old the ice is by the colour and the clarity. I still love my corals, but icebergs are now a close second favourite.

Reefs to icebergs

I also learned about climate impacts in Antarctica and saw many of them firsthand. We watched glacial calving in action and were told it was occurring at a rate faster than ever before. We saw swathes of red and green snow across the peninsula – snow algae it's called – both serving as a visual indicator of warmer temperatures and accelerating snow melt. From unusually warm days to wild snowstorms, we listened to expedition guides as they told us how quickly weather patterns and animal behaviours were changing. I had never really had much appreciation for the southern continent before. But now I see Antarctica for what it is – an icon for ocean and climate (and human) health – it's protection critical to maintaining a habitable planet. As someone who works on the Great Barrier Reef, another icon for ocean and climate health, the whole experience was moving, and I noticed a surprising amount of similarity between reef and Antarctic tourism and the potential for engaging visitors in environmental action.

But while on one hand it was an incredible experience – connecting with nature and making lifelong friends – with the trip came a lot of guilt and mixed emotions.



Getting close to the Antarctic wildlife.

PHOTO: YOLANDA WATERS

“Antarctica has changed my life in more ways than one.”

Work still to be done

The purpose of the expedition was to bring together a group of diverse citizens to develop a set of ocean-focused climate goals that we could put into action beyond the trip, the idea being that our collective experience of the Earth's last wilderness would inspire deep and fruitful conversations. My role was to help facilitate discussion and guide these conversations towards tangible goals and resolutions.

But the trip was not what I expected. It turns out that when you put 100 people on a ship for 10 days, regardless of good intentions, it becomes immediately clear that not everyone is equal and that not every voice matters. In fact, in a very short amount of time the ship became a microcosm of the world – power structures and systems of oppression included.

Despite some incredible people being onboard, it was extremely disheartening to watch politics and agendas slow progress. To watch hierarchies form. To watch voices

be actively silenced and ignored. We see this happen on larger platforms often, but to see it happen on a boat full of people you've just shared an incredible experience with? It's hard to find words.

Never has it been clearer to me that *we will not be able to tackle the climate crisis without dismantling the oppressive systems that got us here in the first place*; without also working towards a world where everyone is safe, heard and respected. And people and organisations rushing to join the climate space and get involved with solutions must be putting this front and centre – otherwise we will get nowhere. And watching the trip unfold made me realise just how much work still needs to be done.

Sharing the lessons

As a moderator, I found the whole process difficult and overwhelming (it made doing a PhD look easy in comparison). At this early stage in my research career, and as someone who often blurs the lines between research and advocacy, I am still learning to how to be an objective moderator while also ensuring the work adheres to my core values. The trip taught me that this is a skill that I need to work on – that is, how not to melt down when discussions become borderline harmful. It also taught me that even if you have the method worked out on paper (we had intended to follow a valid group elicitation method, common in social sciences and stakeholder engagement research), outside of a research setting, things can go rogue in an instant.

Though the final trip outputs are yet to be seen, the discussions I had with people onboard have inspired me to consider new ways in which I might champion ocean and climate goals. For example, how to contribute to the campaign against deep-sea mining, to urge ratification of the High Seas Treaty, to decarbonise marine transport, and so much more. I am lucky to be working with a team to incorporate these goals into a new campaign strategy for Divers for Climate, an initiative to engage the global dive community in climate solutions. I also hope to work some of my reflections on “real-world” stakeholder engagement and methodology into my PhD work, as well as integrate practical considerations about climate communication and Antarctic tourism in my overall discussion.

There are so many lessons to take away from this trip, and I am still working on a way to share these more deeply. Antarctica has changed my life in more ways than one, and I know that these lessons will shape my future and my career in ways I never expected. Though it was difficult at times, I could not be more grateful for the experience and for all who helped me get there – and how many people can say they've spent time with porpoising penguins and icebergs!



Dramatic landscapes everywhere you look.

PHOTO: YOLANDA WATERS



Yolanda, exhilarated after a climb in Antarctica.

PHOTO: YOLANDA WATERS



Research in the Wet Tropics

Zachary Amir
CBCS PhD candidate

A continuous drizzle rained down from the low-lying clouds hanging over the emergent canopy of the Wet Tropics World Heritage Area. Two volunteers and I approached the climax of the hiking track where we were collecting data on the rainforest wildlife community. The wet season officially broke a few weeks before, so we were completely soaked and had given up on dry shoes long ago. I became so accustomed to

pushing back the wet hair out of my face that I almost didn't notice the leech enter my eye. Thankfully, my volunteer was able to remove it before it latched down. Despite the incessant wet weather, hordes of biting insects and sore feet, I couldn't have been happier to be conducting research for my PhD at Nandroya Falls, where I established my unwavering passion for tropical rainforest ecology years ago.

“*My devotion to those most wild of places, tropical rainforests, has remained unwavering.*”

Forest magnificence

As an undergraduate student at the University of Colorado-Boulder in the Ecology and Evolutionary Biology program, I had the good fortune to study abroad in far north Queensland with the School for International Training. Our experiential field-based semester took us to far-flung locations to teach us about rainforest and reef ecology and Indigenous histories. During our orientation, our professor introduced us to the Wet Tropics World Heritage Area via the Nandroya Falls circuit. We hiked through the contorting tangles of vegetation, past buttressed tree roots, and heard the raucous calls of metallic starlings from the canopy. When we reached the waterfall, I was awestruck by its magnificence and enjoyed a rewarding float at its base after an interpretive hike at ecologist pace. I will never forget lying on my back in the water and staring up at the rich basalt cliffs enclosing the waterfall and thinking of how fortunate I was to be there, but also how lucky I would be if I could live and work in this forest in the future.

Standing at the base of Nandroya Falls on a cloudy and typically wet day in the wet season. At around 50 meters tall, this waterfall is one of the largest waterfalls accessible by a hiking track in Wooroonooran National Park. The pounding waters have eroded away the rocks at the base of the waterfall, creating a nice sandy bottom that is perfect for a nice swim after a good hike filled with invertebrates, creeping vines, and the occasional glimpse of bright birds such as the double-eyed fig parrot.



PHOTO: ZACHARY AMIR

Safeguarding tropical rainforests

Now, years later, I'm back in far north Queensland to conduct research using camera traps to monitor wildlife. Although I originally started my PhD with the intention to sample Southeast Asian tropical forest wildlife communities, the COVID-19 pandemic disrupted those plans. While the pandemic prevented me from leaving Queensland, it created unexpected opportunities for me to set up camera trap surveys across the Wet Tropics World Heritage Area. As of early 2023, my team and I have successfully installed and collected nearly 300 camera traps spread out between Daintree, Mt Lewis, Danbulla, Curtin Fig, Crater Lakes and Wooroonooran National Parks. I'm particularly interested in understanding how invasive species like feral pigs and cats may be impacting native species, and the data generated from these surveys will inform wildlife conservation and tropical rainforest management. This research project has direct outcomes related to invasive species management and our ongoing collaborations with Queensland Parks and Wildlife Service, Dulabed and Malandabara Aboriginal Corporation, James Cook University and Australian Wildlife Conservancy will ensure our results are translated into on-the-ground management actions.

A lot happened in the eight years between my first glimpse of Nandroya Falls as a bright-eyed undergraduate student to my itchy leech-bothered eyes of the present. However, my devotion to those most wild of places, tropical rainforests, remained unwavering. I hardly could have predicted the sinuous path that brought me back to Nandroya Falls but I am eternally grateful for the opportunities that led me back. By leveraging our research and collaborating with local organisations, we're creating actions to safeguard one of the world's oldest tropical rainforests to ensure that it remains wild and vibrant for generations to come.

This piece was first published as an [ESA blog post](#).

Three baby southern cassowaries (*Casuaris casuaris*) follow closely behind their dad as they travel through the dense lowland rainforest understory.

A mother feral pig (*Sus scrofa*) and eight of her piglets forage through the understory of the rainforest looking for fallen fruits and underground tubers.

A spotted-tailed quoll (*Dasyurus maculatus*) uses a hiking trail to travel through the forest at night in search of its prey, typically small rodents and marsupials.

A Lumholtz's tree kangaroo (*Dendrolagus lumholtzi*) is captured by one of our camera traps in a rare moment where it appears to be sitting on the ground.



PHOTO: ZACHARY AMIR



PHOTO: ZACHARY AMIR



PHOTO: ZACHARY AMIR



PHOTO: ZACHARY AMIR



Left to right: Gaston (guide), Bastien, and Jean Jacques (ecoguard) after completing a transect.

My Cameroonian adventure

Bastien Dehaudt
CBCS PhD candidate

Picture this: you are in the middle of a Cameroonian rainforest, away from high-speed internet, away from indoor plumbing, away from the noise of human civilisation. Dream or nightmare?

You walked a full day carrying your tent and materials to reach the research station. There is a little clearing in the dense forest with a couple of shacks for eating peacefully away from mosquitoes, and platforms to lay your tent. A tent you will be sleeping in for 45 days. However, there is no time to rest. Now you must do what you came here for: wade around the jungle to look for faeces and vomit. Not everyone's cup of tea, but definitely mine.

If a seed falls in a forest ...

I received the amazing opportunity to go to the Dja Faunal Reserve in Cameroon and study the seed dispersal of duikers, a group of forest-dwelling antelope-like ungulates, for one of the chapters of my PhD with The University of Queensland and [SUSTech](#). This project is part of a bigger collaboration on tropical seed dispersal with the [University of California, Los Angeles](#), where, coincidentally, I completed my undergraduate degree. Small world. The main goal was to gain a better understanding of how different species of vertebrates contribute to the seed dispersal network in an African rainforest where most trees are dispersed by animals. Different research groups studied different species, including hornbills, bats, monkeys and, of course, the underrated duikers. Each species likely disperses seeds differently, based on its size, movements, habitat preference and behaviours. Considering the alarming rate at which these forests and their wildlife are being degraded due to human disturbances, we aimed to study such plant-animal interactions in the hope of better understanding and predicting future changes to tree recruitment dynamics and forest structure.

Duikers vary in size (from 5 to 70 kg!) and activity patterns. However, they all eat lots of fruits, making them good potential seed dispersers. Duikers are especially interesting because they are ruminants, meaning that, like cows, they regurgitate food into their mouths to chew the cud. Consequently, they will spit out hard regurgitated seeds from the fruits that they ate earlier on in the day. So, duikers may disperse seeds in at least two ways: classic seed defecation, and regurgitation. I aimed to answer three questions:

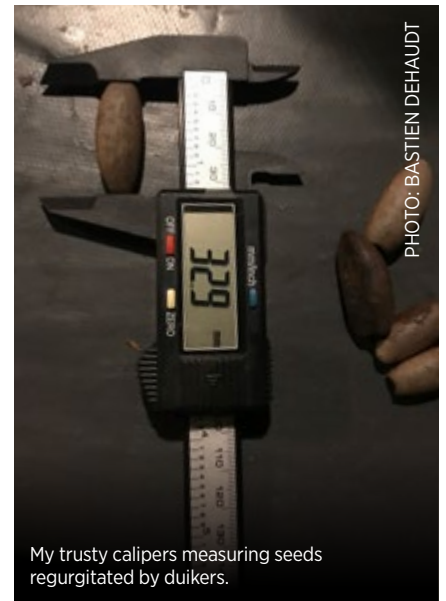
- 1 Does seed trait (e.g., size) affect whether it is defecated or regurgitated by duikers?
- 2 Do seeds that are defecated or regurgitated by duikers end up in different locations or habitat types?
- 3 Are seeds that are regurgitated or defecated still alive, and can we germinate them?

Research bliss in the jungle

To answer these riveting questions, I decided to conduct multiple (18) 1 km-long transects in the rainforest to look for duiker dung and duiker bedding sites (where they regurgitate seeds). Walking a kilometre in a straight line is easy enough. Walking a kilometre in a straight line in a jungle is not. Armed with my trusty GPS, and with two local guides at my side (and their machetes), we slowly and carefully walked/crawled between trees and vines looking for any trace of duikers. Thankfully, our hard work paid off, and we found 78 duiker bedding sites and 124 duiker dungs. I was never so happy to see poop my whole life. I felt like a kid searching for easter eggs, and was ecstatic to collect seeds at the bedding sites. I ended up collecting and measuring almost 1000 regurgitated seeds from 26

plant species. Some nights I would spend hours with my calipers and a good music playlist measuring hundreds of seeds and filling up MS Excel spreadsheets. I washed and looked at a lot of faeces for tiny seeds, which was actually pretty fun using my cool magnifying lens glasses. Pure bliss for a researcher.

I make it sound idyllic, but this work could be exhausting and did not always go to plan. We often walked over 20 kilometres a day and came back sweaty, covered in mud and physically exhausted. We once got attacked by ants and had to run while taking our shirts off. In addition to conducting transects, we attempted to place GPS collars on duikers, which turned out to be extremely difficult. We were only able to collar a single duiker, a cute female I named Penny. She still sends us her location to this day.



My trusty calipers measuring seeds regurgitated by duikers.



Bastien crawling inside a hollow trunk looking for seeds (there was a bat inside).

Bountiful data – and gratitude

I returned to Australia (after a quick detour to France and California to see friends and family) with enough data for my PhD chapter, and more. We had also placed and collected 60 camera traps around our site, which captured cool images of chimpanzees, elephants, pangolins and other wildlife. It was good to know that some animals were still around, even given the countless gunshots from illegal hunting I heard over my time in the Dja.

I can only hope that future generations will also be able to have similar experiences in nature. I am thankful to the Cameroonian locals for sharing their knowledge of the forest, and I hope to go back one day. *Merci beaucoup pour une expérience magnifique!*



Penny the duiker with her brand new GPS collar.



Home sweet home.

CBCS at the nexus of global science-policy processes

The Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem Services (IPBES) recently held its second author meeting for their [Nexus Assessment](#) at Skukuza Rest Camp in Kruger National Park, South Africa.

IPBES fills a similar role to the IPCC, but with a focus on biodiversity and ecosystem services rather than climate, and is currently undertaking a range of assessments. The Nexus Assessment specifically aims to identify the interlinkages between biodiversity, food and water security, health, and climate change and to better understand the policy implications.

[Professor Jonathan Rhodes](#) represents CBCS in this science–policy process as a lead author of Chapter 4, which looks at policy and socio-political response options in the context of the Nexus.

[Dr Brooke Williams](#) is also participating as a contributing author for this chapter.

The meeting was attended by over 100 experts, with a wide range of backgrounds and from diverse disciplinary areas. It was incredibly inspiring to be able to discuss and make progress on understanding the complexity of the biodiversity, food, climate, health, water nexus with such a diverse set of people and to do so in such an amazing location as Kruger National Park.

If you are interested in having input into the assessment, look out for the second-order draft of the assessment, which will be out for external review towards the end of the year; anyone can participate in that review process. If you want to find out more about IPBES or how to get involved, see: www.ipbes.net



Some of the successful CBCSers at the Faculty of Science awards ceremony. Left to right: Ama Wakwella, Dr Alice Twomey, Associate Professor Carissa Klein, Faculty of Science Executive Dean Professor Melissa Brown, Associate Professor Daniel Dunn, Dr Brooke Williams.

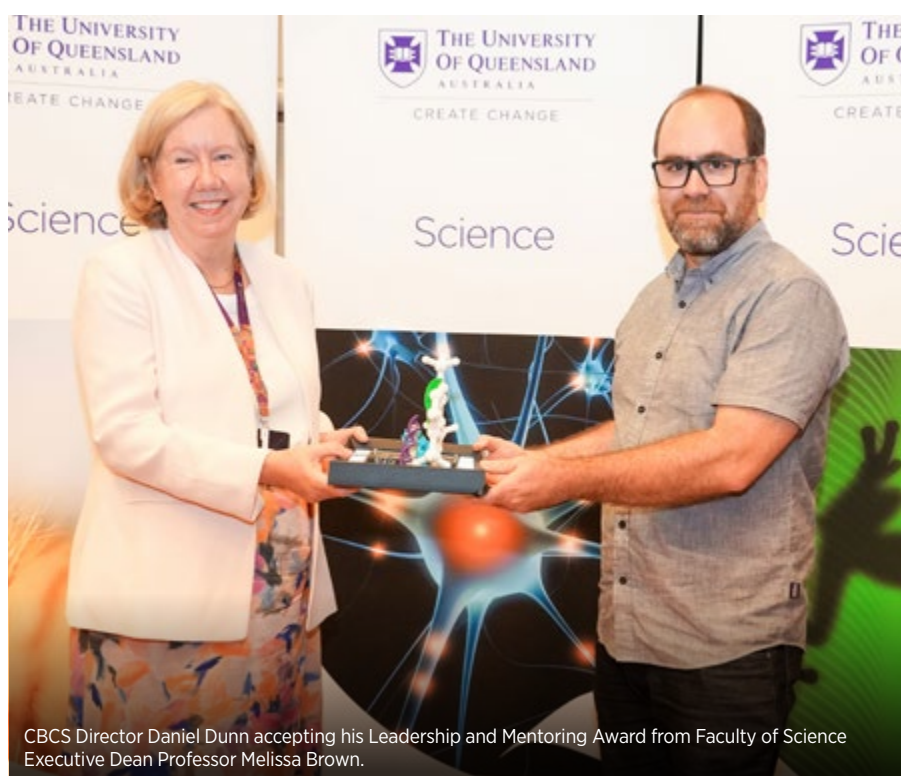
CBCS shines at the 2023 Faculty of Science awards

CBCS celebrated multiple wins by many individuals and two groups at the 2023 Faculty of Science awards in March, taking home three of the nine awards.

CBCS Director [Associate Professor Daniel Dunn](#) received the Leadership and Mentoring Award; [Associate Professor Carissa Klein](#), [Dr Amelia Wenger](#) and PhD candidate [Ama Wakwella](#) the Partnership and Collaboration award for their Ridge to Reef Fisheries team; and the CBCS

Management Committee the Faculty of Science Award for Excellence in the Team category.

Multiple CBCSers were also nominated for awards, including [Professor Jonathan Rhodes](#) for the Leadership and Mentoring Award, and [Dr Vicki Martin](#), [Dr Brooke Williams](#), [Dr Michelle Ward](#) and [Dr Alice Twomey](#) for the Rising Star award, with Alice shortlisted.



CBCS Director Daniel Dunn accepting his Leadership and Mentoring Award from Faculty of Science Executive Dean Professor Melissa Brown.



Around a hundred alumni spent three days at Heron Reef and UQ Heron Island Research Station in March 2022, together with UQ's Vice-Chancellor and Dean of Science.

Heron Island Research Station alumni weekend

A highly successful three-day alumni event took place at the Heron Island Research Station from Friday 10 to Sunday 12 March this year. The Heron Island Research Station is a world-class facility, home to outstanding and ground-breaking research towards solving some of the most pressing environmental and conservation challenges of our time.

Reservations for event sold out in less than hour, but around 100 lucky participants attended the weekend of tours of the research station, researcher talks, snorkelling, and guided reef and turtle

walks. Among the attendees were The University of Queensland's Vice Chancellor and President Professor Deborah Terry AO and the Executive Dean of the Faculty of Science Professor Melissa Brown.

Located at the southern extremity of the Great Barrier Reef, some 80 kilometres off the coast of Gladstone, the 16.8 ha coral cay that is Heron Island has a rich history. Researchers have been working from the island since the 1930s, although the University of Queensland-owned research station wasn't formally established until 1951. The research station can support

up to 140 researchers at any time, and around 5000 university and high school students visit it annually.

View a gallery of images from the alumni event [here](#).

AI tools can improve equity in science

[Violeta Berdejo-Espinola](#) and [Dr Tatsuya Amano](#)

After *Science* updated its editorial policy to ban the use of AI tools in scientific papers, we wrote a letter to the Editor raising our concern about the decision. We argue that AI tools like ChatGPT and DeepL might improve equity in science by helping non-native English speakers proofread their manuscripts quickly and cheaply. This opportunity might be even more beneficial for researchers in low-income countries who cannot afford human editing services.

Science has responded positively to our arguments and may review its policy in their light.

Read our letter to the *Science* Editor [here](#).



Heron Island Research Station staff including academic director Associate Professor Chris Roelfsema (second left) and HIRS manager Dr Stuart Kininmonth (far right) with Dean of Science Professor Melissa Brown and Vice-Chancellor Debbie Terry AO (centre).

From puffins to policy: a long journey in ecology

Hannah Thomas

CBCS PhD candidate

CBCS HDR representative – Engagement



A koala joey in care, at the Conservation Ecology Centre in the Otways.

“As soon as I learnt the word ‘ecologist’ at about eight years old, my career path was set.”

I grew up surrounded by the nature of a northern Scottish coastline. Think puffins, seals, orcas and sea cliffs. It was full of adventure, plus very cold and windy most of the time. I have always been passionate about conservation, and as soon as I learnt the word “ecologist” at about eight years old, my career path was set.

My family moved to tropical Cairns when I was a teenager. It was quite the contrast to Scotland. The wildlife was equally as cool, but this time it was bandicoots snuffling around in my backyard and a coral reef on my doorstep.



Our smallest northern quoll capture on Groote, 75g of cuteness!

Christmas Island and Groote Eylandt

After high school I moved down to Brisbane to study ecology. I first learnt about CBCS during my summer break, when I volunteered for a past CBCS PhD student, who was doing her field work on Christmas Island. I was lucky enough to witness the incredible red crab migration and see some amazing wildlife. And yet, I also saw first-hand some of the challenging conservation issues facing the Island, like the piles of plastic pollution that had washed across the ocean to line its beautiful tropical beaches.

Next up was my Honours project, which involved trapping and studying the northern quolls of Groote Eylandt. Some of the highlights of field work on Groote included: countless large green ant nests to run into, large saltwater crocodiles in the ocean preventing an after-work swim (well, the crystal clear water was too tempting, so I did have one swim, but it was quick!) and many, many quolls. The lab work was slightly less fun than the field work, as I now had 150 quoll scats to search through. But, overall, I loved conducting my own research project and knew I would return to university as a postgraduate student at some point.

Conservation in a time of lockdowns

By this time, I was ready for a break from studying and had a year of internships, first with the Conservation Ecology Centre in the Otways and then at Australian Wildlife Conservancy. AWC then employed me as a field ecologist at Mallee Cliffs, which was my dream job to land after graduating. I spent most of my time trapping red-tailed phascogales, radio-tracking numbats and microchipping bilbies, and the rest of my time in interstate police checks – as this was the time of lockdowns and I had to drive from Victoria to New South Wales to work every day.

I returned to Brisbane to start my PhD at the beginning of 2021, in the Maron Ecology and Conservation Policy Lab. I'm currently studying deforestation and policy across northern Australia, which I find super interesting, and I enjoy getting to learn new things every day. The policy side of conservation is not something I'd really touched on before, but I'm now realising how important it is. I also work as a Project Officer at Wildlife Queensland, focusing on a few of south-east Queensland's iconic threatened species, like the Richmond birdwing butterfly and brush-tailed rock-wallaby.



Setting camera traps in the field.

PHOTO: ELLIE KIRKE

When I'm not studying, I'm pretty much always enjoying the great outdoors, whether it's hiking, bouldering, camping or beaching. It's hard to pick a favourite hike around Brisbane as there are heaps to choose from, but I don't think you can beat Mount Barney. I've also done some longer hikes interstate and overseas, with the Rees-Dart track in the South Island of New Zealand as one of my highlights.

It's been great to be part of the CBCS community since I started my PhD. I've really enjoyed being a HDR rep for the Management Committee since June last year, and would recommend it to any other HDR students considering the position – my role ends soon, and it's time for someone else to get lots of free Merlo coffee!

PHOTO: HANNAH THOMAS



Enjoying the alpine views while hiking in New Zealand.

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