

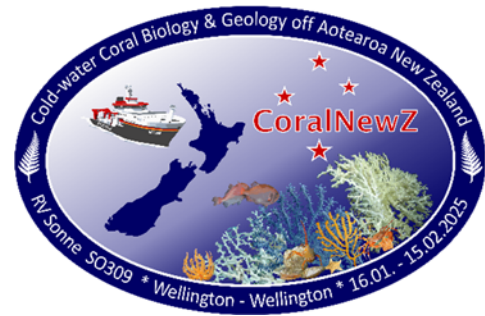
FS SONNE

Voyage SO309 CoralNewZ

16.01. – 15.02.2025

Wellington – Wellington (New Zealand)

4th weekly report (03.02.-09.02.2025)



Last week, we watched spellbound as the experienced team from the MARUM SQUID ROV, led by Nico Nowald, safely and carefully steered the vehicle over flourishing coral reef rich in relief and species on the summit of the Ghaul seamount. This reef is built up by the cold-water coral *Solenosmilia variabilis* (see illustration). Everyone on board who could, whether crew or scientists, followed the live broadcasts on the monitors available throughout the ship, which were also streamed live worldwide and aroused great interest. But first things first.



Intact *Solenosmilia* reef on the Ghaul seamount at a water depth of 925 metres.
Copyright MARUM - Center for Marine Environmental Sciences, University of Bremen.

Last Tuesday at midday we were finally able to take our equipment container on board, which had arrived in Port Wellington after a long delay. Afterwards the SONNE headed at full speed for our last working area, the Graveyard Seamount Complex on the northern flank of the Chatham Rise. Its seamounts have varying degrees of bottom trawling activity, in particular the Ghaul seamount is unfished, the Graveyard seamount is still lightly trawled today and the Morgue seamount was heavily trawled until around 20 years ago and has been protected ever since. In order to assess the impact of bottom trawling on cold-water coral ecosystems, NIWA carried out defined trawl camera profiles on the three seamounts mentioned at certain intervals (2009, 2015 and 2020) - as we are now doing together with the Oceanfloor Observation System (OFOS) photo sled. In addition, we were able to deploy the MARUM SQUID ROV almost daily and specifically sample the associated fauna for various scientific

questions, which were meticulously processed by the Senckenberg and NIWA working groups, the latter under the direction of Kareen Schnabel, professionally documented by Peter 'Chazz' Marriott and Severin Korfhage and finally methodically fixed or deep-frozen in a variety of ways and listed in databases.

The volcanic Ghoul seamount also had another scientific highlight to offer. Our geologists from MARUM retrieved coral-bearing sediment cores up to 8.42 metres long from the top of the seamount. This means that the recent coral reef only represents the tip of a coral mound - the first ever evidence of a coral mound in New Zealand waters!

The contrast to the Ghoul Reef could not have been greater when we explored the Morgue seamount, which, as mentioned, was still heavily fished a good two decades ago. Unfortunately, mainly coral rubble still awaited us there today (see picture).



Coral rubble on the summit of the Morgue seamount, photographed with the OFOS photo sled at a depth of 960 metres.

OFOS, ROV, gravity corer and epibenthic sled stations running around the clock would not have been possible without the great efforts of our mapping group consisting of Evgenia Bazhenova, Alissa Bach (both MARUM) and Sam Davidson (NIWA): Their professional visualisation of the complex topography of the seamounts, which are characterised by rapid changes in basalts and sedimentary sequences as well as steep slopes, helped everyone to deploy their equipment safely.

Everyone on board is safe and sound.

André Freiwald, Voyage Leader