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Message from the Editor

Welcome to the first edition of Endpoint for 2019! While it is only a few months into the new year, SETAC AU members have been very busy and we have [regional reports](#) from New South Wales, Queensland, South Australia, Tasmania, Victoria and New Zealand (I think this may be a record number of reports!). There have also been a number of events recently and we have reports on the ANZG Water Quality Guidelines Workshop in [Sydney](#), the workshop on improvements to statistical methods used in water quality guideline value derivation in [Townsville](#) and the Science & Technology Australia (STA) [President and CEO Forum](#). Dustin Hobbs and Rachael Smith have also written an insightful report on [Science meets Business](#) from late last year.

Every issue we feature SETAC AU members and this issue we have New Zealand (North Island) Rep Jenni Gadd featured in the [General Member Profile](#) and new Student Rep Drew Szabo featured in the [Student Profile](#). You can also read about the research findings of the 2018 SETAC AU Postgraduate Research Publication Award recipient Steph Chaousis in the [Student Corner](#) Section. The Asia Pacific Student Advisory Council (APSAC), which has a great new logo, is currently asking for feedback from SETAC AU students and you can find more about their online survey in the [Student Corner](#) section.

The big event coming up very soon is SETAC-AU 2019 in Darwin. Early bird registration has been extended to the 28th April and you can find out more about the conference in the [What's Happening](#) section or at www.setac-au2019.com.au. There are also more ANZG Water Quality Guidelines Workshops coming up in Melbourne and Darwin.

As always, thank you everyone who has taken the time to contribute to this edition of Endpoint and happy reading!

Best wishes

Peta Neale (p.neale@griffith.edu.au), **Communications Officer**



From the President

Welcome to another chock-a-block edition of Endpoint! Since our last edition, the council has been extremely busy bringing the membership the Darwin conference and the ANZG Water Quality Guidelines workshops. I'd like to thank the executive team for all their recent help. They've fielded numerous emails and made quick decisions to get these events off the ground and I appreciate all the support!

The Darwin conference organisation has been going extremely well. Most importantly, we can announce that a lovely outdoor venue at Pee Wee's restaurant has been booked for the conference dinner. We have had an excellent response from sponsors and we are going to have a fabulous exhibition, for which we've just doubled the space we originally allocated. We have many Sponsored Special Sessions, which will bring focused content and amazing experts from here and abroad to speak at the conference. We are also excited to be offering three capacity building workshops, 1) an ANZG Water Quality Guidelines workshop to be held within the conference agenda, 2) a PFAS training workshop on the Thursday after the conference and 3) a Sunday members-only workshop focused on prioritising Australasia's Chemicals of Concern, which is supported by the Australasian Interest Group for Environmental Contaminants (aka the WiOW team). We are now working to review the submitted abstracts and put together a great program. Acceptance notifications will be sent in the next couple of weeks, so if you have submitted an abstract keep an eye on your inbox. Early-bird registrations were extended and close 28th April! See the website for details www.setac-au2019.com.au.



The council has also been busy organising the workshops on key features and application of the revised Australian and New Zealand Guidelines for Fresh and Marine Water Quality, i.e. www.waterquality.gov.au/anz-guidelines. Thus far, we have held one workshop in Sydney on the 3rd April ([report in this edition of Endpoint](#)), there is one planned for Melbourne (16th May) and during the Darwin conference (9th July). These events have been made possible thanks to sponsorships from Sydney Water and the Victoria Government and we've also received fantastic support from the Australian Contaminated Land Consultants Association (ACLCA). The workshops are key capacity-building exercises aligned with SETAC-AU's mission and we've had an amazing response from people. We are now working towards bringing these event to other capitals and New Zealand. Details for the Melbourne workshop can be found on our website (<https://australasia.setac.org/index.php/meetings/melbourne-workshop/>). If you are in Victoria, please spread the word and come along yourself.

SETAC-AU's draft Global Horizon Scanning Project (GHSP) paper has been submitted to Integrated Environmental Assessment and Management (IEAM) for publication. This important paper is the result of a workshop held before the Nelson conference in 2015. It describes the top 20 priority research areas for our fields and will be an important lobbying tool to encourage support for environmental toxicology and chemistry in our region. It was a gigantic effort and I especially need to thank Sally Gaw and Bryan Brooks for their tenacious leadership and pushing this through to submission. Also a big thank you to the co-authors that volunteered their time to the workshops and writing the paper. Once published, the council will consider how to best communicate the outcomes of this project and how to make the most out of this valuable resource.

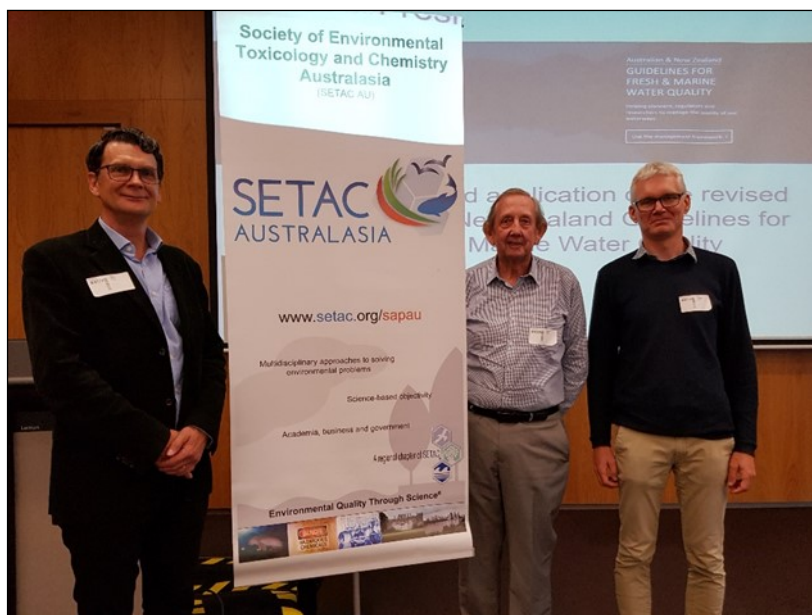
The SETAC World Council are working on an initiative involving co-ordinated and internally communicated SETAC outreach about our sciences. They have some ideas about what the outreach would look like and they would like to see SETAC-AU participate in this initiative and share with other geographic units. To accomplish this, there would be an internal communication effort where the SETAC World Council celebrates experiences at all geographic scales within SETAC. I've expressed some needs of the chapter where this outreach would be strategically useful (e.g. GHSP translation for stakeholder engagement). Please let me know if you'd like to get involved.

Andrew Harford, President

Regional Reports

ANZG Water Quality Guidelines Workshop

SETAC AU hosted the first in a series of workshops on the key features and application of the revised Australian and New Zealand Guidelines for Fresh and Marine Water Quality on 3rd April 2019 in Sydney. The event was sponsored by Sydney Water with support from the Australian Contaminated Land Consultants Association (ACLCA). Approximately 100 people from a range of sectors including industry, regulators, consultants, state and federal government organisations gathered to hear about the changes to the guidelines and water quality management framework. The three speakers, **Graeme Batley** (CSIRO), **Ross Smith** (Hydrobiology) and **Rick van Dam** (ERISS), provided a plethora of information that was easy to digest and left the audience feeling full and satisfied. Be sure to look at the updates on the website and sign up for notifications of new information as the website continues to be updated (<http://www.waterquality.gov.au/anz-guidelines>).



Workshop presenters (left to right): Ross Smith, Graeme Batley, Rick van Dam

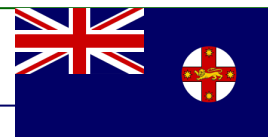


(Left) Sydney Water sponsors and co-organisers, with workshop presenters (left to right): Merran Griffith, Graeme Batley, Jenny Rogers, Rick van Dam, Ross Smith, Catherine Cunningham. (Right) Attendees of the workshop at the Sydney Water building in Parramatta.

Lisa Golding (lisa.golding@csiro.au), New South Wales Regional Representative

Regional Reports

New South Wales



CSIRO Land and Water, Lucas Heights, Aquatic Contaminants Group, Monique Binet (Monique.Binet@csiro.au) and **Jenny Stauber** (Jenny.Stauber@csiro.au)

In November 2018, we welcomed **Christoph Naab**, a Masters student from University of Augsburg, Germany for 6 months to work on an internship project comparing the toxicity of complex mixtures in continuous and pulse exposures to tropical copepod *Acartia sinjiensis* larval development. Christoph and **Kitty McKnight** worked collaboratively under **Monique Binet**'s supervision to produce high quality work, which will be presented at the upcoming SETAC conference in Darwin. It was sad to farewell Christoph last week, as we always enjoy the energy and enthusiasm that internship students bring to the group.

Monique and Kitty were lucky enough to spend some time at the AIMS SeaSIM facility in Townsville late last year along with **Mandy Reichelt-Brushett** for a collaborative project to investigate the toxicity of manganese to adult corals (*Acropora muricata*). This project stemmed from work first done by our group over 15 years ago, but was unpublished (commercial-in-confidence report) and was followed by a pilot study done in 2018, where the unique sensitivity of adult corals to manganese was identified. Our work enabled these sensitive species to be incorporated into current revisions of the marine ANZ Mn guideline value and the findings will be presented at SETAC AU Darwin.

Monique has also been working with Merrin, Kitty and Lisa carrying out toxicity assessments of PFWs, with particular attention being placed on determining ways in which variation and trends in PFW toxicity over time can be tracked using a full suite (8 species) of toxicity tests and a reduced suite (3 species) of toxicity tests. Of particular concern to industry is the ability to determine acceptable levels of toxicity within a monitoring program and how to assign trigger values for further action when only three species are used for highly complex and toxic mixtures.

Antony Lockyer, PhD candidate with University College London, Australia and supervised by Dr **Craig Styan** is now completing his thesis titled "Marine Invertebrate Sperm as an Indicator of Metal Toxicity". Antony spent time in the CSIRO labs late last year completing experiments to determine the effect of metals on the acrosome reaction in the serpulid, *Galeolaria caespitosa* using flow cytometry. His first paper, published in *Ecotoxicology and Environmental Safety* and co-authored with Monique Binet, identifies the importance of sperm density in assessing the toxicity of metals to fertilisation of broadcast spawners. Antony still has 3 papers to complete looking at how metals effect different sperm functions and the development of flow cytometric methods for sperm ecotoxicity assays.

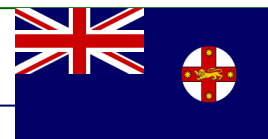
Lisa, Francesca and Jenny have just returned from a NiPERA - funded workshop in Singapore on Advances in Risk Assessment Tools with Relevance to Tropical South East Asia and Melanesia (SEAM). They presented their results (and the work of PhD student Megan Gillmore) which was the culmination of a 3 year research project on effects assessment in tropical SEAM. Other invited attendees from Australia were Ross Smith, Andrew Harford and Mandy Reichelt-Brushett. A key aim of the workshop was to identify outstanding research needs for nickel risk assessment in the region. A social highlight was dinner outside on the 33rd floor of the finance tower overlooking the light show near Marine Bay Sands, our impressive SETAC World Congress venue for 2020. Jenny, Lisa and Francesca also met up with our colleagues from CNRT New Caledonia to



Dinner with attendees of the NiPERA SEAM workshop at Level 33 overlooking the venue for the SETAC World Congress in 2020, Marine Bay Sands, Singapore

Regional Reports

New South Wales



further scope out a funded joint research project to develop a nickel guideline for freshwaters in New Caledonia.



Attendees of the NiPERA SEAM workshop held in Singapore, April 2019

We welcome two new PhD students:

- **Lucas Morais**, who will be based at Latrobe University, Wodonga, with Aleicia Holland, Jenny Stauber and Di Jolley as co-supervisors. Lucas has been at CSIRO Lucas Heights for 3 weeks being trained in chronic *Ceriodaphnia* bioassays with Kitty McKnight and Monique Binet
- **Gwilym Price**, based at CSIRO Lucas Heights, co-supervised by Di and Jenny.

Both students will be working on a project funded by the International Zinc Association to investigate the bioavailability and toxicity of zinc in Australian and New Zealand freshwaters.

Office of Environment and Heritage (OEH), Environment Protection Science Branch, Amanda McDonald (Amanda.mcdonald@environment.nsw.gov.au)

There has been plenty of movement around the Environment Protection Science Branch since our last update. Firstly, our Branch Director, **Georgina Kelly**, has been appointed Executive Director of Science Division – congratulations Georgina! Georgina's appointment has made way for **Emily Yip** to take over the branch reins as our new Director. Emily has been with OEH since 2008 and while her background is in civil engineering, she is keenly absorbing as much as she can about ecotoxicology, environmental chemistry and risk assessment.

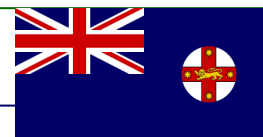
Our Environmental Forensics team has recently welcomed a lot of new faces. **Francesca Gissi** and **Megan Gillmore** have joined the team, greatly bolstering our expertise in ecotoxicology, while **Kate Cussen** and **Alyana Thomas** are providing valuable support for our chemists. **Jordan Facey** and **Dayna Fucile** have also joined the team on a casual basis to assist with our pollution investigations (which we've had no shortage of this year!). We also have two new interns from UTS, **Claudia Pilon-Summons** and **Ainsley Jones**, coming on board. Welcome everyone!

And while we are welcoming new faces, congratulations to **Andrew Symons** on the safe arrival of a baby girl, and to **Anneke Coomans** for the safe arrival of her baby boy.

On the research front, **Emily Woodward** has completed her Master's degree with flying colours. Emily, from Western Sydney University, was looking at the ecotoxicological effects of Class A firefighting foams with **Val Spikmans** (WSU), with co-supervision from **Fleur Pablo** and **Katelyn Edge**. Meanwhile, **Yarong Li** and **Chris Doyle** continue to work with Val looking into the utility of portable analytical equipment for incident response, and **Denise Duff** has recently joined this project as part of her PhD.

Regional Reports

New South Wales



Anand Chandra and **Peter Serov** have been working on an exciting project with National Parks and Wildlife Service looking at water quality and groundwater biodiversity at old tip sites in the Snowy Mountains. This is the first-time stygofauna have been recorded within the Snowy Mountains and all the taxa discovered are likely to be new species. Anand happily reports that the Kosciuszko subsurface environment is rich in biodiversity and the presence of stygofauna is providing a good indication of overall environmental health.



Stygofauna of the Snowy Mountains - both images are previously unknown species found in Kosciuszko National Park. R: Groundwater Crustacea-Syncarida. L: Groundwater Crustacea -Amphipoda. Credit for both images: Peter Serov.

Our branch has also continued to have considerable involvement in the NSW Government PFAS response. **Janina Beyer-Robson** and **Kate Langdon** represent OEH on the National Chemical Working Group (NCWG) which has been responsible for drafting the PFAS National Environmental Management Plan (NEMP). The PFAS NEMP is part of a national approach to managing PFAS contamination and the second version (NEMP 2.0) is now live for consultation – check it out at <https://www.epa.vic.gov.au/your-environment/land-and-groundwater/pfas-in-victoria/pfas-nemp-2-0>.

Ecotox Services Australasia (ESA), Rick Krassoi, Director (rkrassoi@esa.com.au)

Here at our Lane Cove testing lab, we have recently put some effort into upgrading our marine and freshwater culture facilities and upgrading equipment to include some automation for monitoring test and culture conditions. Culturing and testing is highly laborious, and automation of many repetitive and time consuming tasks helps with both the happiness index and economic viability. We have some new tropical marine ecotoxicity tests that will soon be ready for commercialisation some time over the coming months.

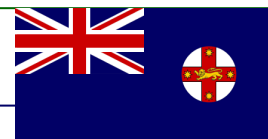
We have also spent a bit of effort refreshing our corporate design and website. Our original logo was designed in the year 2000, and website in 2003, so they had both had a good run. The bulk of our ecotoxicity testing project work relates to coastal environments. The new logo represents this coastal transition when viewed from space, and the colour palette and stylized form takes a NASA satellite image as its inspiration. From land to sea, from freshwater to salt, from the shallows to the ocean depths. Our new website reflects this new design, and we hope you like it.



Satellite imagery that inspired the new Ecotox logo

Regional Reports

New South Wales



University of Technology Sydney, Freshwater Applied Ecology Group, Anne Colville
(anne.colville@uts.edu.au)

Simon Mitrovic's group at the University of Technology Sydney is continuing their work on a range of projects, looking at environmental flows, cold water pollution, nutrients and organic carbon, cyanobacterial toxins, and algal blooms. **James Hitchcock** has left us to take up a teaching position at the University of Sydney, but is still involved with his research on food webs and microplastics. **Laura Michie** is working with fisheries staff at Narrandera to see how cold water pollution and cold shock impact juvenile native fish. **Jake Violi** completed his Honours with Simon, **Ken Rodgers** and **Anne Colville**, examining cultures of cyanobacteria for the presence of the toxin BMAA (beta-methylamino-L-alanine), a non-protein amino acid which has been tentatively linked with motor neurone disease. He is delighted to see his results published in *Ecotoxicology and Environmental Safety*. **Jordan Facey** is looking at the effects of metal concentrations on the production of microcystins by *Microcystis aeruginosa*, supervised by Simon Mitrovic and **Simon Apte**. Jordan and Jake recently published a paper in *Toxicon* on the uptake of the cyanobacterial toxin Microcystin-LR into membranes, working with Joel Steele and Charles Cranfield. **Angus Rawle** has completed his thesis on organic carbon and bacteria and will graduate soon. Matt Balzer and **Lauren O'Brien** continue their work on zooplankton in riverine food webs.

WaterNSW, Water Quality Programs team, Lisa Hamilton (lisa.hamilton@waternsw.com.au)

As this is the first time that WaterNSW's Water Quality Program team has contributed to Endpoint as a group, I would like to give you some background on us. WaterNSW undertakes research into catchment health for water quality as part of our function under the Water NSW Act (2014). To do this, our team run our Science Program. Our research program is primarily derived to deliver catchment protections and water quality benefits in our declared catchment areas (currently the Sydney Drinking Water Catchment is the only official declared catchment under the Act), but we also have projects that cross the barriers of our metropolitan and rural business sectors for bulk water supply.

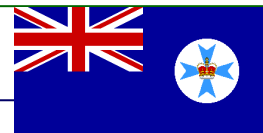
Our team consists of myself (**Lisa Hamilton**), our three Water Quality Scientists; **Joe Pera**, **Alec Davie** and **Ann-Marie Rohlfs**, our hydrogeologist; **Maria Dubikova** and two Graduate Scientists; **Heather Lacey** and **Ric Carney**. Current research projects that may be of interest to SETAC members include the redesign of our macroinvertebrate monitoring program that Ann-Marie is finalising to better assess land use on catchment health; the trial that Alec is running on the Phytotoxigen assay in conjunction with Sydney Water Laboratory to measure cyanotoxin gene presence in algal blooms and evaluate the method as a more refined measure of risk for toxic cyanobacteria blooms. Joe has been undertaking his PhD through UTS, with Simon Mitrovic and Alec as his supervisors on the potential water quality impacts of the proposed release of the carp herpes virus and Ric has recently done some interesting assessment of microbial community shifts after a simulated fish kill Joe ran as a mesocosm experiment. Ann-Marie, Heather and Lisa have recently completed a couple of long-term assessments of water quality improvements after sewerage of either whole towns or extensions to existing networks. We used pharmaceuticals and personal care products as tracers of sewage actually reaching local waterways from the onsite sewage management systems prior to sewerage and continued detections as evidence of attenuation time after sewer installation. Maria is currently focused on mining impacts in our declared catchment looking at quantifying water losses. Maria's next task will be to assess whether there is any water quality impacts on our storages as a result of mining impacts, focusing on metal mobilisation.

If anyone has any questions or thinks there may be synergies between our work and your own research, please get in contact with me as we deliver a lot of our research program through collaborations with experts and research laboratories.

Lisa Golding (lisa.golding@csiro.au), New South Wales Regional Representative

Regional Reports

Queensland



Australian Rivers Institute's Toxicology Research Group (ARITOX), Griffith University
(www.aritox.com)

It's been a busy start to 2019 for the ARITOX group, led by **Fred Leusch**, with new students, new projects, international visitors and recent PhD completions.

Arthur Barraza is an incoming PhD candidate working with **Jason van de Merwe** and Fred Leusch. Arthur's research will investigate how contaminants potentially affect sea turtle reproduction. Research goals include: assessing long term data sets for differences in reproductive output, developing new assays to assess endocrine disruption, and investigating evidence of endocrine disruption in sea turtle sub-adults, nesting females and hatchling.

Julia Smith is a PhD candidate under the supervision of **Liesbeth Weijs**, Jason van de Merwe, and Fred Leusch. Julia's research will assess the toxicological status of sharks as apex predators in the Australian marine ecosystem. Julia's research will determine if large predatory sharks are exposed to high metal and organic contaminant concentrations and how these contaminants are distributed across several tissues. Additionally, Julia will determine whether the concentrations found in shark tissues have a negative impact on their health.



New PhD candidate Arthur Barraza

Natacha Hogan is currently a Visiting Professor with the Australian Rivers Institute and working with Fred Leusch and the ARITOX lab at Griffith University. Natacha is an Associate Professor from the University of Saskatchewan (Saskatoon, SK, Canada) where she has an active research program in environmental and mechanistic toxicology (<http://hoganlab.weebly.com>). While with ARI, Natacha

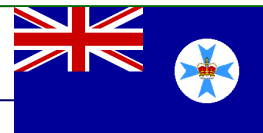
is conducting a study to compare contaminant-induced metabolomic responses in fish and human liver cell lines. This research will hopefully identify both exposure biomarkers and mechanisms of toxicity through the metabolome as well as provide some insight into the relevancy of human-to-animal extrapolation from *in vitro* bioassays for toxicity assessment. Natacha arrived in January just in time to escape the Canadian winter (brrr) and will be working with ARITOX at the Gold Coast campus until June.



Visiting Professor Natacha Hogan

Regional Reports

Queensland



Shima Ziajahromi is currently working on a project funded by Water Corporation with **Peta Neale** and Fred Leusch looking at microplastic pollution in Western Australian wastewater treatment plants. Shima has recently published her last (fifth!) PhD paper in *Science of the Total Environment*, which shows that while sorption of contaminants to microplastics does occur, it may not be as relevant under environmentally realistic conditions with mg/L concentrations of organic matter (Ziajahromi. S, Kumar. A, Neale. P.A, Leusch, F.D.L. 2019. Effects of polyethylene microplastics on the acute toxicity of a synthetic pyrethroid to midge larvae (*Chironomus tepperi*) in synthetic and river water, *Science of the Total Environment*, 671: 971-975)

Kimberly Finlayson has recently finished her PhD on the development, validation and application of an *in vitro* toxicological model for sea turtles. Cell cultures were established from skin and internal organs of green sea turtles and variations between individuals and tissue types were investigated. Using the most representative cell line, a series of bioassays measuring three different endpoints (cell viability, oxidative stress, genotoxicity) were validated and applied to test the toxic effects of 16 model compounds. Finally, the applicability of the *in vitro* model to broader ecological questions was demonstrated, in parallel with chemical analysis of trace elements, by analysing blood extracts from turtles from three different foraging grounds to examine differences in exposure and effect. Combined, the results indicate that *in vitro* methods are suitable and useful in identifying chemical risk to sea turtles and offer a promising avenue for other marine megafauna. Kimberly is now working in a post-doctoral position with Jason van de Merwe at Griffith University applying the methods developed in her PhD to examine exposure and effect in other sea turtle foraging grounds and to further develop the *in vitro* model.

Some of Kimberly's recent papers include:

Finlayson, K.A., Leusch, F.D., Limpus, C.J. and van de Merwe, J.P., 2019. Towards the development of standardised sea turtle primary cell cultures for toxicity testing. *Ecotoxicology and Environmental Safety*, 173: 63-70

Finlayson, K.A., Leusch, F.D. and van de Merwe, J.P., 2019. Cytotoxicity of organic and inorganic compounds to primary cell cultures established from internal tissues of *Chelonia mydas*. *Science of The Total Environment*, 664: 958-967.

Finlayson, K.A., Leusch, F.D. and van de Merwe, J.P., 2019. Primary green turtle (*Chelonia mydas*) skin fibroblasts as an *in vitro* model for assessing genotoxicity and oxidative stress. *Aquatic Toxicology*, 207: 13-18.

Steven D Melvin (s.melvin@griffith.edu.au), Queensland Representative

Regional Reports

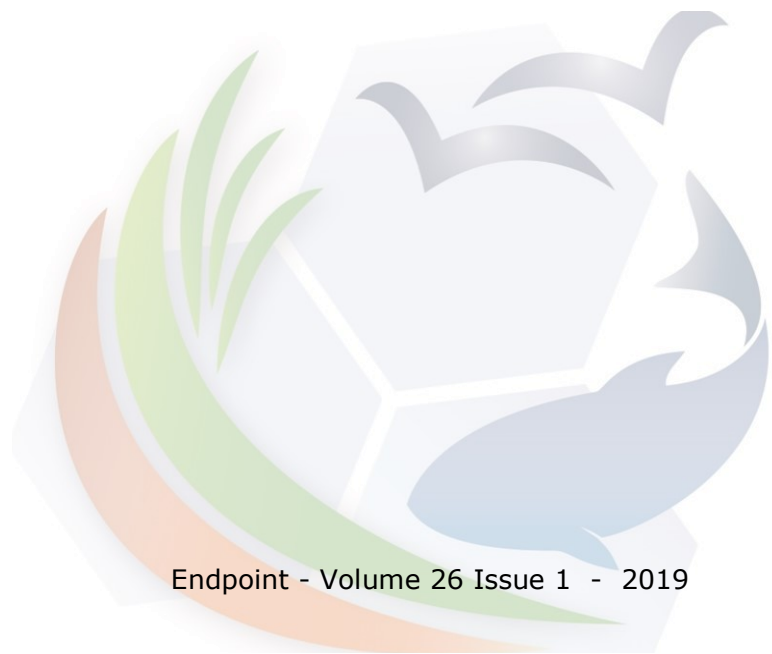
South Australia



South Australian SETAC members gathered at Uni SA for a regional meeting on 27th February to hear **Rick van Dam** give a presentation on the revised Australian and New Zealand Guidelines for Fresh and Marine Water Quality. With Rick speaking, it was a great opportunity to promote the society, so we opened the meeting to non-members and had a solid turnout from organisations such as SA EPA and SA Water, as well as environmental consultancies. The presentation was well received, and the discussion was lively at the social event held after the meeting. I'm sure others appreciated the opportunity to catch up with friends and former colleagues as much as I did. In fact, I was so busy socialising I forgot to take photos on the night, and unfortunately nobody else did either! I'll take that as a sign of a successful meeting.

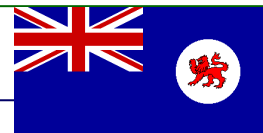
Special thanks to **Casey Doolette** for organising the venue, **Mike McLaughlin** and **Anu Kumar** for suggesting the speaker, and of course Rick van Dam for giving a great presentation. The next SA meeting will be announced shortly.

Peter Bain (peter.bain.0@gmail.com), South Australia Regional Representative



Regional Reports

Tasmania



Another successful summer season in Antarctica has drawn to a close, with several projects in ecotoxicology and contaminated site remediation being completed at Casey Station. PhD students from RMIT, **Jordan McCarthy** and **Stephanie Wallace** spent a busy 3 months on station collecting a range of terrestrial micro-invertebrates for ongoing culturing and toxicity testing focused on hydrocarbon contamination and soils currently undergoing in-situ remediation. They were joined by their supervisors **Suzie Reichmann** and **Cath King** for the final weeks of their project work on station.

Cath was also working with **Belinda Ferrari** and PhD student **Eden Zhang** from UNSW and AAD colleague **Dan Wilkins** investigating atmospheric carbon fixation in polar desert soils. Following on from a recent Nature paper in which the team discovered air breathing bacteria from Antarctic soils in the Windmill Islands, samples were taken in 300 m transects across three sites at Mitchell Peninsula, Robinsons Ridge and Browning Peninsula near Casey station. The team also obtained aerial footage using a drone of the spectacular patterned grounds at Browning Peninsula, which will assist in data interpretation. This study was first initiated some 15 years ago at the same sites using the same sampling strategy to explore regional patterns in microbial biodiversity. Over 500 samples were returned to Australia for genetic analysis...certainly enough to keep Eden and other students in Belinda's lab very busy in the coming months.



Belinda & Cath Sampling on Mitchell Peninsula



The Ferrari team

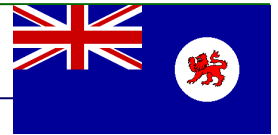
The team at Casey was also lucky enough to be joined by well known science communicator Dr **Karl Kruszelnicki**. Dr Karl was a great presence on station, doing several seminars and providing scientists with various tips for science outreach and communication. Cath was even lucky enough to be involved in some of the first live talk back radio broadcasts from Antarctica to Australia and the UK.



Live radio with Dr Karl

Regional Reports

Tasmania



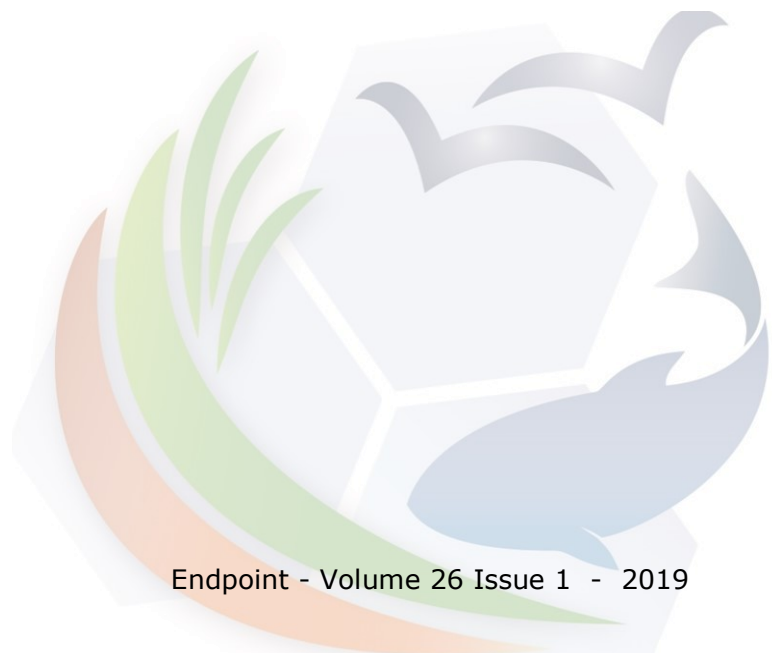
Casey Science team



Walking the 300m transect at Robinsons Ridge

Back at head office in Hobart, **Jane Wasley** and **Kathryn Brown** were busy finalising various manuscripts for publication. Kath also is completing work investigating the toxicity of aged Antarctic diesel to the endemic Antarctic soil nematode *Plectus murrayi*. Sensitivity estimates for the nematode along with other Antarctic biota will be used to derive soil quality guidelines for the management of Antarctic terrestrial contamination in the future.

Cath King (Cath.King@aad.gov.au), Tasmania Representative



Regional Reports

Victoria



School of Biological Sciences, Monash University – Professor Bob Wong
(bob.wong@monash.edu, Bobwonglab.org)

The Behavioural Ecology Research Group at Monash University, led by Professor **Bob Wong**, has been undertaking ARC-funded research investigating the impacts of pharmaceutical pollutants on wildlife behaviour, ecology and evolution. Earlier in the year, the Group hosted the sabbatical visit of Prof **Bryan Brooks** (Baylor University). Recent research publications in the laboratory have focused on pharmaceutical impacts on a range of ecologically important behavioural traits in fish, including mate choice, boldness, exploration, and antipredator behaviours. Some of the research was carried out in collaboration with Prof **Tomas Brodin's** research group at Umea University in Sweden.



Michael Bertram (co-supervised by Prof Bob Wong and Dr Minna Saaristo) was recently awarded his PhD for his fish research studying the behavioural effects of 17-B trenbolone, a powerful synthetic steroid found in hormonal growth promotants. The lab has recently also welcomed three new PhD students (Lucinda Aulsebrook, Jack Brand, and Jack Orford).

In May, Dr **Minna Saaristo** will be hosting a special session at the SETAC Europe conference in Helsinki on 'Examining behavioural effects of chemical contaminants and other stressors on behaviour, ecology and evolution of wildlife'.

Recent relevant publications (lab members in bold)

Bertram, M.G., Martin, J.M., Saaristo, M., Ecker, T.E., Michelangeli, M., Deal, N.D.S., Lim, S.L., O'Bryan, M.K., **Wong, B.B.M.** 2019. Context-specific behavioural changes induced by exposure to an androgenic endocrine disruptor. *Science of the Total Environment*. 664: 177-187.

Candolin, U., **Wong, B.B.M.** In press. Mate choice in a polluted world: consequences for individuals, populations and communities. *Philosophical Transactions of the Royal Society B: Biological Sciences*.

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Victoria



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School of Applied Chemistry and Environmental Sciences, RMIT University - Drew Szabo
(drew.szabo@rmit.edu.au)

Dr **Bradley Clarke's** research group's news includes:

PhD student **Damien Moodie** was awarded the best conference paper at the Australian Water Association (AWA) Biosolids National Conference held in Brisbane in February. Please see: <https://www.waterra.com.au/publications/latest-news/2019/congratulations-damien-moodie/>

PhD student **Timothy Coggan** has published a paper in the journal of Analytical and Bioanalytical Chemistry entitled "A single analytical method for the determination of 53 legacy and emerging per- and poly-fluoroalkyl substances (PFAS) in aqueous matrices" ([DOI: 10.1007/s00216-019-01829-8](https://doi.org/10.1007/s00216-019-01829-8)). The paper presents an extensively validated method for the extraction and analysis of 53 PFAS in wastewater, surface water and drinking water.

PhD student **Phoebe Lewis** just returned from a successful research trip to Antarctica and collected lots of interesting data!

Aquatic Environmental Stress Research Group, RMIT University - Dr Kathryn Hassell
(kathryn.hassell@rmit.edu.au)

AQUEST

AQUATIC ENVIRONMENTAL STRESS
RESEARCH GROUP

Introducing the new AQUatic Environmental STress research group (AQUEST) at RMIT University! Many of you would be familiar with CAPIM and the team that **Vin Pettigrove** headed up at the University of Melbourne for several years.

Well, the research group have left Parkville and in August 2018 we moved to Bundoora to work in the School of Science at RMIT University. The core focus of AQUEST is to assess the health of aquatic ecosystems; inland waterways and estuaries, using a weight of evidence approach to produce tangible environmental outcomes.

We have historically focused on aquatic pollution, identification, research and management, assessed using both chemical and biological methods. While this focus continues, our definition of pollution/environmental stressors has broadened further to include other stressors, such as assessing the benefits of environmental flows to aquatic biota.

The same key staff from University of Melbourne have been retained, including Professor Vincent Pettigrove, Dr **Sara Long**, Dr **Claudette Kellar**, Dr **Jackie Myers** and Dr **Kathryn Hassell**. Professor **Dayanthi Nugegoda** and her research group are now an integral part of the research team as well.

Since arriving at RMIT, we have been busy setting up a new round of our research partnership with Melbourne Water, under the Aquatic Pollution Prevention Partnership (A3P) banner, which provides funding and projects for the group for 5 years. We are also continuing with business as usual with

Regional Reports

Victoria



our projects with other industry partners, including Coliban Water, DELWP, Commonwealth Environmental Water Office and Sydney Water.

We have developed a broad range of tools to detect aquatic pollutants and locate their source, including through subterranean stormwater drains. We have also developed a tool kit of biomarkers in a broad range of aquatic species. These biomarkers are an early warning system to detect environmental stressors before there may be more widespread effects to the ecosystem. We continue to develop and evaluate new biomarkers and evaluate new aquatic test species.

There are many challenges to get more value out of environmental monitoring. Instead of just reporting whether an aquatic ecosystem or waterbody is in good or bad condition, we are able to identify whether an ecosystem is stressed, what is causing this stress and then develop a program to locate the source of this pollutant. We also have a proven track record in then working with government agencies to improve policy. In recent years, our research has contributed to improvements in the EPA State Environment Protection Policy, the Yarra River Action Plan, the Port Phillip Bay Environmental Management Plan and the Victorian Water Sensitive Urban Design guidelines.

For more information about AQUEST, please feel free to contact Professor Vin Pettigrove (Chief Investigator) at Vin.Pettigrove@rmit.edu.au or Monica Tewman (Knowledge Broker) at Monica.Tewman@rmit.edu.au



*Introducing the AQUEST research team. L-R: Dr Jackie Myers, James Oliver, Dr Claudette Kellar, Dr Kathryn Hassell, Dan MacMahon, Monica Tewman, Michael Clark, Dr Hung Vu, Dr Ana Miranda, Professor Vincent Pettigrove, Mardi O'Donnell, Dr Kavitha Chinathamby, Gina Mondschein, Dr Sara Long.
(absent: Professor Dayanthi Nugegoda, Rebecca Reid)*

Minna Saaristo (minna.saaristo@monash.edu), Victoria Regional Representative

Regional Reports

New Zealand



NZ hosted a SETAC AU sponsored session at the New Zealand Freshwater Sciences Society Conference in Nelson, on 10th December 2018. This session was around the updated Australian and New Zealand guidelines for fresh and marine water quality (<http://www.waterquality.gov.au/anz-guidelines>), headlined by **Rick van Dam** presenting on "Key features of the revised Australian and New Zealand Guidelines for Fresh and Marine Water Quality". We also welcomed **Brad Moggridge** from University of Canberra to hear about the ways to include indigenous cultural and spiritual values into water quality management both in NZ and Australia. The session provided a good opportunity for members of the freshwater science community to hear about the guidelines and meet members of SETAC. We are looking for ideas for future regional meetings, which could be again held in conjunction with a conference or a stand-alone event.

NZ has recently gained two new members from SETAC North America and Europe to boost our dwindling membership.

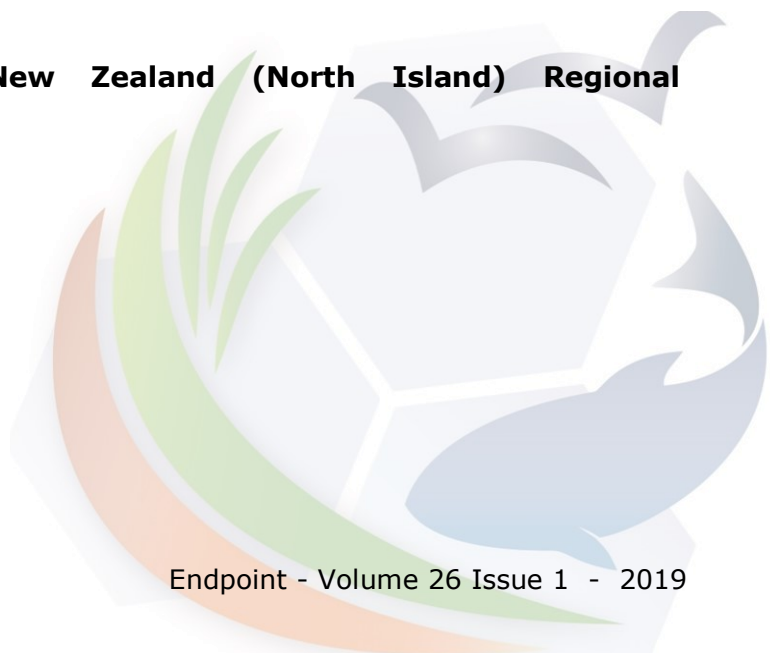
Amanda French has moved from Texas Tech University in the US to a Research Fellow position at the University of Waikato, Hamilton. Here she is focussing on method development in the ICP-MS Suite. The lab has the capability for speciation analysis (HPLC-ICP-MS), laser ablation, and general solution analysis. They also currently have speciation methods for As and Hg and Amanda has recently begun research on As speciation in Lake Tarawera. She is also working on a method for Ag and Ti nanoparticle analysis (spICP-MS) and other methods will expand as interest is expressed. Prior to arriving in NZ, Amanda worked on Pb and trace-element analysis in feathers of American woodcock. She is working on publishing the results of her dissertation where she found correlations between Pb and Sb, which she hypothesizes is due to Pb shot exposure. She would like to continue trace-element research in birds in NZ, which she is currently working on obtaining funding for. She collaborates on many different projects at the university, all related to metals in the environment. Amanda is also on the organising committee for the NZ Trace Element Group (NZTEG) Meeting, which will be held in Hamilton in February 2020.

If you would like to get in touch, please contact Amanda French (amanda.french@waikato.ac.nz)

Melanie Kah has moved to NZ after being an active member of SETAC Europe for about 10 years. She joined the School of Environment of the University of Auckland in January 2019 as a Senior Lecturer after many years as Assistant Professor at the University of Vienna. Her research looks at the fate and remediation of contaminants in the environment, with a particular focus on soil and water. Melanie has worked with the whole spectrum of substances that are released as a result of human activities including pesticides, polymers, PAHs, PFASs, pharmaceuticals, metals and nanoparticles. Her recent research on the ecological risk assessment of nanopesticides is a good illustration of the multidisciplinary approach applied in her group over the last years.

If you would like to know more, do not hesitate to contact her directly (melanie.kah@auckland.ac.nz) or visit <https://unidirectory.auckland.ac.nz/profile/melanie-kah>

Jenni Gadd (jennifer.gadd@niwa.co.nz), New Zealand (North Island) Regional Representative



General Member Profile

Dr Jenni Gadd

I am an environmental chemist working at NIWA, the National Institute of Water and Atmospheric Research, a Crown Research Institute in NZ. I got into environmental chemistry as an undergraduate, transferring from a biomedical degree when I realised I couldn't look down a microscope without getting a headache. Instead I got an MSc(hons) in Environmental and Marine Sciences with a thesis on sources of environmental estrogens to the Waikato River. After graduating I worked for an Auckland-based consultancy, in a whole range of things, but mainly related to assessing and monitoring environmental effects on water quality, with a strong focus on stormwater. After a few years, I felt ready to return to study. I moved to Christchurch and enrolled in a PhD programme at the University of Canterbury, part-time as I continued to work in consultancy. My PhD, supervised by Louis Tremblay and Grant Northcott was again in estrogens, but now looking at steroid estrogens in dairy shed effluents. Yes, I spent a lot of time dealing with a ripe mixture of cow urine and manure and being asked to leave laboratories because I made them smell too much.

Not long after graduating I applied for a position at NIWA, which is the position I still hold, in a part-time basis since 2012 (juggling the job with raising two kids). I'm based in Auckland in a team that works mainly on urban water issues – stormwater and wastewater overflows. No one has ever been jealous when I go on a field trip. And I have few beautiful photos from the field. But, urban areas are where most people live, so protecting and improving the water quality in these areas is important. The NIWA role is a diverse one, with a mixture of research and consultancy work centred around contaminants, including metals in stormwater. It ranges from monitoring contaminant sources and treatment systems to modelling and ecotoxicological assessments. Much of the work I do is in the area of translating research (usually other people's) into tools and guidance for local or regional government. Occasionally I try to dabble my toes back into estrogens and emerging contaminants more generally, but most of the time the emphasis is on metals. My work has included derivation of Australian and New Zealand water quality guidelines for copper and zinc (still on-going!) and at the moment, preparing guidance on how to use sampling devices, including DGTs, to monitor contaminants during storm events in a more cost-effective way. I'm also involved in a 3-year research project looking at macro- and micro-plastics in an urban stream (see Endpoint 25(3), December 2018).



Please contact Peta Neale (p.neale@griffith.edu.au) if you would like to be featured in an upcoming edition

Student Profile

Drew Szabo

Name: Drew Szabo
Degree: PhD (Applied Chemistry)
Institutions: RMIT University
Supervisors: Dr Bradley Clarke and A/Prof Jeff Shimeta
Est. Compl. 2021
Thesis Title: *Environmental fate and ecological impacts of surface water derived legacy and emerging contaminants*

Email: drew.szabo@rmit.edu.au

ORCID: <https://orcid.org/0000-0002-0089-9218>

About me

I completed my Bachelor of Environmental Science at Western Sydney University's Hawkesbury Campus. Situated in a remnant of the endangered Cumberland Plains Woodland Community, strangled by invasive species, mismanaged farmland and polluted creeks, this backdrop provided me with the drive to leave the world a better place than I found it. In my personal life, I enjoy engaging with the community through hobbies and interests, forming great friendships with people of similar interests in the process.

I began my Master of Environmental Science and Technology at RMIT in 2016, feeling like I still needed more knowledge in order to make a difference in the world. In my research year, I joined Dr Bradley Clarke's research group, where there were four PhD students working on persistent organic pollutants. I was immediately captivated by the research culture and knew that I would also like to complete a

PhD. I was inspired by the other students in my group and was welcomed into this new research community with open arms. I consider myself lucky to be in this research group; I honestly could not have done any of this without the mateship and support they and my supervisors have given me.

This is where I also became engaged with the SETAC community. I had the opportunity to present some of my work at the Gold Coast and was treated to the hospitality and unique personalities of SETAC Australasia. In 2018, I became the Australian student representative of the SETAC Asia Pacific Student Advisory Council (APSAC). I am continuing in this role in 2019, as well as becoming the student representative of SETAC Australasia. APSAC and the Australasian chapter are doing such great work in integrating science and their respective communities, and I hope the next generation can hold themselves in the same esteem.

PhD Research

In 2018, as part of my Masters research project, I investigated sources of per- and polyfluoroalkyl substances (PFAS) to groundwater in Greater Melbourne. This project was supported by the Australian Contaminated Land Consultants Association and supervised by Dr Bradley Clarke and A/Prof Matthew Currell. The primary study site was the Werribee Irrigation District, which supplies crops intended for human consumption to Melbourne and surrounds. During the Millennial Drought, a pipeline was built from a nearby wastewater treatment plant (WWTP) to deliver recycled water to the district and alleviate water stress.

WWTPs are a known source of PFAS and the hypothesis of our project was that the groundwater in the area was being contaminated by the irrigation of recycled



Student Profile

Drew Szabo

water. We used advanced extraction and analytical techniques to determine the concentration of PFAS in the aquifer. We found evidence of elevated PFAS concentrations in the groundwater compared to aquifers with no known sources of contamination (Szabo et al, 2018). This was the first time in Australia that this had been done, and the information can be used by the water industry to better understand the beneficial use of recycled water in Australia.

My current project as part of my PhD research is to investigate the ecological impacts of surface water derived legacy and emerging contaminants in Australian avifauna. This project is being supported by Water Research Australia and Melbourne Water, and is supervised by Dr Bradley Clarke and A/Prof Jeff Shimeta. In Australia, the occurrence and fate of PFAS in native avifauna is extremely limited despite many contaminated surface waters already being identified. Port Phillip Bay, in particular the Western Treatment Plant, is one of the most productive and most important areas for birds along the entire East Asian-Australasian Flyway. We aim to investigate non-invasive and non-destructive sampling techniques of waterfowl to indicate body burden and also develop novel extraction techniques that will allow trace analysis with minimal sample. So far, we have begun sampling at the Western Treatment Plant lagoons to determine the distributions of PFAS over time. A sampling campaign of waterfowl in Tasmania during the opening weekend of the game season was just completed in collaboration with Jennifer Lavers (University of Tasmania). This project will contribute to some of the first data ever published on PFAS occurrence in Australian fauna.



Where to from here

A number of additional projects are being prepared for the remainder of 2019 and 2020. The focus of the rest of my PhD will be determining ecological impacts of PFAS in Australian avifauna. My research is in line with the key interest areas surrounding PFAS defined by the Heads of EPAs Australia and New Zealand, such as bioaccumulation in the Australian context and the behaviour of PFAS and their precursors in the environment.

Please contact Drew Szabo (drew.szabo@rmit.edu.au) if you would like to be featured in an upcoming edition

Asia Pacific Student Advisory Council (APSAC)

Racliffe Weng Seng Lai (wengseng@connect.hku.hk)

APSAC has initiated a logo competition to invite designs for its future council logo. The final version of the champion logo has been selected and is shown below. A brief introduction of the logo and the designer, Jon Habito, can be found on our Twitter and Weibo pages.



To better frame future campaigns, APSAC is inviting all Asia-Pacific student members to contribute by providing their valuable opinions through an online survey. Please visit the following link (<https://forms.gle/n9QKgFoj2kV9DKFX9>) and build your dream APSAC.

If you would like to learn more about APSAC or if you want to find out how to get involved please contact us by email: apsac.setac@gmail.com. You can also follow us on Twitter (@APSAC_SETAC) and Weibo (@apsac1setac)



SETAC AU Postgraduate Research Publication Award 2018

Steph Chaousis (steph.chaousis@griffithuni.edu.au)

Our article 'Charting a path towards non-destructive biomarkers in threatened wildlife: A systematic quantitative literature review' endeavoured to assess the current state of non-destructive biomarker discovery in wildlife. This publication provides a quantitative and qualitative assessment of current methods employed for non-destructive biomarker discovery in wildlife exposed to chemical contaminants.

We systematically searched the literature for studies that aimed to develop or validate biomarkers of exposure using non-destructive methods in wildlife. The methods employed in each of the studies were sorted in to one of four categories based on their use or omission of experimental and non-destructive techniques. We then further categorised these studies based on several details of the methods employed including the use of wild or lab-based animals, type of non-destructive sample collected, reported confirmation of biomarkers of exposure and effect and whether *in vitro* methods were used or not. Finally, we classified methods by the general approach, such as the correlation of contaminants measured in blood, tissue or the external environment with markers in blood or tissue of the target species.



The results demonstrated that despite progress in this field, there are still many limitations that face research on contaminant exposure in wildlife, particularly where practical and ethical constraints prevent lab-based *in vivo* experimentation. We observed that a large portion of the 82 studies we examined utilised correlative methods described above. Most notably, our data indicated that *in vitro* studies have been minimally used for non-model species (only 7% of examined studies) despite the promise of these tools to enhance non-destructive biomarker discovery. We therefore concluded that this field would benefit from future research on the development of threatened species cell lines and the optimisation of *in vitro* experimentation in this context.

Chaousis, S., Leusch, F.D.L, van de Merwe, J.P. (2018) Charting a path towards non-destructive biomarkers in threatened wildlife: A systematic quantitative literature review. *Environmental Pollution*, 234: 59-70 <https://doi.org/10.1016/j.envpol.2017.11.044>

What's Happening?

Conferences and Workshops

If you are aware of conferences or workshops that would be of interest to other members of SETAC AU please send the details to the Communication Officer p.neale@griffith.edu.au

SETAC-AU 2019
7-10th July 2019, Darwin Convention Centre, Darwin
www.setac-au2019.com.au

Protecting and improving the environment through collaboration – across disciplines and across border



Biennial Conference of SETAC-AU
7 – 10 July 2019

**EARLY-BIRD RATES
EXTENDED UNTIL 28 APRIL**

The SETAC-AU conference in Darwin is fast approaching. The Early-Bird registration has been extended until 28th April and the notifications of abstract acceptance will be sent out soon, so please keep an eye on your inbox. We have three fantastic [workshops](#) to offer – 1) Key features and application of the revised Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2) Prioritising Australasia's Chemicals of Concern, 3) Investigation and Remediation of PFAS Contaminated Sites, as well as great [plenary speakers](#). Check the website for more details www.setac-au2019.com.au.

Updates on Twitter @SETAC_AU and our Facebook page

What's Happening?

Conferences and Workshops



ANZG Water Quality Guidelines Workshop 16th May 2019, Melbourne, Australia

<https://australasia.setac.org/index.php/meetings/melbourne-workshop/>

Partnering with



SETAC-AU is hosting a series of Water Quality Guidelines workshops with the support of the Australian Contaminated Land Consultants Association (ACLCA). The workshops will feature key authors of the Australian and New Zealand Governments Guidelines for Fresh and Marine Water Quality (ANZG 2018, <http://www.waterquality.gov.au/anz-guidelines>).

This full-day workshop in Melbourne, partnering with the Victorian Government and supported by EPA Victoria on 16th May 2019 from 9 am – 5 pm, will focus on educating stakeholders on the recently released ANZG Water Quality Guidelines. The presenters will provide details of the key features of the revised Guidelines, and help attendees understand how the Guidelines can be used for best-practice water management. Key topics will include (but not be limited to) the use of the national water quality management framework, using weight of evidence for water/sediment quality assessment, deriving and applying default guideline values, a case study, and a tour of the new website. These workshops will be important capacity building exercises that will benefit all water managers and water regulators. A draft agenda can be found [here](#).

Supported by



When: 16th May 2019

Where: Kaleide Theatre, RMIT University, Building 8, 360 Swanston St, Melbourne
Courtesy of The Aquatic Pollution Prevention Partnership, RMIT University

Registration: Early-bird \$120 for SETAC members, \$300 for non-SETAC members (Ends 2nd May 2019); Ordinary rate \$160 for SETAC members, \$400 non-members

[Click here to register](#)

The ANZG Water Quality Guidelines Workshop will also be held in Darwin, 9th July
(<http://www.setac-au2019.com.au/workshops.html>)

**SETAC 8th World Congress
6–10th September 2020, Singapore**
<https://singapore.setac.org/>

Conferences and Workshops

Workshop on improvements to statistical methods used in water quality guideline value derivation

On the 27th to 29th March 2019, a 3 day workshop was held at AIMS in Townsville to discuss improvements to statistical methods in ecotoxicology for water quality guideline derivation. The workshop was organised by Dr Rebecca Fisher and funded through a Community of Practice grant from AIMS. Participants included Australian experts in guideline derivation as well as specialist statisticians and modellers working in ecotoxicology. The workshop participants included Rebecca Fisher, Patricia Menendez, Joost van Dam, Andrew Negri (AIMS), Graeme Batley, Jenny Stauber, Quanxi Shao (CSIRO), Catherine King (Department of Environment, AAD), Rick Van Dam, Chris Humphrey, Andrew Harford (Department of Environment, ERISS), David Fox (Environmetrics), Michael Warne (UQ) and Abigail Proctor (UTAS).



Animated discussions were held over the 3 days as the group tackled some of key questions and issues associated with current methods used for the derivation of water quality guidelines in ecotoxicology. Issues were identified from a survey which workshop participants and other invited scientists in the ecotoxicology and guideline (GL) fields contributed to prior to the workshop. Some of the main issues discussed over the 3 days included accounting for uncertainty in Species Sensitivity Distributions (SSDs), how to deal with small sample sizes in SSDs, the use of model averaging and weighting in SSDs, international harmonisation of SSD methods and possible alternative methods for GL derivation. Several outcomes were agreed upon at the workshop, including an overall synthesis of current key issues which will lead to a review journal paper and a policy paper for regulators.



Conferences and Workshops

Workshop on improvements to statistical methods used in water quality guideline value derivation

Importantly, work is ongoing between members of the group as we investigate real data sets and some of the ideas and approaches discussed at the workshop.

An intensive 1 day course in ecotoxicology related methods in the statistical software R was also presented by David Fox prior to the workshop to some of the participants as well as to a number of eager postgraduate students and researchers from AIMS.

While on site at AIMS, the group was treated to a tour of the national sea simulator (SeaSim), a truly world-class marine research aquarium facility for tropical marine organisms. This had us all in awe, and a little green with envy at the experimental capabilities available to AIMS researchers! A dinner was also held in which the workshop group was able to meet and chat with various AIMS personnel, including CEO Dr Paul Hardisty.

Huge thanks to Becky on behalf of all the workshop participants for bringing us all together and facilitating some incredibly useful discussions which will continue into the future. Also a big thank you to David for generously offering his time and years of expertise and experience in this area for the statistical course.



Cath King (Cath.King@aad.gov.au), Australian Antarctic Division

Science & Technology Australia (STA) President and CEO Forum

On 27th March 2019, STA hosted its annual President and CEO Forum at the Royal Mint, Sydney and Kathryn Hassell attended as a representative for SETAC AU. STA is the peak body for science and technology in Australia, representing over 70,000 scientists from more than 70 member organisations (including SETAC AU). STA act as a conduit to Canberra, to advocate for science and technology, and with the upcoming federal election this year, they play a vital role in communicating to parliamentarians the importance of including policies that support Science, Technology, Engineering and Mathematics (STEM).



Representatives from various Australian scientific societies met in Sydney recently to discuss STEM priorities for the upcoming federal election. Photo courtesy of Science & Technology Australia.

We were privileged to have the leaders of the three major political parties present at the forum: The Hon Karen Andrews MP (Minister for Industry, Science and Technology, Coalition Government); Senator the Hon Kim Carr (Shadow Minister for Innovation, Industry, Science and Research, Labor Party); and Dr Adam Bandt MP (Greens Party).

All three leaders gave impassioned speeches about the STEM sector, including both personal anecdotes as well as outlining the key features of their respective parties' commitments for science and technology in the upcoming election. All parties recognise that the majority of jobs in the future will require STEM skills and both Labor and the Greens acknowledged the need to set science research investment targets based on a percentage of gross domestic product (GDP). A notable feature of all the speeches given by the political leaders was the use of the same language and key focus areas that STA have been using during their campaigning and discussions with parliamentarians. This is a great indicator that the politicians are listening!

Following the addresses from each of the political parties, the forum participants split into smaller working groups to discuss ways to support the STEM election campaign and develop strategies for communicating the key features and targets it contains.

By the end of the day there were four main focus areas identified for strong science and technology in Australia:

1. A whole-of-government plan for science and technology
2. A strategy to equip the future Australian workforce with STEM skills
3. Strong investment in both fundamental and applied research
4. A commitment to creating policy across all portfolios that is informed by the best available evidence

Science & Technology Australia (STA) President and CEO Forum

For further information on this, please read the [STA communique](#) which outlines the focus areas and specific election commitments they would like all political parties to consider in support of the STEM sector.

In addition to the communique, STA have also launched an awareness campaign urging us all to "Solve it with Science". This campaign aims to make science a central conversation throughout the election by outlining the various ways that science and technology contribute to making our everyday lives better. Follow #SolveitWithScience on Twitter and Facebook and be sure to include the hashtag in anything science-related that you post to these platforms.



For further information about the STA President and CEO Forum, please see the STA website: <https://scienceandtechnologyaustralia.org.au/tens-of-thousands-of-australians-call-for-science-focus-during-next-election/>



Science Meets Business 2018

Delegate's Report

Dustin Hobbs (Hydrobiology) and Rachael Smith (Queensland Department of Environment and Science)

Last year's Science meets Business, hosted by Science & Technology Australia (STA), was held on 11th of October in Brisbane, which was convenient for a couple of Brisbanites to attend!! Science meets Business 2018 focused on 'High Tech and Big Data' which provided a forum for delegates to hear from some of Australia's leaders in both the development and use of this rapidly expanding area.

The day kicked off with a wonderful welcome to country from Elder, Songwoman and Law-Woman of the Turrbal People, Maroochy Barambah.

Emma Johnson, the president of STA, launched the first panel session of the morning that involved some interesting discussion from panel members explaining where they thought big data and the evolution of new technology would take their companies, and the general population. It was interesting to hear the thoughts of industry leaders with Microsoft's Ms Rita Arrigo discussing how Microsoft were placing themselves at the forefront of technology by bringing new gadgets and artificial intelligence to the general population, which she touched on again in her closing presentation. Other interesting comments centred around the power of knowing what data to ignore when it comes to filtering big data, as per Jireon Prinsen of Clarivate Analytics. Dr Stephanie Williams of Westpac touched on legislators keeping up with the rapidly changing landscape of technology advances, and Ms Nichola Richards of MSD Australia discussed the utility for some companies to access health databases and other information to better develop health care and care delivery.

The sessions were then broken up into two concurrent sessions that covered four streams throughout the rest of the day. These streams being: Agriculture, Medicine, Space and Cybersecurity. Short presentations and a panel Q&A session from some of the industry's leading experts were followed by case studies highlighting successful collaborations between STEM and private industry. The collaborations exhibited in the case studies were interesting; many of them involved the use of technologies or innovations from other industries that were re-purposed, or the presentation of novel problems that required innovators to think a long way outside the box for solutions.

For example, some of the problems posed by the operation of the square kilometre array in regional Western Australia called for the development of new ways to compute the huge amounts of data that are generated as well as how to store the data for future analysis. This saw a collaboration form between Andreas Wicenec, Professor of Data Intensive Research at the International Centre for Radio Astronomy Research, and Alex St. John, CTO of Nyriad. A chance meeting between Andreas and Alex at a New Zealand conference developed into a successful collaboration to solve a myriad of challenges that the square kilometre array has thrown up. Alex and his team developed a safer way to store data that made data losses through hard drive failure redundant by using a similar system of memory storage that our brain uses. To go into the details here would explode my mind once again, so if you are interested in the developments around this new large scale astronomical facility go to <https://www.skatelescope.org/> for updates on its progress.

Another example of collaborations between research and industry and the re-purposing of technology is the MEQ Probe (<https://www.meqprobe.com/>). This probe was initially developed by Prof Mark Hutchison from the Centre for Nanoscale BioPhotonics (University of Adelaide) to detect the change in pH that marks the edge of cancerous growths. Having engaged with industry on projects previously, Prof Hutchison began making enquiries about the use of his technologies outside of their intended use. The result was a collaboration with Super Butcher to develop the MEQ Probe, a technology for assessing meat quality that uses pH as an indicator in real time. A very poignant point raised by Prof Hutchinson; researchers and industry need to ask each other "dumb" questions, which has often led to innovative solutions.

One of the fundamental issues identified as a barrier for generating collaborations between science and business is the development of networks. On multiple occasions throughout the day, speakers expressed how vital networking was in order to meet and develop relationships with new potential collaborators. Just before lunch the very energetic Catherine Kitney (Fishburners) and

Science Meets Business 2018

Delegate's Report

Sally-Ann Williams (Google Australia) presented the audience with some simple techniques for quickly pitching your idea to a potential collaborator or investor – for all those times that you find yourself in an elevator with someone like Richard Branson. They followed this up with some practice time, in which the audience utilised their newly developed skills to pitch their ideas in 30 seconds to someone they didn't know in the audience. Surprisingly (but also maybe unsurprisingly), some people found potential collaborations within that short time frame - demonstrating the importance of being prepared with a great pitch for those networking (or elevator) opportunities.

While the topics that were discussed and case studies presented were not exactly our expertise or in our lines of work, the underlying philosophy that was continually presented is relevant to us all; keep an open mind when discussing your own work and the work of others, no matter where they might be coming from, a piece of technology or an idea that is routinely used in their field might be easily translatable to challenges you face in your own. Also, preparing a 30 second pitch about your idea, your job, a project you are currently working on or about yourself is a great way to be able to convey a large amount of information in short amount of time in a succinct and efficient way.

Finally, we would like to thank SETAC AU for the opportunity to represent then and STA for organising this interesting and insightful meeting.

More information about the event and STA can be found here (<https://scienceandtechnologyaustralia.org.au/2018-science-meets-business-wrap/>).



Social Media

For those of you that are savvy with social media, SETAC AU has both a Facebook page and Twitter handle. We encourage all members to use these media tools for communication and research dissemination through your networks.

If you are interested in using Twitter but don't know where to start, a SETAC AU guide to Twitter is available on the [SETAC AU website](#).



**Facebook Page - Society of Environmental Toxicology and Chemistry
Australasia - SETAC AU**

Search for @SETACAU

People who like this page: 299



Twitter Handle - @SETAC_AU

Following: 1,050

Followers: 770

Likes (Dec – March): 122

#SETAC_AU

#pollution

SETAC AU Mentor Programme



Why a SETAC AU Mentor Programme?

The Society of Environmental Toxicology and Chemistry (SETAC) Australasia Mentor Programme aims to foster a collegiate society by improving the technical and career development of members by establishing mentor relationships

Who is eligible to join the programme?

Any financial member of SETAC AU may take part in the Mentor Programme. All members from early-, mid-, late- or even post-career tracks are welcome to register for the programme

What are the benefits for the mentee?

- Assist in the transition from study to work
- Obtain guidance with regards to career direction
- Learn from your mentor's professional and personal experience and knowledge
- Grow your professional network

What are the benefits for the mentor?

- Exposure to students as potential employees
- Give back to your professional community by sharing your insights and experience
- Stay on top of emerging science through engaging in research-based discussions with your mentee

How do I find out more?

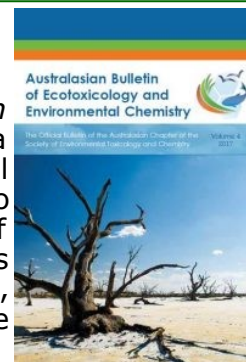
For a Mentor Programme outline or a registration form, please contact
Tom.Cresswell@ansto.gov.au

Click [here](#) for more information

Australasian Bulletin of Ecotoxicology and Environmental Chemistry (ABEEC)

Call for papers

We invite all SETAC AU members to submit new manuscripts to the *Australasian Bulletin of Ecotoxicology and Environmental Chemistry*. The *Bulletin* is a publication of the Australasian Chapter of the Society for Environmental Toxicology and Chemistry (SETAC AU), and is a regional publication dedicated to publishing original, scientifically-sound research dealing with all aspects of ecotoxicology and environmental chemistry relevant to Australasia. Papers published may be research reports, review papers, short communications, descriptions of new techniques and equipment, thesis abstracts, thesis literature reviews and comments on previously published papers.



All papers published in ABEEC will be made freely available through the website for SETAC AU. It will be an online publication only.

This is how the submission process works. Contributions should be submitted to the editor as a manuscript in the same manner as you would for any other journal. You also need to provide the name(s) of at least one reviewer to assess the manuscript. All manuscripts will be sent out for review by at least two experts in the field. After the review process, manuscripts will be sent back to authors for final revisions prior to online publication.

If you wish to submit a manuscript to *ABEEC* or would like to discuss publication of a manuscript, then please contact the editor. A copy of *Instructions to authors* is also available from the editor.

We look forward to receiving your manuscripts.

Reinier M Mann (reinier.mann@des.qld.gov.au)
Editor – *ABEEC*



Selected abstracts from the April 2019 issue of Environmental Toxicology and Chemistry

Rochman C M, et al. 2019. Rethinking microplastics as a diverse contaminant suite 38 (4): 703–711 DOI: <https://doi.org/10.1002/etc.4371>

Abstract: Microplastics are not microplastics, just like pesticides are not pesticides. "Microplastics," like other classes of chemical contaminants, is a catch-all term for a variety of unique chemical compounds. Yet, many scientific publications, policy reports, and media articles present microplastics as if they are simply a single compound or type of material. Such simple communications have consequences, leading to simplified studies and protocols that may be inadequate to inform us of the sources and fate of microplastics, as well as their biological and ecological implications. For example, studying the fate and effects of one plastic type with a specific shape and size does not tell us the fate and effects of microplastics in general. Moreover, not recognizing the diversity of materials in a microplastics sample may overlook the complexity necessary to inform robust quality analysis and quality control (QA/QC) needed in sampling and analytical measurement techniques. For instance, some methods are better at recovering specific sizes, shapes, or types of microplastics. Simplifying microplastics as a single compound has also led to confusion around the need for new policies and strategies to reduce future emissions of microplastics. For example, some policymakers and scientists are under the impression that banning microbeads from rinse-off personal care products has eliminated future releases of microplastics in general to the environment. In reality, such bans eliminate only one source of the diverse and complex emerging global contaminant suite that is "microplastics." This can be compared to banning one specific use of a pesticide (e.g., in the home), leaving the market full of other applications of diverse pesticides that need to continue to be assessed for environmental persistence, bioavailability, and toxicity. In our Focus article, we make the case that it is necessary to rethink microplastics (plastic particles <5 mm in size) and consider them a suite or class of contaminants, in the same way we do for pesticides, trace metals, or flame retardants.

<https://setac.onlinelibrary.wiley.com/doi/10.1002/etc.4371> © 2019 SETAC

Berninger J P, Tillitt D E. 2019. Polychlorinated biphenyl tissue-concentration thresholds for survival, growth, and reproduction in fish, 38(4): 712–736 <https://doi.org/10.1002/etc.4335>

Abstract: Polychlorinated biphenyls (PCBs) have left a legacy of environmental contamination. Even though they were banned from production and active use in the 1970s, they persist in the environment and still have the potential to impact aquatic life. Our objective was to identify data from controlled laboratory studies of PCB-related adverse effects in fish and to conduct a meta-analysis on mortality, growth, and reproductive (MGR) threshold responses. For each endpoint type, we compiled data on the lowest-observed-adverse effect concentration (LOAEC) and the degree of effect at the LOAEC as a percentage of control. The LOAECs were expressed as tissue concentrations, so the term lowest-observed-adverse-effect residue concentration (LOAER) was used to represent PCB exposures. The lower limit of applicability was set at 0.1 µg/g total PCB tissue concentration, below which adverse MGR effects in fish were not supported by the data. Sensitivity distributions identifying the probability of adverse effects in fish populations or communities predicted that 25% of fish species would be impacted between 0.1 and 7.5 µg/g. Concentration-response threshold regressions were developed from the MGR datasets. For example, a 1 µg/g total PCB tissue concentration would predict effects of 17% mortality, 15% growth, and 39% reproductive. The analysis determined the degree of adverse response, with uncertainty estimates, expected across a broad range of PCB tissue exposure concentrations in fish. Data generated from MGR endpoints were combined to determine an approach for overall effect thresholds for PCB-related injury in fish. The MGR datasets included only laboratory data; however, responses were compared with field-observed effects. The present review provides a comprehensive assessment of PCB-induced injury in fish utilizing a data-inclusive approach

<https://setac.onlinelibrary.wiley.com/doi/10.1002/etc.4335> © 2019 SETAC

Membership Details

How to join SETAC Australasia

Even if you are a SETAC member based in Australia, New Zealand or PNG, you may not be a member of SETAC Australasia. You can join SETAC Australasia by going to www.setac.org. After logging in, go to the SETAC Australasia page and click 'Request Membership'. You can find this page by either searching 'Australasia' or going to the 'Get Involved' tab on the left of the page, then 'Regional Branches and Chapters', then 'Asia Pacific Chapters'. There are no additional fees attached to the SETAC Australasia chapter.

Current SETAC Australasia Members

To make sure you don't miss out on attending SETAC get-togethers in your state or territory or contributing your latest research to Endpoint, please update your SETAC profile to include your location so your regional rep can get in touch with you. You can do this by logging into www.setac.org and selecting 'Manage Profile', then 'Edit Bio'.

Suzanne Vardy (suzanne.vardy@des.qld.gov.au)
SETAC AU Secretary

SETAC AU Membership Renewal

A reminder that all membership renewal payments for SETAC members in Australasia should be made to SETAC Asia-Pacific, and not to the SETAC North America office in USA. The link to renew your membership, which is provided in the reminder email as your renewal date approaches, is <https://setacap.site-ym.com>.

Around 25% of members are still paying through SETAC North America and this causes several administrative problems including:

- Charges by the USA office for their staff time handling these wrongly made payments
- Currency exchange fee losses for AUD (or NZD) to USD then back to AUD
- Foreign transaction charges on the member's credit card (charged to the member by their credit card provider)
- It can take up to a year for wrongly paid renewal payments to reach SETAC AU via SETAC North America
- Members' expiry dates for their next membership renewal date may be set wrongly when they pay North America instead of Asia-Pacific
- Members may not get automatic reminders next time (the North America office does not send automatic reminders)
- The AU Treasurer has to waste his time untangling the administrative mess involving all of the above.

If a member does log in at setac.org they can navigate to the Asia-Pacific payment page, but it is easier to use <https://setacap.site-ym.com>.

Also, a BIG NO NO is for a SETAC AU member to purchase a "combi-registration" at a SETAC Europe or SETAC North America conference (a "combi-registration" is a combined conference registration and membership payment). This causes total chaos in the membership system (all of the above plus others) and the membership fee may never reach AU, but instead is swallowed up in the conference.

A detailed guide to renewing your SETAC membership online can be found [here](#).

Munro Mortimer (ase@hydrobiology.biz), **Treasurer**

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Contact: britten@tecobio.com



Advertise in Endpoint

Do you or your organisation have a product, service or upcoming event that might be of interest to SETAC members? For example: technical services, vacant positions, meetings and workshops or student opportunities?

If so, you should consider advertising in Endpoint and on the SETAC AU webpage. The Endpoint newsletter goes out to a readership of >300 SETAC members across academia, industry and government, providing a great way to reach your target audiences.

Details

- Advertising charges for Endpoint AND the webpage are \$100 half page, \$200 per full page.
- A Standing Committee with membership determined by Council will vet (by majority vote) all adverts on the basis of appropriateness of material relative to the aims & objectives of SETAC AU.

For further information please contact the SETAC AU Secretary **Suzanne Vardy** (suzanne.vardy@des.qld.gov.au)



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