NIWA
Taihoro Nukurangi

The resilience of deep-sea benthic communities to the effects of sedimentation

Tēnā koutou katoa,nau mai hoki mai ki tō tātou pānui. Ma te waka eke noa, kia mahitahi ai!

WAIKATO Te Whare Wānanga o Waikato
VICTORIA UNIVERSITY OF WELLINGTON

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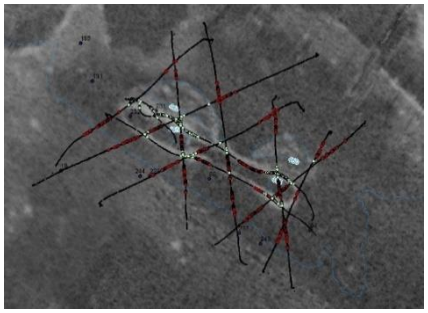
2019 Survey

The second survey under this programme took place in June to monitor changes at sites sampled in 2018, and to undertake some further disturbance. In this flyer we describe the use of the Sediment Cloud Induction Plough (**SCIP**) to observe **Direct physical disturbance,** the **Moorings** deployment for longer-term measurements and the **Sedimentation experiments** on **sponges** and **corals.**

Images from the video cameras mounted on SCIP showing the sediment plume

A modified tyne-plough was used to disturb the seabed, with pre- and post-disturbance monitoring with DTIS (Deep Towed Imaging System). Transect lines are shown below.



White dots indicate records of coral communities, and red dots show observations of SCIP marks

DTIS was used to evaluate the performance off the plough and assess direct physical disturbance.

Image from DTIS of SCIP tracks following disturbance events

Understanding natural sedimentation is important for evaluating human impacts, and last year we deployed 3 moorings which were recovered on the 2019 Voyage. These measured currents, water chemistry, and sediment deposition enabling us to interpret changes with season compared with measurements taken during the short surveys.

A mooring was deployed this year and will be recovered in June 2020.

Experiments

A key science question for our research is 'how resilient will the "knobbly sandpaper sponge" *Ecionemia novaezealandiae* and the stony coral *Goniocorella dumosa* be to sediment plumes. Experiments have been completed on the **sponge** samples and results from assessing sponge health and survival, at different levels of suspended sediment concentration, are now being worked up.

Sponge sample *Ecionemia novaezealandiae*

Next week the experiment on several **coral** colonies branch segments, kept alive so far for 5 months, will begin. The corals have been fed regularly and maintained in water temperature and current conditions similar to those found in the Survey Area. The coral segments held in our tanks remain pink and healthy with their polyp tentacles extended.

Deep-sea stony branching coral colony *Goniocorella dumosa*

As with the sponges, our coral experiments will assess health and survival in varying sediment concentrations. Additionally, we will assess polyp mortality and mucous production if visible and quantifiable from digital images.

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