The Royal Society of Western Australia
Promoting Science since 1914

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Combined Biological Sciences Meeting

On Friday 31st August 2018 the Combined Biological Sciences Meeting (CBSM) was held at The University Club of University of Western Australia. CBSM promotes biological science in Western Australia by encouraging the interaction of scientists, students, and industry from all of the life sciences. It was the 28th year of CBSM.

https://cbsmwa.org.au/images/Program/cbsm2018.pdf
http://www.cbsmwa.org.au/

Poster Session

There were 94 posters covering the areas of:-

Section	Topic	No. posters
A	Biochemistry and Molecular Biology	8
B	Cell and Developmental Biology	12
C	Genetics	8
D	Immunology	10
E	Microbiology	10
F	Neuroscience	13
G	Environmental and Plant Science	6
H	One Health	9
I	~Omics	9
J	Senior Research Presentations	9

RSWA Award

The Royal Society of Western Australia (RSWA) sponsored the $300 prize for the ~Omics session I where there were 9 posters. The winning prize for this session was accepted by **Tina E Berry** from Trace and Environmental DNA Laboratory at Curtin University (TrEnD), for the poster 'Marine Environmental DNA Reveals Spatial and Temporal Community Changes in Zooplankton' detailed at I2 (page 41):-

https://cbsmwa.org.au/images/CBSM2018/cbsm2018posterabstracts.pdf
http://www.trendlab.com.au/peoplecontacts.html

Marine Environmental DNA Reveals Spatial and Temporal Community Changes in Zooplankton

Tina E Berry[1], Megan L Coghlan[1], Benjamin J Saunders[2], Matthew Power[1], Michael Stat[1,3], Simon Jarman[1], Anthony J Richardson[4,5], Claire H Davies[4], Oliver Berry[7], Euan S. Harvey[2] and Michael Bunce[1]

[1]Trace and Environmental DNA (TrEnD) and [2]Fish Ecology, Curtin University; [3]Biological Sciences, Macquarie University; [4]CSIRO Oceans and Atmosphere; [5]Centre for Applications in Natural Resource Mathematics, The University of Queensland; [6]CSIRO Environomics.

Introduction. Zooplankton form highly biodiverse communities that are the trophic links between phytoplankton and larger predators. The composition of zooplankton populations are known to fluctuate in response to biotic and abiotic triggers. Consequently zooplankton are used for oceanic biomonitoring. Historically morphological methods have been used to meet this need, but morphological identification of zooplankton is both time consuming and expensive. **Problem Statement**. There is increasing recognition that morphology alone will struggle to meet the current and future needs of biomonitoring in marine conservation and management decisions. There is a need for an adjunct that is fast, affordable and provides the capacity to detect a range of taxa, particularly taxa that is unseen using morphological methods. **Procedures**. Here we use plankton samples to design and test over twenty novel assays, while additionally comparing previously described assays. The aim; to devise a multi-gene metabarcoding 'tool kit', capable of detecting a wide range of zooplankton taxa from environmental DNA. Assays from the 'tool kit' were applied in two separate studies, using both spatial (Australia wide; across three years) and temporal (Rottnest Island; across five years) samples, to test their ability to map changes in response to climate and location. **Results**. Many hundreds of taxa were identified within both studies. Yet genetic reference database limitations prevented identification of over a third of the sequences queried. The data was subsequently examined by forming operational taxonomic units (OTUs: a taxonomy free method to include all genetic data). The OTU analysis demonstrated clear spatial differences in zooplankton communities around Australia and mapped significant changes in the makeup of the Rottnest community in response to seasonality and heatwave stress. **Conclusions**. These studies provide extensive evidence for the application of multi-gene metabarcoding methods to environmental DNA in long term biomonitoring programs.

Presentation of award to Tina E Berry
by Dr Clayton Fragall, CBSM Chair.