

What a year! COVID has challenged us and changed the way we work. For the AQUEST research group, it's been all about setting up our home offices, getting access to our labs, getting out into the field when we were able and reshaping projects into what is now possible! Opportunities as much as impediments. We've gotten really good with the tech, hosting Webinars for projects including for the Stony Creek whole of catchment litter project and recording lunchtime seminars for Melbourne Water through our A3P research partnership.

Congratulations Claudette and Charlene!

In the past couple of months, PhD student Charlene Trestrail has been awarded the Young Scientist Prize from the Royal Society of Victoria, see <https://rsv.org.au/events/ysrp-2020/> For "Foaming at the mouth: how eating floral foam microplastics harms animals' health" and Dr Claudette Kellar has been accepted as part of the veski inspiring women STEM side-by-side program.

Citizen Science at AQUEST

Our two citizen Science projects "The Pesticide Detectives" and "Litter Trackers" are coming to a close. Final results for both the sampling and pesticide use survey are now available on our webpage: <http://rmit.edu.au/pesticidedetectives>



Pesticide Detectives Citizen Science Project Summary RMIT AQUEST Nov 2020

Animated video journeys of tracked litter are now also available on our litter trackers project website: <http://rmit.edu.au/littertrackers>.



We have tracked what happens to litter in 17 waterways across Greater Melbourne over the last year, deploying GPS enabled bottles at various sites in collaboration with school and community groups and tracking their journeys downstream towards Port Phillip Bay. Many of the bottles reached and even crossed the bay, while others stayed close to where they were dropped.

There are several PhD projects on offer with the AQUEST group, to find out more about these please go to <https://www.rmit.edu.au/about/schools-colleges/science/research/research-projects/project-guides>

In the lab



Georgia Sinclair (PhD candidate) working alongside Dr. Michela Di Giannantonio in the culture room.

Our visiting postdoctoral fellow, Dr Michela Di Giannantonio, is now working for us, as her initial funding was withdrawn. An environmental chemist, Michela is working with Dr Sara Long developing new monitoring tools using metabolomic techniques.

Student Opportunities and Update

Our students, honours and PhD have been working hard on literature reviews and preparing for field activities as soon as restrictions ease.

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Recent Publications

Some recent from our group include:
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- Ballesteros, M.L., Boyle, R. L., **Kellar, C.R.**, Miglioranza, K.S.B., Bistoni, M.A, **Pettigrove, V.** and **S.M. Long** (2020) What types of enzyme activities are useful biomarkers of bifenthrin exposure on *Chironomus* sp. (Diptera, Chironomidae) larvae under laboratory and field-based microcosm conditions? *Aquatic Toxicology* 228 (2020) 105618 <https://doi.org/10.1016/j.aquatox.2020.105618>
- Su, L., Nan, B., Craig, N.J. & **Pettigrove, V.** (2020) Temporal and spatial variations of microplastics in roadside dust from rural and urban Victoria, Australia: Implications for diffuse pollution *Chemosphere* Volume 252, August 2020, 126567 <https://doi.org/10.1016/j.scitotenv.2021.150567>
- Hao Shen H., Golam Kibria g., Rudolf S.S. Wu R.S.S. Paul Morrison P. **Nugegoda D.** (2020) *Spatial and temporal variations of trace metal body burdens of live mussels *Mytilus galloprovincialis* and field validation of the Artificial Mussels in Australian inshore marine environment.*

- Lekamge, S., **A. F. Miranda**, B. Pham, A. S. Ball, R. Shukla and **D. Nugegoda** (2020). "The toxicity of non-aged and aged coated silver nanoparticles to the freshwater shrimp *Paratya australiensis*." *Journal of Toxicology and Environmental Health, Part A*: 1-16
- Sara M. Long**, Dedreia L. Tull, David P. De Souza, Konstantinos A. Kouremenos, Saravanan Dayalan, Malcolm J. McConville, **Kathryn L. Hassell**, **Vincent J. Pettigrove** and Marthe Monique Gagnon (2020). *Metabolomics Provide Sensitive Insights into the Impacts of Low Level Environmental Contamination on Fish Health—A Pilot Study.* *Metabolites* <http://doi:10.3390/metabo10010024>
- McDonald, S.**, Cresswell, T., **Hassell, K.** (2020). Bioaccumulation kinetics of cadmium and zinc in the freshwater decapod crustacean *Paratya australiensis* following multiple pulse exposures. *Science of The Total Environment*, 720, 137609.
- Nan, B., Su, L., **Kellar, C.**, Craig, N.J., Keough, M.J. and **Pettigrove, V.** (2020) Identification of microplastics in surface water and Australian freshwater shrimp *Paratya australiensis* in Victoria, Australia. *Environmental Pollution* 259, 113865. <https://doi.org/10.1016/j.envpol.2019.113865>
- Georgia M. Sinclair**, **Sara M. Long** and Oliver A.H. Jones (2020) *What are the effects of PFAS exposure at environmentally relevant concentrations?* *Chemosphere* <https://doi.org/10.1016/j.chemosphere.2020.127340>
- Nanthi S. Bolan, M.B. Kirkham, Claudia Halsband, **Dayanthi Nugegoda**, Yong Sik Ok (2020) Particulate Plastics in Terrestrial and Aquatic Environments https://www.routledge.com/Particulate-Plastics-in-Terrestrial-and-Aquatic-Environments/Bolan-Kirkham-Halsband-Nugegoda-Ok/p/book/9780367511401?utm_medium=email&utm_source=EmailStudio&utm_campaign=B005890_me1_5ll_7pp_d677_ntacoreprogramm_ejuly_3728090
- Hao Shen, **Stephen Grist**, **Dayanthi Nugegoda** (2020) The PAH body burdens and biomarkers of wild mussels in Port Phillip Bay, Australia and their food safety implications <https://doi.org/10.1016/j.envres.2020.109827>