

CBCS Director Dr Daniel Dunn announces CBCS's new Management Committee.

Over the past 10 years, CBCS has developed organically to connect the work of UQ hubs, centres and schools. It has grown from a handful of researchers to now more than 25 affiliated academics, 30 postdocs and 100 PhD candidates. That growth has required a re-think of the governance of CBCS to better meet the needs of the Centre.

At a meeting of senior researchers in February, we agreed to replace the existing Leadership Group with a more streamlined Management Committee consisting of the Director, four newly defined Deputy Directors, and two ECR and two HDR representatives, with job-sharing encouraged to allow broad participation. The new Deputy Directors have specific remits to move the work of the Centre forward in critical areas identified through extensive outreach to CBCS researchers, postdocs and students, as well as the Schools of Earth and Environmental Sciences and Biological Sciences, and the Faculty of Science. These one- to two-year roles will focus on Community, Research, Education, and Industry and Policy Engagement. Each of the ECR and HDR representatives is now also tasked with supporting one of these focal areas, along with developing cohort-building activities. Equity, Diversity and Inclusion will be at the heart of each of those positions, mainstreamed into everything we do.

Engagement, employability, commitment

This is an exciting time for CBCS and my hope is that this new structure will support stronger engagement across the CBCS community, with a broader suite of activities than was previously possible. A few examples of the types of events we expect to be able to deliver over the course of the rest of this year and into 2022 include:

- cohort- and CBCS-wide social events, as well as public events for the external community
- a call for workshop and training proposals primarily led by ECRs and HDRs
- an industry and government networking event.

We will also be able to participate in a more consequential way to support and guide the further development of the

I can't think of a better group of people to demonstrate the bright future in store for CBCS, and to guide us there.

CBCS welcomes a new management committee



The new Management Committee, Goddard Building, 10 June 2021. Left to right, back: Dr Daniel Dunn, Dr Caitie Kuempel, Natasha Cadenhead, Dr Nathalie Butt, Dr Laura Sonter, Dr Tatsuya Amano. Front: Dr Valerie Hagger, Associate Professor Carissa Klein, Michelle Ward. Absent: Ama Wakwella. Photo: Kate Donnelly

conservation curriculum at The University of Queensland, and provide meaningful opportunities for ECRs to teach in a way that will enhance their employability.

The new CBCS Management Committee consists of:

Director: Daniel Dunn (SEES)

DD Community:

Nathalie Butt (SEES)

DD Research:

Tatsuya Amano (BIOL)

DD Education:

Laura Sonter (SEES)

DD Industry and Policy Engagement:

Carissa Klein (SEES)

ECR Rep Community:

Valerie Hagger (BIOL)

ECR Rep Education:

Caitie Kuempel (BIOL)

ECR Rep Industry and Policy Engagement:

Michelle Ward (SEES)

HDR Rep Community:

Ama Wakwella (SEES)

HDR Rep Research:

Natasha Cadenhead (SEES)

This is a tremendous and extremely committed group. Each of them is well known to the CBCS community from their strong engagement to date. We

are ecstatic to have them on board and leading us forward. Congratulations and a big thanks go out to each of them. We would also like to express our sincere thanks to all who applied, and to the outgoing leadership group. Your interest in supporting CBCS is humbling and sincerely appreciated. We look forward to finding ways to engage you, and everyone else who is interested, in creating the CBCS community we want.

Look out for more from your new Management Committee soon!

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

PROFILE

Dr Claudia Benham

CBCS Lecturer in Environmental Management and Planning Policy

Uniting the social and environmental sciences

“It might seem strange for someone from landlocked Canberra to make a career out of working in coastal environments, but I've always loved the ocean. Every year, my family would pile into the car for the annual Christmas camping trip to the coast, where I would spend hours on the beach looking at shells or watching the soldier crabs in their endless busy-ness. As an adult, I love to be beside or on the water, getting to know the ebb and flow of the tides and the daily changes in the ecosystem. Having access to nature has become even more important to me, as it has for many others, over the past year while we've been confined to our homes and neighbourhoods.

Understanding coastal communities

As an environmental social scientist, my work focuses on understanding how communities in coastal regions value and interact with the environment. I also aim to understand how place-based decision-making can help communities to envision futures grounded in local knowledge, values and identities, and how broader governance settings can be reformed to enable more sustainable outcomes for people and environments on the coast. Most recently, I've been working with communities in the Great Barrier Reef on deliberative decision-making. This work seeks to understand how communities can reconcile regional development needs with the need to protect iconic and biodiverse reef environments. I also work

on projects that examine how gender and other social characteristics shape people's relationships with their local environment.

Finding the perfect fit

My first experience in community-based environmental management was in my Honours year, when I worked with a group of local stakeholders to evaluate a collaborative catchment management process. I immediately knew that I wanted to work at the interface between communities and the environment. I had originally enrolled in an International Relations degree with a major in languages, but quickly found that my main interest was in applying political and social thinking to environmental problems, and changed to a double degree in Arts and Science. At my high school, relatively few people went on to university and there was little career counselling, but one of my teachers told me that it was possible to do both Arts and Science – this small comment helped me see the possibilities and, later, shaped my career path.

Toward the end of my degree, I started working for the Department of Environment in Canberra in the urban water policy team before working in marine conservation planning, cetacean policy and environmental approvals. Through this work, I was exposed to the assessment and monitoring of large

industrial developments, at a time when the gas industry in Queensland was ramping up. Later, my PhD examined the social and environmental impacts and governance of the three large Liquefied Natural Gas terminals in Gladstone Harbour (southern Great Barrier Reef), using a combination of ecological and social research techniques. I loved working in the field, but overall felt that working with communities was the best fit for me. After finishing my PhD, I worked at James Cook University in Townsville for three years, before joining UQ in 2020.

Mentored – and mentoring

Throughout the early part of my career, I have been fortunate to work on fascinating, important problems and have been mentored by amazing researchers, many of them women blazing a trail in their respective areas. I hope to do this for others in turn. I am looking forward to getting to know CBCS and the great research being done here, and especially look forward to interdisciplinary collaborations that bring the social and environmental sciences together.



A rainy fieldwork day. Photo: Dr Rebecca Hendry



Collecting seagrass samples in Gladstone Harbour. Photo: Dr Kevin Erickson



Professor Cath Lovelock named a 2021 Fellow of the Australian Academy of Science

CBCS's Professor Catherine Lovelock is one of 22 Australians acknowledged on 25 May 2021 by the Academy for their extraordinary contributions to Australian science.

Professor Lovelock is a globally renowned expert whose research focuses on the impacts of climate change on coastal wetlands and on the role of coastal ecosystems in mitigating climate change, or blue carbon.

"Blue carbon is the carbon stored in soils and coastal wetland biomass, and it's important in regulating greenhouse gases," Professor Lovelock said.

"These areas also provide coastal protection, habitat, fisheries and amelioration of land-based pollution. People depend on the oceans and coastal ecosystems as a source of food, livelihoods, carbon capture and, thanks to coral reefs, mangroves and other coastal ecosystems, for protection from storms. But people are having enormous impacts globally and it's time to do what we must to ensure our oceans are healthy and vibrant for generations to come."

Professor Lovelock was lead author for the International Panel for Climate Change Wetlands chapter (2019) and contributes to national and international policy to implement conservation and restoration of coastal wetlands.

"Blue carbon offers a way to conserve and restore mangroves, saltmarshes and seagrass while helping with climate change mitigation and better preparing our coasts for the impacts of climate change," she said.

"It's an honour to be recognised by the Academy in this way – I hope it can help turn public attention toward the importance of blue carbon."

Australian Academy of Science President Professor John Shine congratulated the new Fellows for their achievements on the international stage. "These researchers have not only been at the forefront of Australia's scientific community, but have also been leaders in global science," said Professor Shine.

This is an edited version of an article first published by UQ's Faculty of Science on 25 May 2021.

Cath measuring changes in the elevation of the soil surface in saltmarsh in Western Australia. Changes in soil elevation provide indications of vulnerability to sea level rise and are linked to blue carbon sequestration in soils. *Photo: Alex Pearse*

UQ Research Support Fellowships: CBCSers win 7 of 25

Congratulations to the seven CBCSers, across the Schools of Earth and Environmental Sciences and Biological Sciences, who have been awarded UQ Fellowships in the Research Support Streams.

The Fellowships are part of the Australian Government-funded Research Support Package, aimed at mitigating the impact of COVID-19 on Australia's higher education research across 2021-22.

RS Allocation Stream 1 (Postdoctoral Level A, B or C) winners [Jeremy Simmonds](#), [Nathalie Butt](#) and [Michael Jackson](#) will focus on, respectively, linking ecological compensation and emerging environmental markets; climate change-driven changes in forest phenology; and migratory shorebird conservation. [Kennedy Wolfe](#) ([Marine Spatial Ecology Lab](#)) and Aubrie James ([Dwyer Plant Ecology Group](#)) also won Stream 1 Allocations. Stream 3 (Graduate Job-Ready Initiative) winner [Leslie Roberson](#) will continue her research on improving seafood sustainability, while [Pablo Negret Torres](#) will extend NESP Threatened Species Recovery Hub work on fire management for vertebrate conservation.

Thanks to the nominators and supervisors: [Martine Maron](#), [Carissa Klein](#), [Richard Fuller](#), [Jonathan Rhodes](#), [John Dwyer](#) and [Peter Mumby](#).

Centre for Biodiversity and Conservation Science

Director: Dr Daniel Dunn
daniel.dunn@uq.edu.au

CBCS News Editor: Kate Donnelly

E cbcs-info@uq.edu.au

T +61 7 344 60879

W cbcs.centre.uq.edu.au

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Starstruck! CBCSers take home Science awards

Each year, The University of Queensland's Faculty of Science gives awards to staff and students who have demonstrated excellence and future potential in science learning, communication, research, teaching, service, mentoring, leadership or teamwork.

This year, CBCS members won three of the awards! We congratulate:

- [Associate Professor Carissa Klein](#) (Leadership and Mentoring Award for Academic Level C and above);
- [Dr Amelia Wenger](#) (Rising Star Award for Academic Level A/B); and
- [Leslie Roberson](#) (Future Superstars Award for HDR students).

All three winners are part of [The Ocean Conservation Team](#) and are working on a range of topics from seafood sustainability to coral reef conservation.

We are also very pleased that the winners are women, demonstrating CBCS's commitment to supporting women in science. We encourage everyone at UQ to take the [Merle Pledge](#), an initiative designed to substantially improve women's representation in public and professional forums.

In addition to our award winners, three other CBCS members were nominated for these awards: Future Superstars – HDR students [Michelle Ward](#) and [Brooke Williams](#) (short-listed); and Rising Star – [Dr Caitie Kuempel](#) (short-listed).

The full list of nominees for each award is available [here](#).





PROFILE

Leslie Roberson

CBCS Postdoctoral Research Fellow

Left: Leslie with her favourite sea turtle species (leatherbacks) in Winneba, Ghana.

Photo: Andrews Agyekumhene

Below: One of more than 200 unfortunate GoPro stills from Leslie's research in South Africa.

Photo: Leslie Roberson

A year in Ghana

It became clear that protecting animals like sea turtles would be impossible without addressing the threats from fishing and exploitation. After the Honduras projects (where I didn't come up with any solutions or really help anyone), I spent a year living in a fishing village in Ghana helping the wildlife division start a sea turtle conservation program. I ward off a few machete-wielding poachers but, ultimately, I couldn't really help anyone there either, which was extremely frustrating. I'm sure this sentiment is shared by any scientist who does fieldwork. Still, I became more and more fascinated by fishers and fishing communities. I dread small talk at conferences but can chat to fishers for hours. Some of them have an encyclopedic knowledge of the ocean, and some are full of nonsense. But researching fishers (and humans in general) is extremely hard. Humans are annoyingly unique and very hard to describe mathematically.

For my Masters degree in South Africa, I decided to ditch humans and just count fish. I discovered that fish are annoying in different ways to humans. A fisheries scientist named John Shepherd famously said that managing fisheries is like managing a forest, in which the trees are invisible and keep moving around. Even using underwater video cameras, I could barely count the slippery little buggers.

To Australia, and beyond

So, for reasons I can't really explain, I decided to move to Australia to pursue a PhD that involves both fish *and* humans. I love the ocean and suppose I like wicked problems – there are definitely enough of them in marine conservation to keep all the dolphin lovers, intertidal invertebrate fiends and stock assessment nerds very busy. My PhD research delves into a few different areas of fisheries management and conservation, including bycatch risk assessments and analyses of the global seafood trade. My overarching interest is in finding solutions to improve seafood sustainability and reduce the impacts of fisheries on threatened species at different scales, from individual fishing fleets all the way up to high-level international policy. Although my thesis hasn't solved any grand problems, I am extremely relieved to have finished it – and at least my concluding sentence was a bit better than “this is complicated”.

Finding solutions to seafood sustainability and fisheries

“ I sheepishly admit that I pursued a career in marine science because of sea turtles. Sea turtles are mainstream marine biology – there are only seven species in the world, they look like cute grumpy old men, and they even have the decency to (slowly) climb out of the ocean and onto tropical beaches for you. The hardcore biologists study deep-sea polychaete worms. But I have a soft spot for turtles; after all, they survived the extinction event that wiped out the dinosaurs. Yet after all that surviving, sea turtles might not survive the human appetite to take stuff out of the sea.

Turtles and more in Honduras

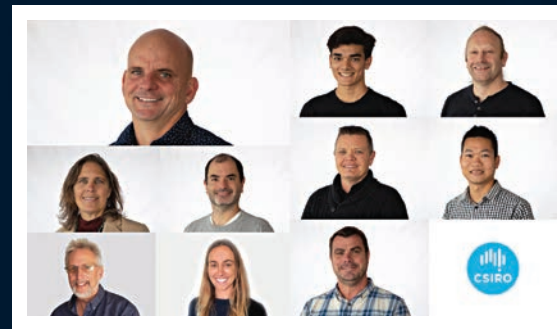
During my bachelors, I had the opportunity to do several sea turtle research projects in Central America and

West Africa. I spent a summer on an island off the Caribbean coast of Honduras that was like an assorted cheese platter of all the possible problems in marine conservation. Bleaching corals diseased from untreated sewage and rapid coastal development; subsistence fishers clearing the reef to feed ravenous tourists pouring off Disney cruise ships; communities abandoning their low-lying sand islands as they disappeared under rising sea levels. A few years earlier, a plane had crashed that was packed to the wingtips full of cocaine heading from South America to the US. Poaching sea turtle eggs didn't even make it on the list of problems. I think the final line of my Senior Essay was something like, “Well, this is complicated.”

I love the ocean – and wicked problems.



Innovative new technologies address key barriers to ocean management



Above: the Innovation Award-winning team.
Photo: CSIRO

Left: the first pilot vessel for the radar harvesting system, CSIRO's RV Investigator, returns from a voyage to the Southern Ocean. Photo: CSIRO

CBCS Postdoctoral Research Fellow Leslie Roberson is part of a 10-person CSIRO team awarded the Innovation category of the 2021 Ocean Awards for their new ocean surveillance technologies.

The **Blue Marine Foundation and BOAT International** award recognises innovations in ocean conservation. Following CBCS Director Daniel Dunn's 2020 win in this category with **MiCO**, this year CBCS was again involved in the **award-winning team**. Led by Dr Chris Wilcox at CSIRO, the **Monitoring Control and Surveillance (MCS) Analytics Team** developed two technologies addressing important gaps in ocean surveillance.

Ocean monitoring and surveillance

We know surprisingly little about the number and activities of vessels at sea. For example, Indonesia estimates it has 0.25–0.5 million commercial fishing vessels, with up to 495,000 of these unmonitored. The problem is not unique to developing countries; Australia has very little information about its recreational boats.

Enforcement agencies struggle to combat illegal fishing in protected areas, even in places like the Great Barrier Reef. Many coral reefs in developing countries are plagued by destructive practices such as bomb fishing, reportedly on the rise since the COVID-19 pandemic has limited patrols. Vessel-tracking systems or remote sensing technologies can detect some vessels or illegal activities, but they are often prohibitively expensive.

The MSC team aimed to lower costs and increase accessibility for surveillance tools

aimed at two key problems: 1) inventorying small or non-transponder-equipped vessels; and 2) detecting vessel incursions or bomb fishing in protected areas.

Harvesting ships' navigation radar

The radar data-logging system uses cooperating ships as sensor platforms by saving information about targets that would normally disappear from the plotter screen. Commercial radars can have ranges over 300km, and an advantage of radar harvesting is its ability to detect small boats not equipped with transponders, as well as non-cooperative vessels. This can build a more complete picture of vessels in the area and their spatio-temporal activity.

Acoustic surveillance using covert hydrophones

Two key barriers prevent widespread use of hardware for recording underwater sound: automated high-quality processing of sound data and reliable, inexpensive communication of information. The team took an off-the-shelf hydrophone and married it to a custom buoyancy engine and satellite communications unit with onboard sound processing. This allows

the hydrophone to sit underwater, detect sounds and briefly surface to send alerts. The team also developed software that allows information to be extracted after recovering the hydrophones.

A new hydrophone lending library allows users to deploy the gear to support enforcement campaigns, and then return it. This model provides access to cutting-edge technologies, and helps agencies target enforcement to reduce threats to marine ecosystems.



The real-time hydrophone unit costs about \$5,000, making it affordable for management agencies and NGOs. Photo: Middy Khong

NEWS IN BRIEF

Impact Assessment for Corridors

CBCSer [Divya Narain](#) has contributed a chapter to a new publication released in July 2021 by the [Development Corridors Partnership](#) (DCP), a multi-stakeholder project led by [UNEP-WCMC](#). The publication, titled *Impact Assessment for Corridors: From Infrastructure to Development Corridors*, calls for better application of environmental planning and management tools for development corridors. Divya's chapter discusses the environmental risks and safeguards of the Belt and Road Initiative (BRI), China's flagship overseas infrastructure investment program encompassing eight transcontinental corridors. Divya was also part of DCP's panel at the annual conference of the International Association of Impact Assessment, [IAIA21 Virtual Event](#) held from 18 to 21 May.

IPBES Business and Biodiversity Assessment

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES www.ipbes.net) 2019–2030 work program includes a methodological assessment on the topic of "Business and Biodiversity". [Dr Laura Sonter](#) participated in an expert working group to define the scope of this assessment, which will be presented at IPBES 9 in March 2022. The assessment will aim to categorise how businesses depend on, and impact, biodiversity and nature's contributions to people, and identify criteria and indicators to measure and integrate these dependencies and impacts into sustainable development.

Australia faces environmental crisis

[Michelle Ward](#) and colleagues recently published [a letter](#) in *Science* exploring the fundamental failure of Australia's flagship environmental legislation. A decade ago, an Australian report outlined changes the country must make to halt the decline and loss of species, but the reforms were never implemented. In the years since, most threatened species have continued to decline, and at least three have gone extinct. Since 2000, more than 7.7 million ha of threatened species habitat have been destroyed. In May, the Australian Government released a report examining Australia's ongoing failure to tackle the species extinction crisis and offering recommendations. Australia's Minister for the Environment has committed to work through the full detail of the recommendations, but worrying signs that they will be ignored are already apparent. The Australian Government must protect and preserve nature as required by international agreements. Without fundamental policy reforms, Australia – a megadiverse country home to about 600,000 species – risks mass species extinction.

Australia's iconic koala is threatened with extinction. Recent research showed that it has lost -1 million ha of habitat since formal legislation was set in 2000. Photo: Briano/WWF-Aus



Delias aganippe.
Photo: Shawan Chowdhury

Butterflies on the move!

Revealed in a new paper led by CBCS PhD candidate [Shawan Chowdhury](#) is the discovery that several hundred butterfly species show evidence of migratory movements. Indeed, the rate of "discovery" suggests that a great many more butterflies might in fact be migratory. Butterfly migration occurs across all families, in tropical as well as temperate taxa. Some 13 lines of evidence have been used to ascribe migration status in the literature, but only a single line of evidence is available for 92% of the migratory species identified, with four or more lines of evidence available for only 10 species – all from the Pieridae and Nymphalidae families. Read the paper [here](#).

Setting robust diversity goals

With a few short months to go before the nations of the world (hopefully) agree on the goals that will guide action on biodiversity conservation to 2050, ambiguity in the proposed goal wording remains. A paper led by [Professor Martine Maron](#) sets out the need for clear net outcome goals to guide action, gives seven principles for formulating such goals, and calls for better alignment between the goals and the action targets that support them. Read the paper [here](#).

CBCS in Nature Communications Top 50

Nature Communications recently released a list of their most downloaded earth, environmental and planetary science articles in 2020, and CBCS researchers led or were senior authors on four of the 50 papers. The Top 50 includes research on exploitation of threatened species by industrial fisheries ([Leslie Roberson](#) and [Carissa Klein](#), read it [here](#)); ecosystem integrity of global forests ([James Watson](#), read it [here](#)); mining threats to biodiversity exacerbated by renewable energy production ([Laura Sonter](#), read it [here](#)); and intact connections between terrestrial protected areas ([Michelle Ward](#) and James Watson, read it [here](#)).

Urban green spaces in Brisbane

During lockdown in 2020, CBCS PhD candidate [Violeta Berdejo-Espinola](#), supervised by [Professor Richard Fuller](#), explored people's use of urban green spaces (UGS) in Brisbane, and the reasons for this use. She found a great deal of flux in people's visits to UGS, and that people emphasised how the psychological and physical benefits obtained from UGS had increased during this time of stress. The COVID-19 pandemic has highlighted that public green spaces in cities can be a nature-based coping mechanism for urban residents that enhances individual and social resilience. Read the paper [here](#) and the blog article [here](#).



Green refuges during lockdown.
Photo: Violeta Berdejo-Espinola