



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

Left: Gareth and James at work on the app in the lead-up to its launch in the first week of May 2022.

As CBCSers know only too well, Australia's biodiversity is in a parlous state. Predictions show that the situation is going to drastically worsen over the next decades. But a new web app, **Threatened Australians**, launched during the campaigning period for the 21 May federal election, helped to put the plight of Australia's threatened species on the political agenda.

The team, CBCS PhD candidate **Gareth Kindler** and **Professor James Watson** along with designer Dr Nick Kelly from QUT and web developer Tim Carden, pushed to launch the Threatened Australians project before the election to address the lack of attention that biodiversity loss received during the campaign. A major issue is that many in the wider public don't recognise the problem – that we are sleepwalking into an extinction crisis that, with the right political will, we can easily avert. But how often did we hear it raised in the election campaign?

A voice for threatened species

There is no doubt many Australians have a strong desire for better protection of the environment, yet many of these same people do not have access to engaging resources that facilitate informed actions. Threatened Australians is an attempt to fill this gap by pulling on the strings of the geographical electoral system. The web app was funded through the CBCS Small Grants Scheme, as well as some **Green Fire Science** funds, and built over a few months. The aim is to connect users with information on those threatened species likely found within their electorate, what actions can be done to save them, and to encourage greater communication between constituents and their elected representatives.

The basic idea is that MPs can be a voice for threatened species just like they are for other local issues, whether they be carparks or healthcare. By lending an active voice to threatened species and the constituency, the hope is that more MPs can start to instigate and vote for improved policy and resource allocations for threatened species.

Media pick-up – and the future

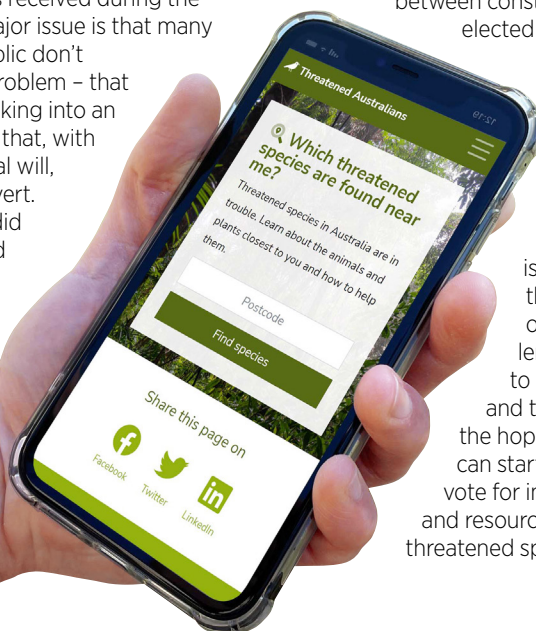
The first week of the launch saw Gareth, James, and Nick get pick-up on local ABC radios from Esperance (Western Australia) to Hobart (Tasmania), and at home in Brisbane. **With a boost from an ABC News article, the website saw 13,000 users over the first few weeks.** Threatened species found within Ryan (Qld) and Canberra (ACT) were the most viewed across the web app. While this use and media attention was very welcome, it wasn't quite the launch the team might have hoped for – which was one full of frontpages and sweeping reforms delivered overnight. Humbled by the experience, the team reminded themselves that engaging broader Australia with species conservation isn't going to happen with the press of a button (or, in this case, the creation of a pretty web app).

Despite this, Threatened Australians may be useful in helping fill a gap, and it's a work in progress. Feedback from users has been positive, with the often-heard comment, "I had no idea these threatened species are found near me!"

The team is very keen for feedback and future uses (they can see its utility for things like Threatened Species Day) and welcome engagement. Please reach out to them if you find this exciting, and you have ideas around improvements, re-launches and partnerships.

Explore the Threatened Australians web app at www.threatened.org.au

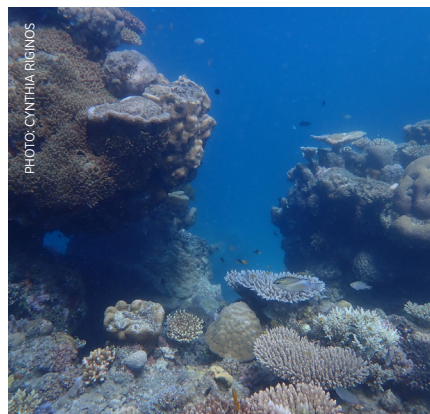
Read more about the theory behind the project in [this article](#) in *The Conversation*.



Dispersal and adaptation in the sea

My favourite early childhood memories are of snorkelling in the Mediterranean Sea – I was captivated by the unfamiliarity and beauty of this underwater world. To this day, putting on a mask and sinking below the water's surface prefaces my most anticipated adventures.

Through studying biology at school, I learned astounding facts about my underwater friends, the most notable being that fishes and invertebrates start life as microscopic planktonic larvae that live in the water column for days to months. What larvae do as plankton and where they go has been called the “black box” of marine biology. My research centres on using tools from evolution, ecology and genetics to peer into that black box of planktonic larvae to learn about marine animal movements and also how planktonic dispersal influences their ability to adapt to different locations.



Diverse corals and fishes at Lizard Island, 2022.

Genetic biodiversity across the planet

My research has been instrumental for showing that marine larvae disperse much shorter distances than previously thought. My work has also uncovered general principles about how dispersal and adaptation are affected by seascapes, environment and the biological attributes of species.

I am also passionate about making genetic biodiversity data publicly accessible and building digital infrastructures to support collaboration and reproducibility. I helped develop the first workable platform, the Genetic Observatories Metadatabase ([GEOME](#)), for linking published genotypes with their spatial and other collecting metadata. With new funding from the GEO-Microsoft Planetary Computer Programme, we will be creating an interface to archive and visualise worldwide genomic biodiversity across all major habitats on Earth.

Although my research has traditionally been discovery-driven, I am increasingly drawn to understanding which species and locations are vulnerable or resilient to global changes. For example, some of my current research projects include assessing the capacity for genetic rescue in corals, determining spreading routes for crown-of-thorns seastars and documenting the effects of an invasive mussel on native ecosystems and aquaculture. These investigations are led by a wonderful group of students, postdocs and research assistants who teach me new things each day.



PROFILE

[Professor Cynthia Riginos](#)

From the US to UQ – and CBCS

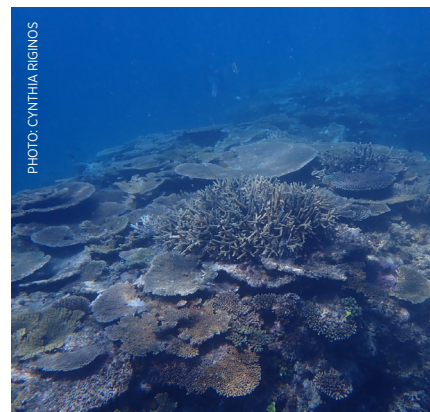
I was delighted to join CBCS last year and have enjoyed many stimulating conversations about biodiversity and conservation. I look forward to drawing upon CBCS's incredible depth and breadth of knowledge as my group's investigations yield new outcomes with applied relevance.

Despite being a newcomer to CBCS, I have been a T&R academic at UQ for 16 years and am presently the Director of Teaching and Learning in the School of Biological Sciences. Before joining UQ, I held an endowed postdoctoral fellowship in Molecular Evolution and Comparative Genomics at Duke University in the US, and completed my PhD and MSc degrees from the University of Arizona in Ecology and Evolutionary Biology. I grew up in Washington, DC and spent summers with family in Greece.

“ I am passionate about making genetic biodiversity data publicly accessible.”



Collecting intertidal fishes at Point Cartwright, Queensland. Left to right: Jenny Evans, Cynthia Riginos, Kimberley Dunbar, Sinan-Saleh Kassam.



Tabular and branching corals at Heron Island, 2021.



Alice has been communicating her research and promoting careers in STEM as Queensland Flying Scientist since 2021. Other events have included the World Science Festival in Townsville and the Wonder of Science State Conference, where Alice demonstrated how mangroves can protect our coasts from erosion using a mini wave flume (above) and learning to [fly a drone through an obstacle course](#) with teammate Professor Ian Frazer. To join the Queensland Flying Scientists or become a Wonder of Science Ambassador, visit their [website](#).

Taking science to the regions: Queensland Flying Scientists

CBCSers are fostering science in rural and regional Queensland. Queensland Flying Scientist and CBCSer [Dr Alice Twomey](#), along with Dr Charith Rathnayaka, Professor Ian Frazer AC FRS and Queensland Chief Scientist and CBCSer [Professor Hugh Possingham](#) spoke on an online virtual panel on 17 March 2022 with the Cairns School of Distance Education (CSDE).

The Queensland Flying Scientists are early-mid career researchers who accompany Young Wonder of Science (WoS) Ambassadors into regional Queensland communities and schools to deliver STEM awareness events. The program aims to address the shortage of STEM-related events outside south-east Queensland. Due to the need to socially distance, many of these events have been facilitated online.

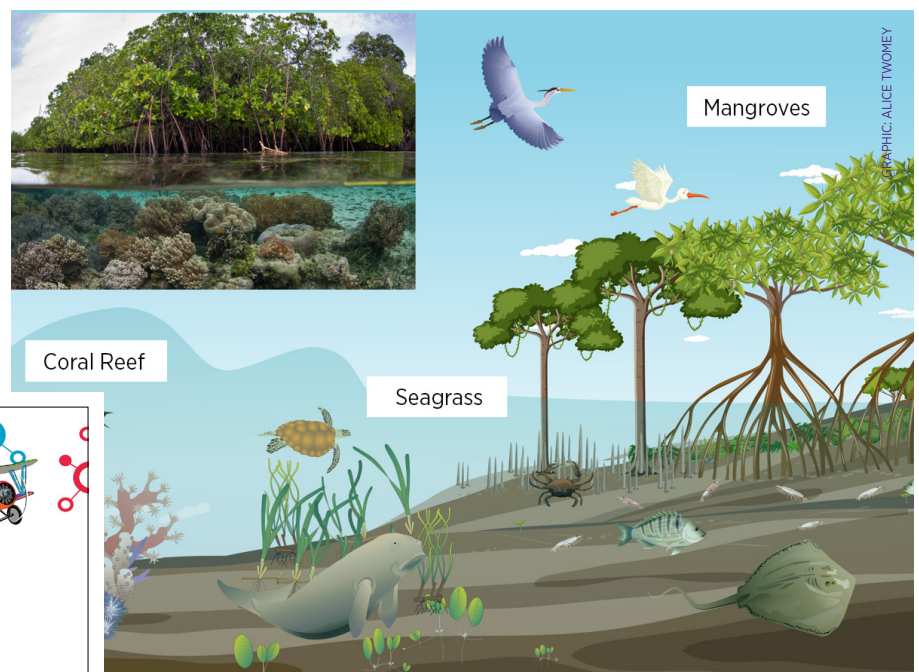
Markus Honnef (CSDE Head of Science) facilitated the online panel and former CBCSer Dr Catherine Kim (WoS Ambassador) MCed, while Hugh opened by speaking about his work in

conservation biology and showing us the importance of maths using COVID-19 cases as an example. Each panel member was invited to present their research in 10 minutes with five minutes for questions. Alice presented her work on coastal wetland hydrology and the restoration opportunities available for degraded agricultural land by tidal reintroduction.

The students were buzzing with excitement and asked some terrific questions like “Why aren’t there more

ecological engineers working to reverse damaged landscapes?” – and some that were a bit more difficult to answer, such as, “Are we alone in the universe?”

The panel was a great success, attracting up to 65 people online, including students, teachers and family members. Feedback from the event highlighted the great value of the researchers sharing work and study in areas that the students (and teachers) hadn’t considered, such as ecological engineering. That’s a win for science communication!



Alice presented her work on coastal wetland hydrology to staff and students of the Cairns School of Distance Education.

Ama Wakwella takes home the Future Super Star Award 2022

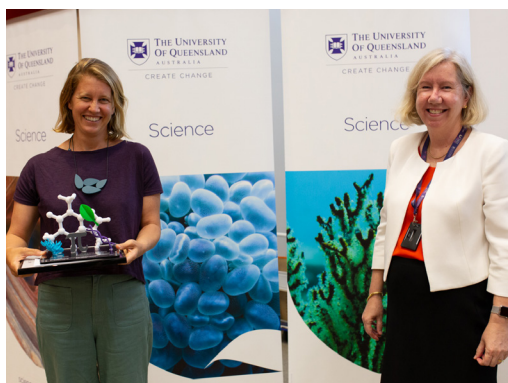
CBCS PhD candidate and HDR Representative **Ama Wakwella** has won the Faculty of Science's Future Super Star award for Higher Degree by Research students. Ama's primary supervisor **Associate Professor Carissa Klein** nominated her for her efforts to create a better sense of community within her scientific circles.

In just over one year, Ama took on leadership roles in CBCS, Carissa's Ocean Conservation Team and in the School of Earth and Environmental Sciences. Outside The University of Queensland, she is also the Early Career Researcher representative for the Oceania Chapter of Ecohealth International.

In these roles, Ama strives to create an environment that makes the group feel welcome, safe and included. The impact of Ama's achievements is in the communities she has fostered. This has been especially important throughout the rollercoaster of COVID-19, as students have been working off campus and suffered feelings of isolation and disconnection.



Ama spotting baby eels in the rockpools along Matareva Beach, Samoa.



Carissa accepting Ama's trophy on her behalf from Professor Melissa Brown, Executive Dean, Faculty of Science.

The HDR events and casual socials that Ama has organised have given students a great reason to come to campus, and helped them feel more a part of the broader scientific community.

Addressing climate threats to leek-orchids

Master of Conservation Science student **Caitlin Rutherford** and her supervisors Drs **April Reside** and **Andrew Rogers** have developed a framework for incorporating climate change adaptation into threatened species management.

The project involved collaborating with ecologists and managers from the governments of the Australian Capital Territory and New South Wales to identify the significant climate-related threats to the Endangered Tarengo leek-orchid (*Prasophyllum petilum*), and develop management actions to address them. The framework is intended to be repeatable for other species for rapid assessment and management, using expert elicitation to combat the lack of published knowledge that often comes with rare or narrow-ranged species.

The project facilitated knowledge-sharing between managers in different jurisdictions, and has already produced promising updates to the management of this threatened orchid species.

PHOTO: ERIKA ROPER

How do we plan for saving a species from climate change?



The delicate beauty of the Endangered Tarengo leek-orchid *Prasophyllum petilum*.

Bird Language Diversity web app

Multiple languages being spoken within the distribution of a species can make for conservation challenges such as difficulties in compiling scientific evidence published in different languages and generating effective conservation agreements between stakeholders.

As part of the [translatE](#) project we have designed the [Bird Language Diversity app](#) to understand and visualise how the distribution of each of the 10,863 extant bird species in the world is associated with different languages.

Bird Language Diversity

Language
Mandarin

Species subset
All species

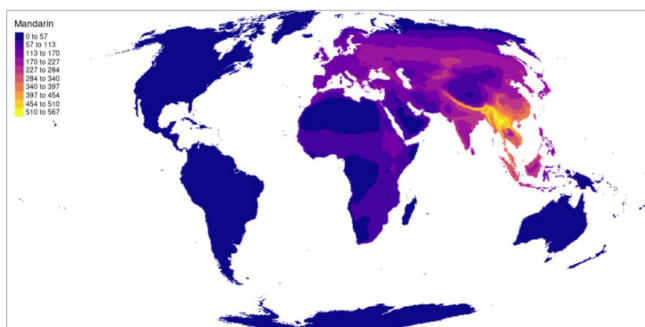
Vary colour scale by language?
☒ yes ☐ no

Number and percentage of species associated with language = 1485 (13.63%)

Number and percentage of species associated with two or more languages, including the selected language = 1394 (16.96%)

For further details see Negret et al. (2022)

Maps of bird species richness associated with 120 official languages from each country in the world. A bird species is defined as being associated with an official language, if the language is spoken within the species' distribution. From the menu, select the language of interest, species subset (all species, migratory species only, or IUCN-listed threatened species only), and whether the colour scale for species richness should be fixed across or vary by language.



Through the development of this app, we showed that a surprisingly large number of languages are spoken within the distribution of each bird species. For example, 1587 bird species have 10 languages or more spoken within their distributions. Importantly, threatened species have significantly more languages spoken within their distributions, indicating the importance of overcoming language barriers in bird conservation.

On this app you can select any of the 119 official languages of countries around

the world and display the distribution of species associated with the language (a bird species is defined as being associated with an official language, if the language is spoken within the species' distribution). The image below shows the example of Mandarin; we can see hundreds of bird species in the Southeast Asian hotspot are associated with Mandarin, indicating that that language might be key to the conservation of those species.

The app shows researchers, decision-makers and the general public how the conservation of local species may depend on interactions with their peers in other areas of the species' distribution where other languages are spoken. This could incentivise local researchers and conservation organisations to overcome language barriers for effective communications, which in turn can increase the effectiveness of their conservation actions.

Some of the potential solutions identified to overcome multiple consequences of language barriers for species conservation are described in our associated paper published in the journal [PLOS ONE](#).

REVIEW

Adrian Montana

Eucalypt walk with Rod Fensham

The CBCS Easter Saturday eucalypt walk with CBCS's [Associate Professor Rod Fensham](#) was amazing. First of all, he taught us how to identify bark types, or whether leaves were one colour or two. With these simple ideas in hand and his wonderful book [ACE Guide to Eucalypts Brisbane](#), we went walking through Chermside Hills. He told us that Brisbane has more species of gum tree than does the whole of Tasmania. As we did a slow walk up the hill, every second tree was a new species. We scratched around in the ground to find gumnuts, which was one key to identifying many of the species. They were often tiny but hardy, and he described them as having shapes like wineglasses and champagne flutes.

After an hour or so, we stopped for a yarn and Rod told us how he retrieved the Aboriginal names and uses of the plants. It was a mesmerising story involving the German explorer Ludwig Leichhardt and an Aboriginal elder John Long, who Rod met at Boonah, among other characters.

Our host [Tali](#) was fantastic and made everyone, young and old, feel very welcome. There were cool drinks in the shade, and we all had a copy of the book in our hands because its photos held all the clues to unlock the diversity of the tour bushland. One member of the group said she had been on plant identification walks before and found them confusing, but Rod made it seem simple. Another said she liked the book because you could stick it in your back pocket and set off, and so we did.



Rod's band of eucalypt walkers identifying trees at Chermside Hills using his book.



NEWS IN BRIEF

World Coastal Forum

A new international initiative holds significant potential to improve coastal ecosystem management around the world to benefit biodiversity. On 10 January 2022, the establishment phase of the new [World Coastal Forum](#) (WCF) got underway, marked by a meeting held both virtually and in person in Yancheng, Jiangsu Province, China, and co-sponsored by the Ministry of Natural Resources of China and the Jiangsu Provincial People's Government.

Ministerial representatives from nine countries as well as representatives from the Food and Agriculture Organisation of the United Nations, the Ramsar Convention, and the IUCN delivered speeches at the meeting. The establishment process for the WCF was launched following resolutions passed between 2017 and 2020 under the Ramsar, CBD and CMS conventions that called for its establishment. The aim in establishing the WCF is to provide a platform where the international community can come together to build consensus and undertake actions to protect coastal biodiversity and manage coasts sustainably.

CBCSer [Professor Richard Fuller](#) and former CBCSer [Dr Micha Jackson](#) (who will be rejoining CBCS in July) both spoke at the January meeting and are members of an Establishment Group that will meet throughout 2022 to advance preparations for an official WCF launch. They are excited about the prospect of increasing the flow of evidence-based information and guidance from scientists and experts to decision-makers responsible for coastal management. More information is available [here](#).



HDR pizza night for Q1 2022

CBCS HDR students were treated to pizza and a hearty welcome to Q1 from their very sartorially blessed HDR Representatives, Natasha Cadenhead and Ama Wakwella (embracing, front right). The event took place at Saint Lucy's on the St Lucia campus on Friday 25 February, just as the Brisbane deluge was getting underway – but that did not stop around 30 HDRs from turning up to enjoy dinner, drinks and good company. A similar welcome night will be held at the beginning of each research quarter for incoming CBCS HDRs.



Dr Astrid Rodriguez Acevedo and some of the 11 students who attended the workshop.

Science writing workshop for students who are non-native speakers of English

Developing an academic career is intellectually and personally challenging. International students pursuing an academic career, particularly those from lower-income countries (that is, the Global South), experience added challenges due, but not limited to, linguistic, cultural, economic and legal barriers. One aspect of the language barrier is that it makes scientific writing even more difficult, and it is therefore even more important for Global South students to learn effective writing skills as early as possible during their PhD.

A large proportion of CBCS, SEES, and BIOL students and postdocs hail from the Global South, and CBCS ran a writing workshop for Global South PhD, MSc and Honours students from 14 to 16 March 2022. The workshop was led by Dr Astrid Rodriguez Acevedo, a Postdoctoral Research Fellow based at the Dermatology Research Centre at the Diamantina Institute at The University of Queensland. Astrid founded [Project Huitaca](#) to support the scientific careers of women in Latin America, and we were very lucky to have her running the workshop.

Students came from Africa (Kenya), Asia (China, Nepal, Singapore, Sri Lanka, Indonesia), and South America (Argentina, Brazil, Chile, Venezuela), while native languages included Spanish, Swahili, Mandarin and Nepali.

IPBES Nexus Assessment

[Professor Jonathan Rhodes](#) has been selected as one of the lead authors for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) [Nexus Assessment](#).

Over the next three years, the Nexus Assessment will focus on the interlinkages between biodiversity, food, water and health, and aim to assess policy and management solutions for addressing the Sustainable Development Goals in relation to these interlinkages.



IPBES first author meeting of the Nexus Assessment, May 2022.

From friendship bracelets to financial returns

PROFILE

Natasha Cadenhead

CBCS HDR Representative – Research

I grew up in Zimbabwe, which I always credit with my love of animals and nature in general. It was a beautiful, outdoorsy childhood spent fossicking for **chongololos**, climbing trees to harass chameleons, having my bare feet punctured by huge acacia thorns and making friendship bracelets for my cat (it was the 90s and did I mention that I was very cool?). From about the age of eight, I wanted to be a wildlife vet, as I had decided that those were the people who got to hug the coolest animals the most frequently.

This career choice persisted through a move to Melbourne during mid-high school (0/10, would not recommend moving continents as an angsty teen) and a failed attempt to get into an undergraduate veterinary science degree. Somewhat reluctantly, I started a Bachelor of Science, telling myself that I'd major in zoology and do vet science afterwards. And then, right towards the end of my undergrad, I realised ... I'd actually rather not hug them (and, shockingly, that perhaps that wasn't all that vets did, anyway). I was taking a few conservation-focused subjects and realised this is what I was passionate about, and what had been driving much of my desire to be a wildlife vet in the first place. I didn't mind if I wasn't the one hugging the animals, I just wanted them to still exist to be hugged. (I know, I know, you shouldn't hug wild animals).



Natasha and Tigger, circa 1997; friendship bracelets not pictured.

A passion for research

I decided to do a Masters in conservation with one of the lecturers who had inspired me the most – Professor Brendan Wintle. My project was the perfect blend of desktop analysis and fieldwork (aka 98% desktop analysis, 2% fieldwork). We were modelling the impacts of fire on the great desert skink, an Endangered lizard that lives in the deserts of central Australia. We predicted the population trajectory of the skink under nine different scenarios and determined that what was most important for managers was to conduct planned burns to prevent frequent fires in areas we'd identified as prime skink habitat, regardless of some of the uncertainties around habitat preferences. This work got me really excited about the power of spatial analysis for solving conservation problems and I spent the next six years working on similar projects as a full-time research assistant.

In this time, I learnt a lot about doing research, the inner workings of academia, and the role that conservation scientists can play in society. One of the things I noticed over time was how well and how often we collaborated with government, at all levels. Which got me really curious about who we didn't collaborate with so much: I became interested in the leverage that certain parts of the private sector – particularly, finance – have over society, where, just as governments allocate resources (\$\$\$) to particular issues, like the environment, so too do financial institutions allocate funds (\$\$\$) to particular areas, through who they lend to and invest in.

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I couldn't find proof of me doing fieldwork, so you'll just have to believe that I go outside sometimes.

“I became interested in the leverage that certain parts of the private sector – particularly finance – have over society”

A move north to Brisbane

This inspired me to (finally) start my PhD, and I moved up to Brisbane in late 2019 (8/10, would recommend leaving Melbourne just before COVID-19, but the coffee here could be better) to join CBCS and work with **Professor Martine Maron**. My PhD looks at ways to help financial institutions – like banks, superannuation funds and investment companies – incorporate biodiversity into the way they make financial decisions like what areas they invest in, what types of loans they give out, and so on.

I think if you told eight-year-old me what I do on a daily basis (sit in front of a computer, read financial reports and Google what “market cap” means for the 500th time), she'd be bored to tears. But it turns out that eight-year-olds don't know everything (your cat isn't going to enjoy wearing that friendship bracelet, dummy) and grown-up me thinks what I'm doing is pretty cool!