



# HeART of the Basin Scholarship Research

Ms Natalie Wolfe-Rackemann - 2021

Prevalence of microplastics in freshwater aquatic plants: Development of a standard method.



## Summary

In 2021-2022, Natalie completed an Honours project focused on the presence of microplastics in freshwater aquatic plants and the development of a standard method for the identification of microplastics on freshwater aquatic plants.

Plastic pollution has become a global environmental issue, with a growing perception that microplastics, particles less than 5 mm in size, may represent a critical threat to ecosystems and their inhabitants.

Partly due to being a relatively new field of study, research of microplastic presence and their impacts is currently hindered by a lack of standard methodology applicable across a range of environments, conditions, and habitats. Determining a simple and cost-effective method for the identification and quantification of microplastics from field samples would help improve their detectability, abundance assessment, and comparisons among different studies.

## Significance of Study

This project focused on developing methodology for assessing the abundance of microplastics associated with freshwater aquatic plants in Rockhampton, Queensland. By testing different digestion times, types of chemical digestion, sample conditions, and incubation temperatures, fluorescence microscopy showed that the treatment conditions on *Ceratophyllum* sp. samples affected the ability to identify the presence of microplastics in the plant samples.

Moreover, the research brings us closer to identifying useful methodology for quantifying microplastics from field samples, highlighting how the sample condition, processing steps, and type of chemical digestion can improve particle detectability.

Freshwater aquatic plants form a foundational habitat and food source within aquatic ecosystems and as such, the identification of these microplastics have major potential ramifications on ecosystem health.

### Support during study

- FPRH HeART of the Basin Scholarship
- CQUniversity Science Honours Stipend

### Work during study

Natalie was lucky enough to obtain casual work for a local company that specialises in stand alone water treatment systems, utilising technologies that are considered more environmentally friendly to treat the water. This company allowed Natalie to balance work and university studies.

Since completing her Honours, Natalie has also been able to obtain project research work using her skills and techniques to assist in microplastics research in a variety of other areas. The balance of this industry and research work provides variety and allows Natalie to consider the application of her research into both further research as well as how microplastic research may be applied to industry.

As such, Natalie is planning to move forward onto her PhD while undertaking both research and industry work, allowing her to determine the best way to utilise the knowledge and skills she obtained during her Bachelor of Science (Honours).

### About the HeART of the Basin Scholarship:

Fitzroy Partnership for River Health established the HeART of the Basin Scholarship in 2016. The Scholarship was established to expand research and understanding about waterway health in the Fitzroy Basin, with the award named to celebrate the significant contribution of inaugural Independent Science Panel Chair, Professor Barry Hart.

It was following recommendations by Professor Hart, that the Partnership evolved. The Hart report was prepared after the Fitzroy Basin floods in 2008 floods and a subsequent cumulative impact assessment study highlighted the need for an integrated monitoring and reporting system for water quality in the Fitzroy Basin.

The \$3,000 scholarship is open to research students at CQUniversity studying Honours, Masters by Research or PhD to progress their learnings in a research topic relating to improving waterway health and/or understanding and use of waterways in the Fitzroy Basin.

For more information on the Fitzroy Partnership for River Health, please contact:

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