

Using environmental DNA to detect the presence of the *Tridacna Squamosa* (Giant clam) off the coast of Terengganu.

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Project Background

- Environmental DNA (eDNA) is DNA which has been shed from organisms into the environment through the form of mucus, feces, gametes, shed skin and hair as well as carcasses.
- In June 2024, our goal was to develop the skills and best practice methods for optimal eDNA collection methods. This experience was necessary in allowing us to use environmental DNA to detect the presence of the Giant Clam (*Tridacna Squamosa*) in a marine environment in Malaysia.

Research methods

- Sampling visits were conducted between 3rd June 2025 and 27th June 2025 at seven different coastal and island sites located along the east coast of peninsular Malaysia
- At least two replicates of 1 Liter samples were collected at each site, stored in an ice cooler until filtration in the lab.
- Filtration was carried out between 15 minutes to 14 hours from the time of sampling. Samples were filtered using a sterile membrane filter (0.22 μm , Membrane Solutions, Auburn, USA)
- DNA was extracted from the sample using the PrimeWay Soil DNA Extraction Kit and qPCR analysis was carried out on the extracted DNA.



Figure 1 shows a set up of the filtration station in the laboratory. Figure 2 (right) shows *Tridacna Squamosa*.

Experiences



- Conducting research in Malaysia was a truly unique experience. Though our main goal was to aid Dr Norainy Hussin on her eDNA research, we were able to take part in a multitude of projects, excursions and activities across eastern peninsular Malaysia.
- Top left photo is a picture of the Laidlaw Scholars (us) with the director of the Institute of Tropical Aquaculture (AKUATROP) and our supervisors for the summer program.
- Top right photo, we are taking part in an oyster breeding workshop at a commercial oyster breeding farm.
- Bottom photo is a selfie when we visited the Tengku Tengah Zaharah Mosque (Floating Mosque) in Terengganu!

Results and discussion

- In the qPCR assay, there was no amplification detected for any of the field samples signifying that there was no eDNA detection of *T. squamosa*.
- In the qPCR assay, some tissue samples recorded positive amplification suggesting that the issues may be in the sample collection/extraction phase.
- In considering future research additional purification steps such as DNA re-precipitation and ethanol washing could be incorporated to reduce the presence of potential inhibitors.

Lessons in leadership

Traveling across the world and receiving exceptional hospitality and unending support and guidance has inspired me greatly. In addition to the amazing food and culture, I have learned about what it takes to have an idea or research question to be able to turn it into a fruitful, tangible project.

I have received a strong foundation in marine fieldwork, laboratory benchwork and the process of getting results, a solid foundation to prepare me for graduate studies.