



- The ultimate ocean classroom
- The trouble with taxonomy
- Listening to humpback whales

- Committing to Science in Sea Country
- Tracking sources of PFAS in Port Phillip Bay
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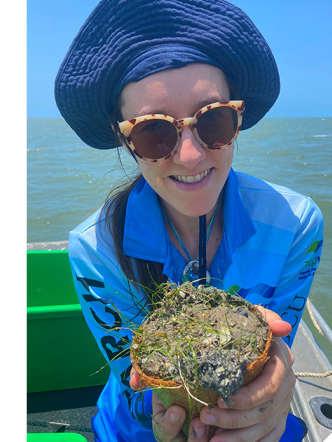
Front cover: **Hammerhead shark**. Image: Zainab Saria
Inside cover: **Seahorse**. Image: David Clode, unsplash
Right: **Reefscape**. Image: Francesco, unsplash

MARINE MARVELS



EDITOR'S REPORT

By Jaelen Myers



JAELLEN MYERS
AMSA BULLETIN EDITOR



“Taxonomy is often undervalued as a glorified form of filing – with each species in its folder, like a stamp in its prescribed place in an album; but taxonomy is a fundamental and dynamic science, dedicated to exploring the causes of relationships and similarities among organisms.

– Stephen Jay Gould

Marine marvels images on facing page – clockwise from top left:

1. Port Jackson shark (*Heterodontus portusjacksoni*). The female PJ, as they are affectionately known, lays a single soft egg, picks it up in her mouth and lodges it in a rock crevasse where it hardens for a few months. Their distinctive eggs resemble a swirl of kelp. Image: 'Breeding time – *Heterodontus portusjacksoni* – Port Jackson shark #marineexplorer' by John Turnbull, CC BY-NC-SA 2.0

2. Mantis shrimp (*Odontodactylus scyllarus*). These shrimp may be small, but they are lethal hunters. They can unfurl their claws at incredible pace – some are 'speakers' with barb-like claws to pierce their soft prey, while some are 'smashers' that use their claws like a hammer to club unsuspecting snails and crabs. Image: 'Mantis shrimp *Odontodactylus scyllarus* #marineexplorer' by John Turnbull, CC BY-NC-SA 2.0

3. Splendid nudibranch (*Goniobranchus splendidus*). Nudibranch means 'external gills', which these creatures are aptly named. The feathery structure is their gills, which are outside of their body. Image: 'Splendid nudibranch' by John Turnbull, CC BY-NC-SA 2.0

4. Swimming anemone (*Phlyctenactis tuberculosa*). As its name suggests, this anemone can detach itself from the algae and rocks it often clings to and swims around. This makes them skilled and mobile predators. Image: 'Swimming anemone' by John Turnbull, CC BY-NC-SA 2.0

5. Brain ascidian (*Sycozoa cerebriformis*). This is a colonial organism, with many identical units making up the brain-looking structure. The colony starts off flat, but as the zooids multiply, they fold up over each other, forming the signature shape. Image: 'Brain ascidian – *Sycozoa cerebriformis*' by John Turnbull, CC BY-NC-SA 2.0

6. Orange feather star (*Comanthus trichoptera*). The distinctive feathery look of these echinoderms comes from the pinnules rows on either side of each arm. They are packed with mucous tubular feet that trap suspended plankton and detritus that the feet then push towards the central mouth. Image: 'Orange feather star – *Comanthus trichoptera*' by John Turnbull, CC BY-NC-SA 2.0

Welcome to another year of the *AMSA Bulletin*. We are only a few months into 2026, but it feels like another year that will keep us on the edge of our seats.

Already, as we transition from 2025 to 2026, new discoveries are being made. Whether you study plants, animals, or single-celled organisms, new species are being discovered every day, reminding us that our oceans have existed long before us and the steady march of evolution continuously generates the flourishing biodiversity around us.

AMSA along with Taxonomy Australia and the Australian Academy of Science all agree that species taxonomy has been widely overlooked in Australia, despite the critical importance of this field for protecting species and their habitats. Arguably every field related to marine science, outreach, and communication deserves more funding and people to specialise in this knowledge, but we also live in a world where financial resources are finite even while pressures for change are rising exponentially.

Australia has remained resilient over the past year and continues to prioritise the health and sustainability of its oceans. Being from the United States where fewer such protections exist, I think Australia serves as a model for other nations to aspire to, thanks to those of us making this happen from the ground-up. I am grateful I got to stay in Australia after my PhD to continue working in this space at James Cook University. We really are a multinational community here, whether we come from afar or lived here for countless generations.

What can you expect in this issue? A key theme we spotlight in this issue is how a lack of taxonomy research is holding us back and what we can do to resolve this issue. In line with this theme, we now know that *Acropora* corals of the Great Barrier Reef are more complex than we ever could have imagined, thanks to emerging technologies in this field. We also include a much-deserved commemoration of the life of Emma Johnston, who tragically passed late last year. She was well-known and respected in the AMSA community and served a seven-year term as the *AMSA Bulletin* Editor. We felt it necessary to celebrate her life through those who were close to her. Also, please enjoy this round of research and organisation features, where we hear about studying whale songs, a student's journey into the world of seagrass research, the Collaborative Australian Postgraduate Sea Training Alliance Network, and much more.

As always, it has been a pleasure to deliver this beautiful publication to you, and we hope you share it far and wide. I, along with this year's editorial team (thanks Zainab Saria, Alicia Linn, Adele Comacchio, Hana-Lei Evans, and Emma Parfitt), wish you happy reading. We thank everyone who contributed and welcome expressions of interest year-round to our address: editor@amsa.asn.au.



Emma Johnston was an exceptional marine ecologist and ecotoxicologist who shaped scientific understanding and environmental management worldwide. Images: These images were provided for use in the Bulletin by the University of Melbourne, originally from the University of New South Wales

A tribute to Professor Emma Johnston AO – esteemed AMSA member

We reflect on the passing of Professor Emma Johnston AO who was an active member of AMSA with research interests in ecology, microbiology and ecotoxicology.

Emma's career in marine science began with an honours degree and PhD at The University of Melbourne and culminated in her appointment as the first woman Vice Chancellor of her alma mater. Following her PhD, Emma moved to the University of New South Wales as an associate lecturer. She went on to become the Dean of Science and

Pro-Vice-Chancellor (Research) at the University of New South Wales and then the Deputy Vice-Chancellor (Research) at The University of Sydney. Emma also served as a director of the CSIRO and the Great Barrier Reef Marine Park Authority, and President of Science and Technology Australia. She also established the Sydney Harbour Research Project.

We feature insights from fellow members who knew her personally from the 1990s until her death late last year.

Penny Berents
Australian Museum
Maria Byrne
University of Sydney
Anthony Boxshall
Science Into Action
Katie Dafforn
University of Massachusetts and Macquarie University

Working with Emma Johnston in the 1990s

Anthony Boxshall

Emma joined the Keough Lab at The University of Melbourne as an honours student in 1998, bringing her energy, deep thinking and kindness to the team. Already an active member of AMSA in Victoria and nationally, she took on a complex project that eventually developed into the seminal piece of work she did for her PhD regarding copper ecotoxicology. Although Emma was very active in student politics as Student Union President at the University of Melbourne, she always had time to be part of the marine science community, by connecting with AMSA Victoria events or helping graduate students in the field or lab.

In the mid-90s, Emma joined a second-year field trip to Mushroom Reef at Flinders: a right-of-passage for University of Melbourne marine students for decades with students learning to use transects and quadrats in the intertidal zone.

Emma could be seen with her trusty camera capturing the activity. Not only did she complete the tasks well and early, she captured the art of science being done. Within a week or two [Ed note: for those under 30, back then cameras used film which had to be developed] Emma turned up to a lab class with copies of individual photos of her classmates, professors and demonstrators actively doing intertidal science. Her generosity of spirit (and action) was infectious.



Known for experimental creativity, fearlessness in the field, and a mischievous sense of fun, she fostered a nurturing, empowering lab culture. Her legacy endures in her students, collaborators, and the scientific community she helped build.



Emma's involvement with AMSA as Bulletin Editor

Penny Berents, Maria Byrne

Emma was an active AMSA member from her student days in 1997 up until her death in December 2025 when she was Vice Chancellor of The University of Melbourne. Emma took on the role as Editor of the *AMSA Bulletin* in July 1998 while a postgraduate student at The University of Melbourne and subsequently took the job with her when she moved to the University of New South Wales as a lecturer. Emma produced her first Bulletin in October 1998 (Bulletin 144). She served as Editor for seven years producing 23 issues until retiring from the role in April 2004 (Bulletin 166). Reflecting on her great communication skills, Emma's editorials in the Bulletin were lively, cheery and interesting. The Bulletin, originally four issues a year, was a big task for Emma and was an excellent source for communicating marine science in Australia with many members reading them from cover to cover.

Emma represented AMSA at the first Science Meets Parliament in January 2000. Her editorials reflect that, even as a postgraduate student, she was interested in the big picture for marine science, beyond that of her research project. Emma recognised the importance of scientists engaging with policy makers. She was an advocate for AMSA to play an active role in the Federation of Scientific and Technological Societies (later to become Science and Technology Australia).

Her editorials typically took a national perspective, promoting AMSA conferences and canvassing the need for more funding for research and development, and marine science in particular. She described a visit to Timor Leste in 1999, where she taught a local boy to snorkel, and reflected on the need for Australian marine scientists to support our Pacific neighbours. In 2004 she described diving under the ice on a field trip to Antarctica. After retiring as Editor, Emma continued to serve AMSA on the National Council until 2007 and for another two years from 2011–2013.



Emma's research and impact

Katie Dafforn

Emma was an exceptional marine ecologist and ecotoxicologist who shaped scientific understanding and environmental management worldwide. Her research combined fundamental ecology with real-world application, informing policy and practice across Australia, New Zealand, the United States, and beyond.

Her work transformed thinking around why some species thrive in new environments, showing that metal pollution can facilitate marine invasions, with invasive species often more tolerant of toxicants like copper. This insight reshaped risk prediction and management strategies globally. In ecotoxicology, she united ecology, evolution, and chemistry to develop innovative field-based tests and lead influential studies on dredging impacts, while also advancing environmental DNA as a cutting-edge tool for monitoring ecosystem health.

Emma's research spanned environments from the tropics to Antarctica, where she documented light-driven tipping points in polar ecosystems. Known for experimental creativity, fearlessness in the field, and a mischievous sense of fun, she fostered a nurturing, empowering lab culture. Her legacy endures in her students, collaborators, and the scientific community she helped build.

Emma did so much in so little time. Her accomplishments will continue to inspire us for generations to come.

Above: Emma Johnston with Andy Stevens of CSIRO at the 2014 Australian Academy of Science National Marine Science Symposium which facilitated discussion of white papers that led to the *National Marine Science Plan 2015–2025*.



Students gather ready to board the RV *Investigator*.

Seas the opportunity!

How CAPSTAN is turning students into ocean stewards

The ocean is full of mysteries, and for Australian university students it's also the ultimate classroom.

Learning at sea is different: there are data streams to analyse, samples to process, equipment to deploy, and multiple scientific activities to balance. Decisions must be made in real time while navigating shifting weather conditions and managing plans A, B and C. You can observe things at the surface, then check what the data is telling you at depth. Things can be more tangible than they are in a textbook or lecture.

That's why the Collaborative Australian Postgraduate Sea Training Alliance Network (CAPSTAN) program brings together early career marine scientists from all walks of life. They receive hands-on experience at sea, gain a deeper understanding of the marine world and build the skills to help protect it.

Partnering to transform marine science education

CAPSTAN is a maritime education and training initiative between CSIRO, the University of Tasmania's Institute for Marine and Antarctic Studies (IMAS) and the Australian and New Zealand International

Scientific Drilling Consortium (ANZIC). The program is supported by sea time on CSIRO research vessel (RV) *Investigator* and funding from the Australian Government's National Collaborative Research Infrastructure Strategy (NCRIS). A network of 19 leading Australian university and industry partners subscribe to the program, each guaranteed a place for one of their students. The CAPSTAN Steering Committee ensures a fair and transparent selection process for this highly sought after opportunity.

Piloted between 2017–2020, CAPSTAN was officially launched in 2024. The program builds on other successful at-sea training programs such as NOAA's Explorer-in-Training and South Africa's SEAmester, as well as the work of many in the Australian marine science community who had long been advocating for and developing similar training activities. From that work, Australia now has a coordinated, multidisciplinary, at-sea training program that encompasses the full spectrum of marine science disciplines and is aligned with the needs of industry and government.

Ben Arthur
CSIRO Marine National Facility

Pier van der Merwe
University of Tasmania

Sarah Kachovich
Australian and New Zealand International Scientific Drilling Consortium

Circumnavigating the island state

In 2025, CAPSTAN embarked on a 10-day circumnavigation of Tasmania. The 26 program participants from across the country worked alongside CSIRO technical support staff and vessel crew to gain direct experience with the equipment, systems and techniques used on board a modern research vessel. During the 'Tassie Lap' the main study sites included the southern extension of the East Australia Current, Bass Canyon, and the Tasman Fracture Zone. The cross-disciplinary science training program included:

- deep towed camera surveys;
- environmental DNA (eDNA) surveys;
- conductivity, temperature, depth (CTD) sampling;
- TRIAXUS and Argo float deployments;
- net trawls;
- a shipwreck survey;
- seafloor mapping including sub-bottom profiling;
- sediment sampling; and
- seabird/marine mammal surveys.



Piloted between 2017–2020, CAPSTAN was officially launched in 2024.

Not just for students

No longer a student? CAPSTAN also provides opportunities for early career researchers and established professionals to upskill. The program takes a chief scientist, alternate chief scientist and trainers on each voyage. They work with CSIRO and CAPSTAN staff to design and deliver the voyage program, including pre-voyage workshops and at-sea training and sampling.

Program outcomes

While participants have their own unique takeaways, post-voyage feedback reveals some common outcomes. All participants agree or strongly agree that they:

- built strong professional networks;

- have a better appreciation of marine career options; and
- gained quality experience not available elsewhere in Australia.

Commonly highlighted aspects of the program include the diversity of people and research on board, the opportunity to do 'real research' at sea, interacting with trainers and crew, and the welcoming and friendly atmosphere.

On the horizon

With the support of the Australian marine science community, CAPSTAN continues to grow. Two 2026 voyages will include a 12-day voyage from Fremantle to Hobart in April-May and a 10-day voyage from Brisbane to Fiji in September.

Right: CAPSTAN 2025 participants onboard the RV *Investigator*.



Upon their completion, more than 125 participants will have sailed with the program. Regardless of their ultimate career path, program alumni form a growing support network, fostering collaborations, friendships, and professional opportunities.

Like its namesake, [a CAPSTAN being a machine used to multiply force when pulling ropes and cables on ships], you can expect to see this network applying force to improve the understanding and protection of our oceans.

*Student interviews were originally recorded by ABC reporter [Meg Whitfield](#) for ABC Radio's [Tasmanian Country Hour](#). Learn more about [CAPSTAN](#).

Each participant took something different away from the CAPSTAN program



Emily Hunt (right) being trained in CTD sampling by CSIRO hydrochemist Maddy Lahm.

“ I don't actually get to do any fieldwork so having the opportunity to get these multidisciplinary skills – and even just the operational skills of the boat – is really important.”
– Emily Hunt



Lisa Walton processing a sediment core.

“ For my PhD, I already have all the data that I'm using, and this is an opportunity for me to actually see the equipment go in and out of the water and look at the data in real time.”
– Lisa Walton



Joseph Cresswell (right) with University of Western Australia master's student Ciara Fegredo.

“ I look at deep ocean mud, however, I've not been on an ocean research voyage before so, from my own perspective, just having that experience is awesome. Looking at what's on the seafloor, and having that understanding, is important for my research.”
– Joseph Cresswell



Marine taxonomy is a foundation science, and it's in trouble

Taxonomy allows us to discover, describe, and classify all organisms. It is a dynamic discipline fundamental to all aspects of biology and ecology. Working in the life sciences without a good understanding of taxonomy is like trying to follow a recipe without knowing the ingredients.

Where we've been

Taxonomy is in dire straits, with a worsening skills shortage affecting many marine scientists and their research. This is documented in the *AMSA Position Statement: The importance of taxonomy to marine science* and Taxonomy Australia's decadal plan. Furthermore, the Australian Academy of Science's cost-benefit analysis shows that return on investment ranges from \$4–\$35 for every dollar spent on targeted taxonomic discovery. These returns are realised through activities such as the implementation of biosecurity plans and marine resource management.

We have summarised these findings in an *Advances in Marine Biology* paper that makes 11 recommendations for immediate systemic reform. These advocate revitalising taxonomic education, fostering museum-university partnerships,

supporting early career researchers, and investing in infrastructure to enable species discovery.

Where we are

Despite repeated advocacy for more taxonomy support, not much has changed over the past decade or more. In fact, it is estimated that only about 30% of our marine fauna is actually described. Unknown biodiversity is dominated by the benthos, especially groups such as polychaetes, molluscs and crustaceans, which occupy the bottom of the food chain and thus play a critical role in ecosystem functioning. At the same time, Australia has been establishing a network of marine parks throughout Australia's extensive exclusive economic zone and there are international obligations to sustainably manage these areas. This means that management plans need to be developed and implemented with ongoing monitoring. It remains

Pat Hutchings

Australian Museum

Rachel Przeslawski

Research Connect Blue

uncertain how we are to do this without understanding the full extent of diversity across all trophic levels.

A 2025 review of the status of Australian polychaetes that we co-published with colleagues in *Advances in Marine Biology* confirmed that taxonomic knowledge is generally much better in coastal waters than offshore. Our analysis was constrained to the distribution of type species, and unfortunately, people undertaking ecological surveys often fail to deposit vouchers in the relevant museum. The review also highlighted extensive collections in Australian museums that were only identified to group, family or genus, as well as unsorted materials.

Where we need to be

None of this is new information. It has been repeated many times with little action being taken, and it is only going to get worse. We urgently need to think outside the box.

How can we reverse the decline of taxonomy as a discipline in marine science?

1. We must clearly explain to managers of fisheries, marine

parks, and environmental protection agencies why it is critical to know the marine fauna, including the consequences of failing to do this.

2. We must source funding for taxonomical research and education, including philanthropic sources, engaging with museum directors and other executives and creating endowed chairs at museums.
3. When expensive research cruises, which cost millions, are being planned, a realistic budget must be included to identify fauna. Funding can be directed to existing researchers, but it is much better to offer mentored PhD scholarships and postdoc opportunities to transfer the skills necessary for subsequent employment. Those reviewing and assessing these proposals should draw attention to any such absences in funding allocation.
4. Researchers should consider collaborating with industry to gain financial support for taxonomic work. This requires careful negotiating to ensure the material is deposited in museums and the data are freely available.
5. Taxonomists also need to far better engage with university staff to foster collaboration, including through joint appointments, which could encourage students to take on PhDs with museum staff as co-supervisors.

Taxonomy is a foundational building block of science, and for this reason alone we should pay attention to its decline. But it's also a dynamic field with lively debate, exciting discoveries, and emerging technologies. Integrated taxonomy combines morphological, molecular, and even functional ecological approaches, meaning it can also appeal to a range of disciplines for the next generation of marine scientists.

Why is so much marine fauna undescribed?

- Taxonomists are primarily based in Australian museums, almost all of which are state funded. Other priorities of health, education and policing taking funding precedence. This has led to taxonomic research positions not being replaced as researchers retire.
- The loss of museum researchers means less interaction between museum staff and universities, and decreasing awareness of the resources and opportunities that museums offer to investigate Australia's marine biodiversity using morphological and molecular techniques.
- Students are being told at universities that there are no jobs in taxonomy, and systematics is rarely, if ever, taught. Thus, we are no longer training a potential next generation of taxonomists in skills including molecular biology, phylogeny and ecology.
- A decline in undergraduate field work means that students are less likely to see firsthand live specimens of invertebrates to foster their knowledge about these diverse fauna.

Further reading

> Taxonomy is a foundation of marine science, and it is in trouble. *Advances in Marine Biology* paper.

> The taxonomy of Australian polychaetes: Current knowledge gaps and steps forward for management. *Advances in Marine Biology* paper.

> AMSA [position statement](#) and Taxonomy Australia [decadal plan](#).

What can you do to support taxonomy?

Show up to taxonomic training sessions, build funding for taxonomic expertise into your next proposal, and encourage your institutions and leaders to invest in taxonomy and the museum collections that make it possible.

Use social media to highlight what is below our oceans and how it needs to be conserved.

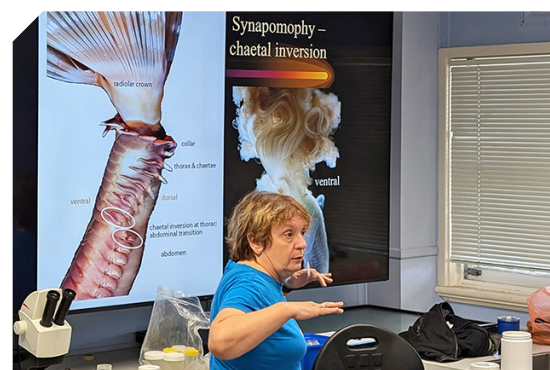
Participate in the upcoming AMSA2026 symposium *Beyond Names: Taxonomy Powering 21st-Century Marine Science* being run by Drs Kupriyanova and Hutchings and keep on the lookout for future opportunities.



Top: Pat Hutchings works with a student, showing characters useful in identifying a polychaete at a polychaete workshop held at Murdoch University November 2025.

Above: Chris Glasby and Robin Wilson at the Murdoch University workshop.

Images: James Tweedley



Left: A student photographs a live cirratulid during a polychaete workshop held at the Sydney Institute of Marine Science in March 2025.

Above: Elena Kupriyanova talks about sabellids at the polychaete workshop.

Images: Rachel Przeslawski



The tables have turned: hidden diversity in Australia's iconic table corals

Sage Rassmussen
University of Technology Sydney
and King Abdullah University of
Science and Technology

Coral reefs are globally considered biodiversity hotspots, supporting at least 25 per cent of all marine life and described as 'rainforests of the ocean'.

The true species richness of the corals themselves, however, has long been underestimated and many species remain undiscovered. This is largely because coral taxonomy for much of the past 50 years involved examining bleached coral skeletons to delineate species. Critically, there was no quantitative method for determining whether two similar-looking specimens were distinct species.

A pioneering project led by an Australian team from the Queensland Museum Tropics, James Cook University and University of Technology Sydney has sought to revise coral taxonomy and systematics. This extensive task has required global collections, molecular phylogenetic and morphological analysis, and deep dives into museum records to examine type material – the original specimen upon which a species description is based. Type specimens anchor species names to an evolutionary lineage and are the basis of all taxonomic and systematic research.

Molecular phylogenetic research in the past 25 years has demonstrated two fundamental issues with traditional taxonomic research. First, morphologically similar but distinct species have been lumped together as either geographic or morphological variations of a single species. Second, many species share similar morphology due to convergent evolution, but not because they are closely related.

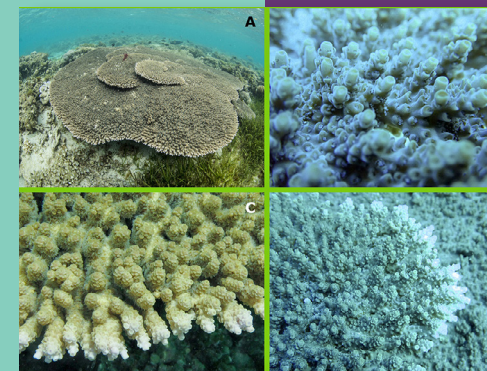
Tools are now available to address these long-known issues at the species level in diverse and taxonomically challenging groups such as *Acropora*. Combined genomic and morphological analyses across the Indo-Pacific show that *Acropora* (staghorn corals) are more diverse than currently recognised. We now face the task of revising the taxonomy of the 400+ nominal species of *Acropora* and presenting a new taxonomic framework.

True diversity revealed

Our most recent work combined morphological and molecular data in the first taxonomic revision within the *Acropora hyacinthus* complex. All species in the group share a similar tabular morphology. As of the late 20th Century, they were considered a single, morphologically variable species ranging from the Red Sea to French Polynesia. Our study, published in *Invertebrate Systematics*, shows that this hypothesis was a classic case of taxonomic 'lumping'.

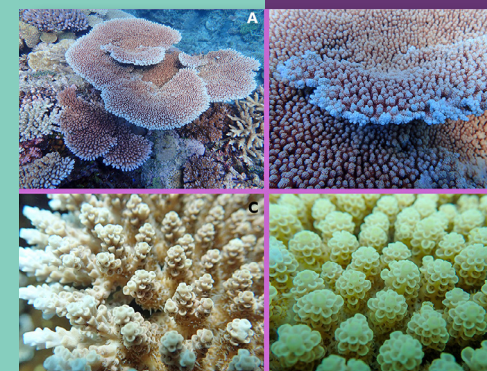
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Left: Coral taxonomist Dr Sage Rassmussen inspecting tabular *Acropora* corals at Orpheus Island on the Great Barrier Reef.
Image: Augustine Crosbie



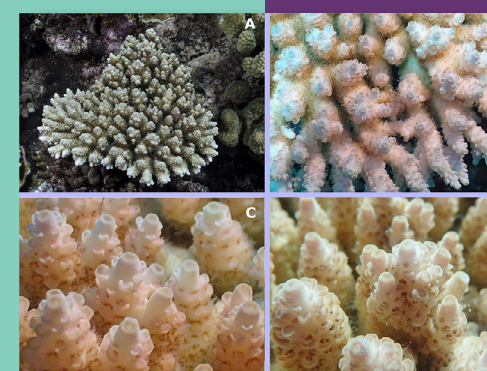
Acropora harriottae

This species is generally yellow-brown and has been recorded as *A. hyacinthus* on subtropical reefs of Lord Howe Island and the Solitary Islands. It is endemic to south-eastern Australia, extending from the southernmost Great Barrier Reef (GBR) [Keppel Islands and Capricorn-Bunker Group] to subtropical reefs of south-east Queensland, northern New South Wales and the Tasman Sea. Type locality is North Solitary Island.



Acropora tersa

This species is generally pastel-coloured (mostly pink, but also green or blue) and is characterised by the radial corallites which are very uniform in size and shape and arranged in neat rosettes. The name 'tersa', which means 'neat', refers to the uniform arrangement of corallites and even height of branchlets which are densely packed and extend to the edge of the colony plate. The species is common on the north-central GBR but rare in the south. It has also been recorded in other parts of the western Pacific including Fiji, Papua New Guinea and Palau. Type locality is Little Stevens Reef, central GBR.



Acropora kalindae

This species generally forms side-attached plates which are pink, light brown, or pale yellow and with thick, strongly tapering branches. It has large, conical axial corallites, often with multiple axial corallites on each branch. These characteristics led to the species being erroneously identified as *A. anthocercis*. It is currently known only from eastern Australia and is most abundant in the far northern GBR. Type locality is Myrmidon Reef.



Acropora nyinggulu

This green-brown species is a common tabular coral on Western Australian reefs. The radial corallites are labellate but vary considerably in size to the point where sometimes the lower wall is so reduced that the branchlets are almost smooth. The species is named after the local Indigenous name for the type locality, Ningaloo Reef. The species range extends south to the Houtman Abrolhos Islands, and potentially throughout the Indo-Philippine Archipelago as far north as Okinawa in Japan. The northern Pacific population may represent a distinct sister species. Type locality is Coral Bay, Western Australia.

Images: Adapted from
Rassmussen et al. 2025.



Continued from page 8

The previous authors had used the concept of ‘reticulate evolution’ as a theoretical shield to argue against revising the taxonomy of the group in the face of overwhelming quantitative data.

To clarify this complex group, we combined cutting-edge phylogenomics with systematic morphological assessment. By sequencing thousands of genomic loci – specifically ultra conserved elements and exons – we can identify the subtle genetic signatures that define a species, moving beyond the limited signal of traditional markers. Then skeletal characters are critically compared to original type material and descriptions. This dual-layered approach allowed us to detect fixed evolutionary differences between 16 evolutionary lineages previously obscured by superficial similarity or environmental variations.

Top left: Dr Tom Bridge from Queensland Museum and James Cook University surveying coral biodiversity on the northern Great Barrier Reef. Image: Matt Curnock

Top right: Professor Andrew Baird and Dr Julia Hung from James Cook University processing coral samples collected around the university’s Orpheus Island Research Station north of Townsville. Image: Gus Crossbie

The result is a paradigm shift: the concept of one cosmopolitan species has been overturned in favour of significant provincialism across the Indo-Pacific. Importantly, we show that endemism in corals has been overlooked through the description of two new species currently known only from Australia: *A. kalindae* and *A. harriottae*. Globally, the revision suggested the validity of 11 nominal species (removing nine) and formally described five new species, four of which occur in Australian waters.

Implications for conservation

The findings of this study have clear implications for Australian marine diversity, as accurate taxonomy is crucial for effective conservation and management. On the GBR, what was once considered a single species [*A. hyacinthus*] is now known to be at least four distinct species that are often living in sympatry. Further, tabular *Acropora* species in Western Australia are different to those on the east coast. This knowledge is critical for understanding ecosystem function and resilience. For example, variability in bleaching susceptibility previously attributed to intraspecific variability

may be a result of differential stress response between distinct species.

The endemism in Australia’s coral fauna is not reflected in the current coral taxonomy, placing many species at risk of ‘silent extinction’. For example, *A. harriottae* occurs only on the southernmost reefs of the GBR and a few small, isolated reef systems in subtropical south-eastern Australia – a region warming at three to four times the global average. Our ongoing research indicates this region supports many other endemic coral species, suggesting many coral species are far more vulnerable to extinction than threat assessments such as the IUCN Red List suggest.

This work marks the beginning of a required coral taxonomic revolution, underscoring the vital importance of integrating new genomic technology with historical museum records and a little detective work.

More information

> [Project Phoenix](#)

> [Invertebrate Systematics paper](#).



Listening to
humpback whales:

migration insights from
passive acoustic monitoring

Read on...



Listening to humpback whales...

Jan-Olaf Meynecke Griffith University

Amelia Street Griffith University and Marine Mammal Foundation

Leah-Celine Redell University of Oldenburg

Each year, the eastern Australian subpopulation of humpback whales (*Megaptera novaeangliae*) undertakes a long-distance migration between high-latitude feeding grounds in Antarctica and low-latitude breeding areas in the Coral Sea.

Throughout this migration, these whales travel close to shore, passing through coastal regions heavily used for boating, fishing and tourism, such as the Gold Coast bay in southern Queensland and Batemans Bay on the south coast of New South Wales. As climate change and coastal development continue to reshape marine environments, understanding when whales use these areas, how long they remain, and how their presence changes across the migration season is increasingly important.



Capturing whale song from beneath the depths – Olaf Meynecke

The Whales and Climate Research Program (WCRP) hosted at Griffith University forms part of a multi-year passive acoustic monitoring (PAM) initiative along Australia's east coast migration corridor supported by Google and in partnership with Curtin University. We are using site-based studies to understand humpback whale occurrence across multiple regions, migration timing, and the environmental factors that influence these patterns.

My colleagues and I started the WCRP journey in 2018 to assess the impact of climate shifts on whales. In 2023 the program joined the Decade of Ocean Science for Sustainable Development (2021–2030) with the aim to achieve implementation of its research findings into policy and management by 2030. The program, funded by a private charitable trust, has brought 40 institutions and organisations from Australia, South Africa and South America together, generating over 60 scientific publications on the topic of whales and climate with a focus on humpback whales in the Southern Hemisphere. Working across countries in a multidisciplinary team has been a rewarding challenge. It has taught me a lot about the importance of passion and dedication to keep notoriously underfunded marine science going and bridging administrative hurdles across different institutions.

Initially, our research focused entirely on collecting sighting data and satellite tagging humpback whales to fuel our studies, such as the development of an agent-based model to simulate the movement of humpback whales along the eastern coast of Australia. However, the regional and temporal bias in the data is a major barrier and can thus be complemented by acoustic data. Humpback whales are highly vocal animals, widely recognised for their complex song performed exclusively by males. Both sexes produce a diverse range of social calls that can travel long distances underwater, making them indicators of presence even when animals are out of sight.

To further demystify factors related to the movements and distributions of humpback whales, we deployed autonomous underwater microphones for several months across different regions along the eastern coast of Australia to record the soundscape throughout their migration. Once retrieved, we visually and aurally examined thousands of hours of time-stamped recordings for humpback whale vocalisations and started the process of developing automated detections to drive existing detectors within Google AI. These data have provided several avenues for student projects and collaborations with our first preliminary results surfacing.

Top: Humpback whale calls in acoustic software Raven Pro.

Above left: Batemans Bay.

Left: Humpback whales on their southward migration. Images: Leah-Celine Redell



Working across countries in a multidisciplinary team has been a rewarding challenge.



Humpback whale habitat use: insights from Batemans Bay – Amelia Street

Situated along the migratory pathway of eastern Australian humpback whales, Batemans Bay lies far from both the subpopulation's tropical breeding grounds and Antarctic feeding areas. Although whales are regularly sighted here from coastal headlands and whale-watching vessels, their temporal occurrence across the migration season had not previously been examined. My interest in addressing this knowledge gap developed through my background in marine mammal bioacoustics as a research assistant with the Marine Mammal Foundation. I analysed long-term passive acoustic recordings from Port Phillip Bay to examine patterns in the acoustic presence and behaviour of Burrnun dolphins (*Tursiops australis*). This work reshaped how I think about marine systems, revealing how much

ecological activity occurs beyond what we can observe visually. I became interested in applying similar methods to highly vocal migratory species such as humpback whales, whose seasonal occurrence and migration timing along the eastern coast are still largely inferred from visual observations.

Building on this experience, my honours research was conducted in collaboration with the WCRP, Curtin University's Centre for Marine Science and Technology, and the Marine Mammal Foundation. I used PAM data to investigate humpback whale acoustic presence in Batemans Bay throughout the 2024 migration season.

An autonomous recorder was deployed from May to September, operating continuously for 24 hours a day, resulting in more than 100,000 minutes of acoustic recordings. Humpback whale calls were first detected in late May, with sustained daily detections occurring shortly thereafter and

continuing throughout the monitoring period. A key finding was the consistent acoustic presence across the season, with no clear separation between northward and southward migration phases. At a finer temporal scale, distinct diel patterns also emerged. Detections were highest during dawn, dusk, and night, and lowest during daylight hours, suggesting that low light periods may represent important contexts for acoustic activity and communication. This project strengthened my appreciation for PAM as a non-invasive approach to investigating humpback whale occurrence and migration timing. I am particularly interested in examining interannual patterns in humpback whale acoustic presence, comparing Batemans Bay with other locations along Australia's eastern coast, and investigating the environmental and behavioural drivers of vocal activity. I look forward to exploring these questions through PhD research in the near future.



Timing is everything: humpback whale migration patterns – Leah-Celine Redell

Growing up on Germany's northern coast, my first encounters with North Sea harbour porpoises sparked my deep, lasting fascination with marine mammals, which carried me all the way to Australia to complete a master's thesis project on humpback whales. My research is conducted in collaboration with the Helmholtz

Institute for Functional Marine Biodiversity at Carl von Ossietzky University of Oldenburg. It examines the timing and environmental drivers of the humpback whales' southward migration through the Gold Coast bay, which acts as an important migration corridor and resting habitat, especially for mothers and calves. Seeing the first humpback whales during my fieldwork there made me grateful to study these graceful giants.

Using long-term PAM data, I am analysing six years of hydrophone recordings, tracking humpback whale call rates over time and identifying migration timing by detecting call declines. Listening to their diverse vocalisations and complex songs always brings me back to the excitement and curiosity that first drew me to study marine mammals. Currently, I am processing and analysing the acoustic

recordings alongside environmental data, including sea-surface temperature and sea ice extent, at their feeding grounds in Antarctica. By integrating these acoustic data with environmental variables I aim to understand how climate-driven factors influence the timing of humpback whale migration.

With growing human pressures and climate change reshaping marine ecosystems, understanding when and why whales use this coastal habitat feels more urgent than ever. I hope that my research helps to protect these critical habitats, ensuring safer passage for humpback whales during their remarkable journey. After all, healthy oceans depend on whales, just as whales depend on healthy oceans. I hope to continue this work through a PhD in cetacean ecology and bioacoustics.

Read more on the Whales and Climate Research Program website.

Left: The passive acoustic recording device deployed in Batemans Bay, 2024. Image: Beneath the Bay, Batemans Bay





Committing to Science in Sea Country

Rachel Przeslawski Research Connect Blue

Amanda Williams Southern Cross University and Ngiyambandigay Wajaarr Aboriginal Corporation

Laura Parker Department of Primary Industries and Regional Development

Aboriginal and Torres Strait Islander peoples have cared for and protected Sea Country for millennia, developing a profound understanding of the ocean and its rhythms through deep listening and observation.

Their relationships with marine life are woven through in totemic species, cultural practices, and some of the world's oldest continuing fishing traditions. This knowledge system spans sea, land and sky, grounded in a holistic and relational worldview that recognises humans as part of nature rather than separate from it.

This perspective differs traditionally from Western or Eurocentric approaches, which have often been reductionist and positioning humans as dominant over the natural world. This enduring custodianship makes Indigenous communities essential partners in shaping how Australia understands, manages and sustains its oceans.

AMSA and Indigenous partnership

Every year AMSA hosts a conference to bring together Australia's marine science community and share knowledge. Since 2016, the conference has also supported an annual Indigenous workshop. The first workshop was held on Ngatiawa lands (Wellington) at a joint conference with the New Zealand Marine Sciences Society. This workshop was largely led by non-Indigenous people who facilitated panel discussions and presentations.

More recently, these workshops have shifted from a focus on Indigenous engagement to Indigenous partnership

and leadership, and they are now wholly led by Indigenous scientists and Traditional Owners. Indigenous science and knowledge are no longer separated from the main conference program but instead woven throughout most conference symposia. Additionally, two documents now provide guidance. The *AMSA Strategy 2022–2028* sets a priority to 'facilitate Indigenous partnerships in marine science', and the *nipaluna Statement* steers members, partner organisations, and Indigenous scientists in their commitments towards our oceans and to each other.

Journal special collection

Following on from these activities, several AMSA members have worked to bring together the 'Science in Sea Country' special collection in *Marine & Freshwater Research*. The collection showcases studies framed with an Australian Indigenous perspective and led by Indigenous scientists, community members and rangers, as well as work centred on cultural knowledge and community priorities.

Publications were developed collaboratively between these groups to ensure a diversity of voices, and they were reviewed by at least one Indigenous scientist. One example is a study examining Bara-Baruga (mangrove) ecosystem recovery after a hailstorm in Boambee Creek, Gumbaynggirr, NSW.



Above left: A glimpse into the AMSA2022 Indigenous workshop in Cairns, North Queensland. Image: Rachel Przeslawski

Above right: Gumbaynggirr Rangers and Southern Cross University students in the field at the mangrove rehabilitation site of Boambee Creek, NSW. Image: Southern Cross University

Left: From the Baru-Baruga project featured in the 'Science in Sea Country' Special Edition. The mangrove rehabilitation site of Boambee Creek, NSW. Image: Southern Cross University

This collaborative effort between the Gumbaynggirr Rangers and Southern Cross University also contributed a broader understanding of factors of health and resilience for Baru-Baruga (mangrove) forests.

While we can't divulge details on every article, the special collection covers other topics including pipi populations, urchin barrens and youth education. All highlight the importance of elevating Indigenous Ecological Knowledge to restore and sustain marine organisms and ecosystems. We hope that this collection accentuates the outstanding contribution of Indigenous scientists and Indigenous knowledge to our understanding of Australia's marine environment.

Sea Country at AMSA2026

AMSA is excited for 2026 as we prepare for our conference in Canberra under the theme 'Marine Science with Impact'. A trio of volunteer committees is working to make this conference a smashing success, including our Indigenous Committee chaired by Amanda Williams. We're hoping to have another dynamic program entwined with Indigenous knowledge, creativity, and culture.

Indigenous knowing of Sea Country will be embedded throughout the conference, with dedicated spaces for Indigenous-led yarns and the integration of Indigenous science across symposia, plenaries and workshops. The Indigenous Committee is working closely with the scientific and organising

committees to develop a program that elevates Indigenous leadership and showcases research grounded in Community priorities. This includes Indigenous-led and two-way research partnerships that demonstrate how Indigenous Ecological Knowledges strengthen marine conservation, restoration and policy outcomes.

Dedicated networking opportunities, culturally safe spaces and targeted workshops will help ensure Indigenous delegates feel supported, visible and valued. These forums can also foster meaningful conversations about best practice when working with Indigenous communities, and about prioritising respectful, accessible ways of sharing project outcomes. This is particularly important with the Indigenous communities that are most affected by the degradation of our marine waters.

Holding the conference in Canberra offers an opportunity to reflect on how marine science informs national policy and environmental decision-making. By placing Sea Country within the theme 'Marine Science with Impact', AMSA 2026 affirms that impactful marine science in Australia must meaningfully engage with and respect the rights, knowledge and aspirations of First Nations Peoples.

Further reading

> *Marine & Freshwater Research* Science in Sea Country special collection.

> *AMSA Strategy 2022–2028* and *nipaluna Statement*.

Left: Doc Reynolds, winner of the AMSA2024 Melissa George Sea Country Award. Image: Rachel Przeslawski





The ocean was home, and curiosity did the rest

“I grew up on Réunion Island, a small volcanic island in the Indian Ocean roughly 500 kilometres south-east off the coast of Madagascar.

Living between corals glowing in the shallows and the high volcanic mountains, the coastline is impossible to ignore, no matter which direction you drive.

The ocean was not something I thought about deeply as a child. The ocean was simply part of life. Growing up surrounded by that beauty, you would think marine science would

Below: Mesocosm set-up assessing the thermal tolerance of *P. australis* seedlings.

Inset: Growing *P. australis* seedlings in the mesocosm. Images: Clement Tremblin

have felt like an obvious calling, yet as a child, I actually wanted to be a firefighter, which was arguably more practical when living on a volcanic island prone to bushfires.

Entering the microcosm of Foraminifera

My introduction to marine science and research journey did not arrive through a transformative dive on a tropical coral reef. Mine was from a missing bus in Perth on my first day of class at the University of Western Australia. While waiting there, I found myself in an unexpected conversation with a stranger who turned out to be Professor David Haig. He mentioned that he studied the ancient sea

Clement Tremblin
Edith Cowan University

through the lens of something called foraminifera. Something about the way he spoke about them made me lean in rather than walk away.

As a volunteer with Professor Haig, I began investigating how fossilised and living foraminifera organise themselves across different microhabitats of Western Australia. Foraminifera are single-celled organisms that have existed on this planet for hundreds of millions of years, living in almost every marine environment on the Earth from the sunlit surface of the open ocean to the cold silence of the deep seafloor. For most they are invisible to the naked eye, and yet each one constructs a shell of extraordinary



“While terrestrial ecologists study their world from the outside looking in, we enter ours.

Clement photographing *P. australis* flowers and checking the viability and sign of fruiting in Geraldton. Image: Anna Frows, Edith Cowan University
Inset: Up-close and personal with a foraminifera: a time capsule of the sea. Image: Clement Tremblin

intricacy, often extremely colourful due to their symbionts, which shows a tiny architectural record of the environment and habitat they lived in. Their shells carry information about water temperatures, ocean chemistry and their living ecosystems that vanished long before humans existed to observe them.

Finishing my bachelor's degree did not mean leaving foraminifera behind. The more immersed I became in marine science, the harder it became to ignore the larger story unfolding around it. On a dive, I witnessed seagrass flowering underwater, and something shifted again. While terrestrial ecologists study their world from the outside looking in, we enter ours. Surrounded by the kind of silence that only exists underwater, I understood that I had barely begun to ask the right questions, which then brought me to my master's degree at Edith Cowan University.

Thermal tolerance in early life stages of *Posidonia australis* seedlings

Posidonia australis, commonly known as ribbon weed, forms some of the oldest and most extensive seagrass meadows along Australia's southern coastline. They shelter fish and crustaceans, support fisheries that coastal communities depend on, lock away carbon at rates rivalling terrestrial forests, and stabilise the seafloor in

ways that protect entire coastlines. Losing them does not just mean losing a habitat but also biodiversity, blue carbon stores, and ecosystem services that no restoration budget could easily replace.

They are also disappearing. As climate change accelerates, marine heatwaves are becoming more frequent and severe, and the meadows are struggling to keep pace. Working with Dr Marlene Wesselmann, Professor Kathryn McMahon, and Nicole Said, I studied how *P. australis* seedlings in Western Australia respond to ocean warming, comparing populations from Geraldton in the north down to Albany in the south. Seedlings are the future of these meadows because as they regenerate; they carry the genetic diversity a species needs to adapt over time. We are not simply measuring survival but also measuring growth rates, metabolic responses, and physiological indicators to understand whether certain populations carry a natural thermal tolerance that could one day inform how we restore and protect these meadows.

Building networks

Science is not something you do alone. I discovered AMSA in 2024, and I wish I had it found sooner. The Rottneest Island workshop organised by AMSA WA brought together early career researchers and masters/PhD students from across Western Australia, all working on different problems but driven by the same underlying

motivation. In July, the last AMSA conference in Melbourne expanded that to a national scale, showing me the breadth of research being conducted from the tropics to the Southern Ocean and the collaborative spirit driving it. For someone who grew up on a small island where marine science was very little part of the conversation, finding that community has been one of the most meaningful and unexpected gifts of this entire journey.

Looking forward

In a couple of months I will start my PhD which will follow my previous work on how to restore meadows in a warming world, looking at how and why *P. australis* flowers differently across Western Australia, what those patterns reveal about the relationship between temperature and reproduction, and what they might tell us about which populations are most at risk. Looking back at the path from Réunion to the tiny world of foraminifera and now vast seagrass meadows, I can trace the logic of it now. Perhaps I wanted to be a firefighter once, but that is not so far from what I am doing. The fire is just quieter here, burning unseen beneath the surface making it even more dangerous as a result. Our challenge now is learning to listen to the nature call... to understand it before it is too late.





From catchment to coast: urban runoff as a major source of PFAS to Port Phillip Bay

Phoebe Lewis Environment Protection Authority Victoria

Erica Odell and Vincent Pettigrove RMIT University



Per- and polyfluoroalkyl substances (PFAS), often called ‘forever chemicals’, are used in a range of products including non-stick cookware, waterproof textiles, firefighting foams and electronics.

Their chemical stability makes them highly persistent in the environment, where they can travel long distances and accumulate in wildlife.

While wastewater treatment plants and industrial sites are often considered the main pathways of PFAS to marine environments, our recent study of Melbourne’s major rivers and creeks flowing into Port Phillip Bay tells a more complex story. We found that urban surface water runoff is a significant, and in fact dominant, pathway delivering PFAS to the bay. Port Phillip Bay provided an ideal case study, as it receives inputs from multiple urban waterways and is a well-studied, highly valued ecosystem where stormwater and rainfall are known to be major pathways of pollution.

Monitoring PFAS in urban waterways

We sampled seven major waterways discharging into Port Phillip Bay over a two-month period in 2023 (early March to late April), combining weekly water samples with specialised passive samplers that accumulate contaminants over 28 days. Together,

these approaches captured both short-term variability and longer-term contaminant exposure.

Of the 52 PFAS we tested for, 25 were detected in the water samples and 26 in the passive samplers across the sampling period. Concentrations varied between catchments, with the Maribyrnong River showing the highest average levels, followed by Kororoit Creek and Merri Creek. The Yarra River and Werribee River showed lower overall concentrations, but PFAS were still consistently present.

Across all sites, PFOS (perfluorooctane-sulfonic acid) was the most frequently detected chemical, which is

environmentally persistent and well known for its ability to bioaccumulate in aquatic food webs. Shorter-chain replacement PFAS were also detected, reflecting shifts in manufacturing and regulatory trends as global bans come into effect. Importantly, PFAS contamination was not confined to a single hotspot, but rather, was widespread across Melbourne’s urban catchments.

What drives PFAS patterns?

To better understand why PFAS profiles differed between catchments, we linked chemical data with detailed land-use information and hydrological modelling. We anticipated

that traditional point sources such as wastewater infrastructure or airports would dominate patterns. Instead, broader urban and industrial land uses were more consistently associated with PFAS concentrations at the catchment scale.

Residential areas, rural-residential zones, and industrial land collectively appeared to influence PFAS levels more than individual, discrete facilities. This points to more diffuse sources (such as stormwater runoff from roads and roofs, residues from consumer products, legacy contamination in soils, and recycled materials applied to land) as potential key contributors. Rather than originating from a single discharge point, PFAS are likely mobilised across the urban landscape and transported via freshwater pathways to the bay. Samples collected during rainfall events did not strongly explain concentration differences, although further event-based sampling would help clarify how stormwater pulses influence PFAS transport.

Surface water versus wastewater: a surprising comparison

One of the most significant findings came from comparing annual PFAS loads entering Port Phillip Bay. Using measured concentrations and flow data, we calculated that surface waters delivered roughly 57 kg of PFAS per year (across the 52 compounds) into the Bay. When focusing on a commonly reported subset of 19 PFAS, combined inputs from

Above left: **Kororoit Creek enters Port Phillip Bay near Altona in Melbourne’s western region.**
Above right: **Coastal view from Rye foreshore looking across Port Phillip Bay toward Mount Martha and Mornington.** Images: Monica Tewman

surface waters and treated wastewater totalled about 82 kg annually.

These findings suggest that treated wastewater discharges contribute substantially less PFAS to the bay compared to surface waters. Even allowing for uncertainties, urban rivers and creeks delivered more than double the PFAS load of treated wastewater effluent. This also suggests that the common assumption that wastewater treatment plants are the primary source of PFAS to coastal environments may not fully capture the dominant pathways. While wastewater remains an important contributor, our results indicate that diffuse urban runoff is the larger overall source of PFAS to Port Phillip Bay.

From a management perspective, this distinction is critical. Point sources are relatively straightforward to regulate and monitor, whereas diffuse stormwater inputs are more complex to manage and require catchment-scale solutions.

Advancing catchment-to-coast science

Because PFAS persist and can bioaccumulate, even low concentrations in rivers may translate into higher exposures for fish, seabirds and marine mammals over time. Given the recreational and ecological value of Port Phillip Bay,

understanding these upstream inputs is essential for protecting marine biodiversity and human health.

Overall, this research highlights the importance of integrating chemical monitoring, passive sampling and catchment modelling to understand how contaminants move from land to sea. By screening a wide suite of PFAS, including both legacy and emerging compounds, and linking them to land use and flow data, we provide a clearer picture of how urban landscapes influence marine contamination.

For marine scientists, this reinforces that coastal water quality is fundamentally connected to upstream land management. Addressing persistent pollutants such as PFAS will require coordinated, catchment-wide approaches that extend well beyond traditional point-source regulation. Continued research to improve analytical detection capabilities and understand the ecological consequences of PFAS exposure is essential if we are to safeguard Australia’s coastal ecosystems into the future.

Read the *Environmental Research* paper.



Top: **Queenscliff at the entrance to Port Phillip Bay.**

Right: **View from the South Wharf Promenade toward Melbourne CBD.** Images: Monica Tewman

Bringing early career professionals onboard with the UN Ocean Decade

Have you ever wondered how you can make significant contributions to the future of our oceans early on in your career?

Perhaps you're seeking opportunities to participate in professional development, or high-level discussions and meetings. Perhaps you're an experienced professional wondering how you can contribute to empowering the next generation. If any of these questions or ideas resonate with you, consider joining or supporting the Early Career Ocean Professionals (ECOP) Network Programme!

ECOP origins and vision

ECOPs are individuals who self-identify as being early in their career, with 10 or fewer years of professional experience in any ocean-related field. The ECOP Programme emerged from the First Global Planning Meeting for the United Nations Decade of Ocean Science for Sustainable Development (UN Ocean Decade) in 2019, as the few ECOPs in the room realised they were underrepresented. Their idea was to seek ECOP representation in UN Ocean Decade activities and events, emphasising diversity (professional, racial, gender, demographic, and generational) to ensure engagement and equal opportunity for knowledge generation, assimilation and transfer.

The ECOP Programme was formally endorsed by the UN Ocean Decade in January 2021. Its vision is to: "elevate and strengthen the diverse perspectives of new generations of ocean professionals through a collective voice, ensuring that knowledge is transferred between

experienced professionals and ECOPs to promote ocean sustainability for 'The Ocean We Want'". ECOP participation become an integral component of committees, workshops, panels, events, task teams, expert groups, and other UN Ocean Decade structures and activities. In a nutshell, the programme empowers ECOPs with professional development and networking opportunities at local, regional, national, and international scales with ocean stakeholders through the UN Ocean Decade framework.

The Australia/New Zealand National Node

The programme has become a global movement with 8,238 members in 168 countries, organised into six regional Nodes, more than 60 national Nodes, six task teams, and 17 endorsed projects as of February 2026. The Australia/New Zealand Node was launched during the 2024 NZMSS-AMSA Conference to serve as a regional focal point for collaborating with the Global ECOP Programme and disseminating relevant materials, opportunities, and news. We strongly encourage diversity within our membership and invite all to join, especially those who self-identify as belonging to under-represented groups in science, technology, engineering and mathematics, including Traditional Owners, Aboriginal and Torres Strait Islanders, and Māori custodian groups.

Rita M. Franco-Santos
University of Western Australia
Danielle Smith
University of Queensland
Rosa M. Cañedo-Apolaya
University of Tasmania

“Become part of the ECOP community to connect, collaborate, and contribute.”



Membership benefits

ECOP Programme membership offers six main benefits.

Members can learn about national and international opportunities which are compiled into a database and shared on social media platforms, especially LinkedIn.

Members can attend webinars hosted by the programme on a wide variety of topics and enrol in training organised in cooperation with the Ocean Teacher Global Academy.

Networking is an important benefit. As a member, you can connect with like-minded individuals, rely on other ECOPs for support, take advantage of work travel to connect with distant ECOPs, and engage with and learn from professionals at other career stages.

Members can connect and collaborate with national and international bodies and organisations and attend events of relevance, such as UN Ocean Decade Conferences and Ocean Sciences Meetings (next in April 2027 and February 2028 respectively).

Engaging with the network can increase career prospects for those who take the chance to organise activities (ocean literacy working groups, webinars), volunteer, join a UN Ocean Decade structure (such as expert groups), or coordinate a regional/national node or task team.

Members have access to relevant content and have a platform to amplify their voice. Lastly, you can be highlighted among and beyond the community by one of the programme's campaigns (such as ECOP Stories, ECOP Conversations, My Coastline).

Experienced professionals welcome

Other career stages are also welcome as ECOP Programme partners. You can help transfer legacy knowledge to the next generation of ocean leaders and professionals by speaking

during webinars, providing training content, and financially supporting coordination, activities, and event travel. In return, ECOPs can bring in fresh, innovative ideas to advance your work and increase its efficiency, relevance, and impact. Your association to the programme will also increase your regional and global visibility.

Since stepping into the Australia/New Zealand National Node coordinating team in July 2025, we have been planning targeted activities to provide further benefits to ECOPs in the region. These include:

- promoting opportunities via our LinkedIn page;
- a webinar series and a campaign to highlight our members;
- AMSA conference workshops and events;
- exploring potential mentorship pathways and collaborative initiatives on specific areas of interest (such as the Biodiversity Beyond National Jurisdiction treaty implementation); and
- supporting the establishment of local node groups (such as the Western Australia ECOP Chapter).

Not a member yet? Become part of the ECOP community to connect, collaborate, and contribute. Keep up to date with our offerings via member emails and through the website and LinkedIn page. You can offer suggestions, feedback, and propose webinars or other activities by email or connect with us in person in Perth, Brisbane, and Hobart!

For more information see the [Australia/New Zealand Node website](#) and [LinkedIn page](#).

Top: ECOP past and current coordinators (Global Programme, nodes and task teams) and volunteers at the 2026 Ocean Sciences Meeting at Glasgow, Scotland, after hosting a workshop for professionals at any career stage that are interested in the programme..

Image: Shenghui Li, ECOP Programme

Above left: ECOP dinner during the Ocean Sciences Meeting at Glasgow, UK, in February 2026. Image: Shenghui Li, ECOP Programme

Above right: Launching the Western Australia ECOP Chapter at the Indian Ocean Marine Research Centre, University of Western Australia, on 15 January 2025.

Image: Eric Jorden Raes



AMSA's mission is to advance marine sciences in Australia. The basic object of AMSA is to promote, develop and assist in the study of all branches of marine science in Australia and, by means of publications, meetings, symposia and such other methods as may be considered appropriate, to provide for the exchange of information and ideas between those concerned with marine science.

Membership is open to scientists or corporate bodies engaged in marine research, to students of marine science and anyone, via the Associate Member route, with an interest in any aspect of marine science approved by the Council of the Association. AMSA aims to improve the public's image of marine scientists and to forward their interest generally.

Octopus. Image: Zainab Saria

CORPORATE MEMBERS



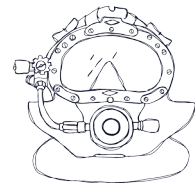
Research
Connect
Blue



elgin
associates



Led by practical experience



TOTAL DIVE SOLUTIONS



dive in.
explore.
discover

