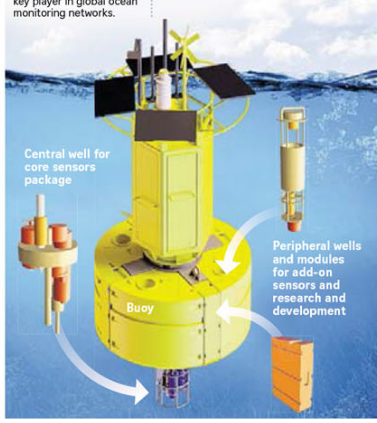


Monitoring the seas to strengthen climate change research

WHAT:
Three research buoys will be set up by 2025, each equipped with sensors to monitor environmental parameters such as salinity, temperature and mineral content of the seas surrounding Singapore.

FINDINGS/AIM:
To better monitor Singapore's seawater quality in the long term and contribute to marine environment data, and establish Singapore as a key player in global ocean monitoring networks.

LED BY:
Dr. Jani Tanzil, deputy facility director of the National University of Singapore (NUS) St John's Island National Marine Laboratory.



Central well for core sensors package

Buoy

Peripheral wells and modules for add-on sensors and research and development

S'pore making waves in marine research

St John's Island National Marine Laboratory was set up on St John's Island in 2002 by the National University of Singapore to conduct research around the Republic's Southern Islands. As the laboratory turns 20 this year, **Cheryl Tan** and **Gena Soh** look at its notable projects which are helping to establish Singapore as a regional nexus for marine research and education amid climate change.

Discovering new marine species

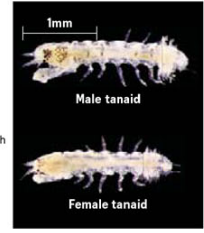


WHAT:
As part of a biodiversity expedition in 2018, researchers from NUS and the Indonesian Institute of Sciences collected more than 12,000 creatures during a 14-day voyage to survey the unexplored deep seas off the south-west coast of West Java, Indonesia. Research work is being carried out on these species.

FINDINGS/AIM:

- Among the new species discovered, a total of 40 new species of tanaids, or small crustaceans, were found to be potentially new to science.
- Researchers will study the important ecological roles the tanaids play in the ocean.
- They are also looking to go on more biodiversity expeditions with their Indonesian counterparts to unexplored parts of Indonesia.

LED BY:
Mr Chim Chee Kong, research associate at the NUS Tropical Marine Science Institute.



1mm

Male tanaid

Female tanaid



Studying bacteria from aquaculture farms

WHAT:
Researchers look at how long bacteria and viruses from aquaculture can accumulate and survive in marine sediments like clay and sand particles.

FINDINGS/AIM:

- Pathogens from farms – including two bacteria strains – were found to linger for 21 days and could affect the water quality in the Johor Strait.
- Researchers hope that the results of their study can improve open-water fish farming and aquaculture operations to reduce their environmental impact.

LED BY:
Mr Elton Lim, PhD student at the Singapore Centre for Environmental Life Sciences Engineering, Nanyang Technological University (NTU).

Researching coral health and resilience



WHAT:

- Corals contain symbiotic microalgae which photosynthesise to produce nutrients that the corals require. The corals emit waste products which nourishes the seaweed.
- Farming releases waste nitrates into the sea which causes the seaweed to overgrow. This, coupled with corals becoming weaker as a result of climate change, has caused the seaweed to overpower the corals, leading to decreased coral growth. This phenomenon has already been observed in other parts of the world.
- The study looks at how interactions between the coral and seaweed affect the coral microbiome, which could have effects on reef resilience against environmental stress.

FINDINGS/AIM:
Coral "probiotics", in the form of healthy bacteria, can be prescribed to the corals to prevent damage by improving their immunity against harm such as bleaching.

LED BY:
Ms Peggy Tang, PhD student at the Singapore Centre for Environmental Life Sciences Engineering, NTU.

Sources: NUS, NTU PHOTOS: ISTOCKPHOTO, GOOGLE EARTH, ST FILE, PEGGY TANG STRAITS TIMES GRAPHICS