

Samuel Thompson

PHD CANDIDATE

School of Biological Sciences, University of Western Australia

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About me

I use novel sampling methods, computers and large genetic datasets to answer biological questions, typically in marine vertebrates. My research has focused on the development and deployment of a novel sampler capable of simultaneously collecting environmental DNA (eDNA), stereo-video imagery and oceanographic data, along with the development of a new family-specific eDNA metabarcoding primer set targeting Lutjanidae (Snapper). I investigate the spatial distribution of marine vertebrate species in the context of anthropogenic change; especially the presence of restricted-access marine areas such as Marine Parks and offshore infrastructure.

Education

University of Western Australia

Perth, Australia

PHD

2020-present

- Environmental DNA (eDNA) metabarcoding PhD with the Marine Ecology Fisheries Research Group and the Jarman lab
- Developed a sampling system capable of collecting 360-degree stereo-video, water samples and oceanographic data at depths up to 600m
- Designed a family-specific eDNA metabarcoding primer set for Lutjanidae (snapper)
- Built multiple custom bioinformatic pipelines for processing genetic, visual and oceanographic datasets
- Worked extensively with industry (BHP)

University of Southampton

Southampton, United Kingdom

MASTER OF OCEANOGRAPHY

2017-2018

- Studied all forms of oceanography with a focus on biological oceanography and deep-sea ecology
- In my research project I worked on characterising deep-sea megafauna of the Kiribati region (published in *Frontiers in Marine Science* 2019)

University of Kent

Kent, United Kingdom

BACHELOR OF BIOCHEMISTRY (WITH HONOURS)

2010-2014

- Studied general life sciences with a focus on genetics and molecular biology
- In my research project I worked on understanding genome duplication events in the marine chordates using novel bioinformatic tools

Employment

eDNA Frontiers

Perth

DATA SCIENTIST (PART-TIME)

2023-present

- Data scientist / Bioinformatician for eDNA Frontiers at Curtin University
- Building interactive software (R Shiny Apps) to automate the analysis of large eDNA datasets
- Automating client report generation
- Building an interactive online data portal for displaying eDNA datasets to clients

Minderoo Foundation

Perth

RESEARCH ASSISTANT (PART-TIME)

2021-present

- Research assistant with the Minderoo OceanOmics team during offshore expeditions
- Working onboard the Pangaea Ocean Explorer, conducting eDNA and genomic sampling, extraction, amplification, purification and sequencing
- Opportunity to undertake knowledge transfer of eDNA techniques to traditional ranger groups
- Has provided me with a unique opportunity to conduct end-to-end sampling to sequencing on an offshore vessel

University of Western Australia

Perth

LABORATORY DEMONSTRATOR (PART-TIME)

2021-2022

- BIOL1131: Plant and Animal Biology
- Laboratory demonstrator and tutor for both face-to-face and online delivery formats
- Marker for marine component
- Guest Lecturer: Amphioxus: A model for developmental biology

RPS MetOcean

Perth

OCEANOGRAPHER

2019-2019

- Working in the data resources department
- Work processing, QCing and interpreting large oceanographic datasets through a linux environment and the command line
- Data from instruments including: ADCPs, CTDs, LIDAR buoys, Wave rider buoys

Royal Perth Yacht Club

WINDSURFING AND SAILING INSTRUCTOR (PART-TIME)

- Working as a dual qualified windsurfing and sailing instructor at a prestigious Perth yacht club
- Delivering both practical and theoretical lessons to groups of all ages and abilities ranging from age 8 up to 70

Mylan

ANALYTICAL CHEMIST

- Key research team member during the ANDA submission to the FDA for a generic Advair drug product
- Conducted inhalation-specific lab techniques including aerodynamic particle size distribution, dissolution and emitted dose testing
- Use, calibration, maintenance and troubleshooting of analytical chemistry instrumentation including HPLCs and Raman spectrometers.
- Worked abroad in Dublin training new staff and setting up equipment in a new, purpose built QC lab

Other Skills

Coding languages

BASH, R, HTML, PYTHON

- Shell scripting; building and running pipelines for processing large bioinformatic and oceanographic datasets via command-line
- Highly proficient with the configuration and operation of both native and virtual Linux environments (WSL2)
- Familiar with wide variety of R packages, especially for ecological statistics and spatial analysis
- Highly familiar with version control systems: Git and Docker

Practical Skills

ELECTRICAL, MECHANICAL, WOODWORK, ROPEWORK, BOATWORK

- Highly proficient at building and troubleshooting 12v automotive and marine systems
- Highly proficient at troubleshooting software/hardware related PC issues; I have built multiple desktop PCs and completed many initial OS installs and setups using various windows and linux distributions
- Intermediate mechanical knowledge; especially 4x4 and diesel automotive systems
- Basic carpentry and joinery skills from building multiple campervans
- Basic ropework / winch skills
- I have participated >1000 deployments of various marine sampling equipment on a variety of vessel types from the Southampton Solent to the Southern Ocean

Licenses & certifications

Advanced resuscitation

OXYGEN PROVIDER AND CPR

First Aid

4WD training

RIIVEH201D: OPERATE LIGHT VEHICLE, TLIC1051: OPERATE COMMERCIAL VEHICLE, TLIC2025: OPERATE FOUR WHEEL DRIVE VEHICLE, TLIF2010: APPLY FATIGUE MANAGEMENT STRATEGIES, RIIVEH305E: DRIVE AND RECOVER A FOUR WHEEL DRIVE VEHICLE, PMASUP236: OPERATE VEHICLES IN THE FIELD

Recreational skippers ticket

Advanced Open Water Diver

Dinghy sailing instructor

Safety boat

Powerboat level 2

Start windsurfing instructor

Scientific voyages

Perth -> Ningaloo Plateau

RESEARCH ASSISTANT - MINDEROO OCEANOmICS

Pangaea Ocean Explorer

2023 (8 days)

Christmas Island -> Cocos Keeling Islands -> Fremantle

RESEARCH ASSISTANT - MINDEROO OCEANOmICS / UWA DEEP-SEA RESEARCH GROUP

Pangaea Ocean Explorer

2023 (30 days)

Fremantle -> Abrolhos Islands -> Fremantle

RESEARCH ASSISTANT - MINDEROO OCEANOmICS

Pangaea Ocean Explorer

2023 (10 days)

Esperance -> Albany

RESEARCH ASSISTANT - MINDEROO OCEANOmICS

Immortalis

2023 (10 days)

Fremantle -> Cocos Keeling Islands

RESEARCH ASSISTANT - MINDEROO OCEANOmICS

Pangaea Ocean Explorer

2022 (22 days)

Carnarvon -> Ningaloo Marine Park

RESEARCH LEAD - UWA MARINE ECOLOGY GROUP. SURVEYING PALEOCOASTLINE FEATURES WITH STEREO-BRUVs, NOVEL SAMPLERS, CTDs AND ENVIRONMENTAL DNA

Keshi Mer

2022 (12 days)

Fremantle -> Abrolhos Islands -> Fremantle

RESEARCH ASSISTANT - MINDEROO OCEANOmICS

Pangaea Ocean Explorer

2022 (10 days)

Esperance -> Israelite bay -> Fremantle

RESEARCH ASSISTANT - MINDEROO OCEANOmICS

Pangaea Ocean Explorer

2022 (14 days)

Coral Bay -> Exmouth Gulf

RESEARCH ASSISTANT - MINDEROO OCEANOmICS

Pangaea Ocean Explorer

2021 (10 days)

Dongara -> Onslow, WA

PHD STUDENT - UWA MARINE ECOLOGY GROUP. SURVEYING MARINE PARKS, PROPOSED PARK ZONES AND OFFSHORE OIL AND GAS INFRASTRUCTURE USING STEREO-BRUVs, NOVEL SAMPLERS, CTDs AND ENVIRONMENTAL DNA

Adrianus

2021 (28 days)

Presentations

Simultaneous eDNA and visual surveying of the marine environment

ECR PRESENTER

Australia and New Zealand eDNA conference

2023

Amphioxus: A model for developmental biology

GUEST LECTURER

UWA - BIOL1131: Plant and Animal Biology

2021

Research update

STUDENT PRESENTER

UWA - School of biological sciences postgraduate retreat

2021

Research proposal

PHD RESEARCH PROPOSAL

UWA- School of Biological sciences Friday seminar series

2020

Awards and Funding

Grant: Biodiversity and societal benefits of restricted access marine areas

WITH PROF. JULIAN PARTRIDGE, PROF. SIMON JARMAN, PROF. GARY KENDRICK, DR. TIM LANGLOIS, DR MATT NAVARRO. TOTAL FUNDING: AUD\$ \$666,524.

BHP/UWA

2020-2024

Award: CSIRO Early-career researcher conference bursary

GRANT TO ATTEND THE 2023 AUSTRALIA AND NEW ZEALAND eDNA CONFERENCE IN HOBART. TOTAL FUNDING: AUD\$ \$600

CSIRO

2023

Publications

Preliminary observations of the abyssal megafauna of Kiribati

E SIMON-LLEDÓ, S THOMPSON, A YOOL, A FLYNN, C POMEE, J PARIANOS, ...

Frontiers in Marine Science

2019