SPRFMO
South Pacific Regional Fisheries Management Organisation

13th MEETING OF THE SCIENTIFIC COMMITTEE

8 to 13 September 2025, Wellington, New Zealand

SC13 - Obs 02
Direct observations from within the Central Lord Howe 2024 temporary suspension of bottom fishing VME encounter area

Greenpeace

South Pacific Regional Fisheries Management Organisation

13th Meeting of the Scientific Committee

Wellington, New Zealand, 8 September - 13 September 2025

Direct observations from within the Central Lord Howe 2024 temporary suspension of bottom fishing VME encounter area

Observer Information Paper

Greenpeace

Katrina Goddard[1] and Ellie Hooper[2]

8 August 2025

1. NorthTec Tai Tokerau Wānanga, Northland, Aotearoa New Zealand, written on behalf of Greenpeace Aotearoa
2. Greenpeace Aotearoa, Auckland, Aotearoa New Zealand

1. Background

The Lord Howe Rise, a largely submerged plateau in the southwest Pacific Ocean, is the largest component of Northern Zealandia. Scientific evaluations of the region indicate it hosts deep-sea corals, sponges, and demersal fish, supports high marine biodiversity, provides habitat and migration routes for seabirds, cetaceans, and fish due to its unique geomorphology, is home to diverse benthic habitats, and is important for a range of deep-sea fauna. However, parts of the Lord Howe Rise have been heavily fished by bottom trawlers, raising concerns about potential impacts on vulnerable marine ecosystems (VMEs).

In October 2024, a New Zealand flagged bottom trawler operating within the Central Lord Howe Bottom Trawl Management Area (BTMA) on the Lord Howe Rise reported 37 kg of deep-sea corals in a single tow. This multi-taxa coral bycatch triggered a temporary suspension of bottom fishing in the encounter area, under the South Pacific Regional Fisheries Management Organisation (SPRFMO) Conservation and Management Measure (CMM) 03-2023.[1]

In March 2025, Greenpeace undertook a Seamount Expedition on the *Seaworker* vessel. The main purpose of the expedition was to obtain high resolution video footage (and still imagery) of VME indicator taxa on seamounts and similar features (underwater mountains that have an elevation over 100m) and non-feature areas within New Zealand's Exclusive Economic Zone and within the SPRFMO convention area. The scientific expedition was co-designed in collaboration with researchers from the National Institute of Water and Atmospheric Research (NIWA), the Department of Conservation (DOC) and the Ministry for Primary Industries (MPI).[2]

The expedition was originally designed to focus in and around the Northwest Challenger BTMA within the SPRFMO convention area. After the reported potential VME encounter, the expedition was updated to include the Central Lord Howe BTMA as it was logistically possible to reach this area. All tow surveys[3] were within the temporary suspension of bottom fishing encounter boundary to provide direct observations through high resolution video footage to ensure the best available scientific data could be used by the SPRFMO Scientific Committee members when reviewing this temporary bottom fishing suspension, as per the Encounter Review Standard.[4]

[1] Since replaced by CMM 03-2025, however due to the timing of the encounter, the requirements of CMM 03-2023 will apply:
[2] Note that agencies (MPI/DOC) were offered a free of charge berth on the expedition, but declined.
[3] Note at the time of the survey the trawl track coordinates of the October 2024 potential VME encounter were not released to Greenpeace, but the temporary suspension of bottom fishing boundary was.
[4] As approved at the 12th meeting of the Scientific Committee 2024, SC 12 DW10 Encounter Review Standard for the SPRFMO

2. Description of Data

At the Central Lord Howe 'encounter site' (Table 1), a total of four towed camera transects were undertaken (Figure 1; Table 2). Each transect was carried out using the STR SeaSpyder Drop/TOW camera system, which was flown approximately 2 - 5 m above the seafloor and rated to 1500m depth. This system used an IP camera for navigation (2k). The system was equipped with two high resolution cameras for survey purposes;

1. The Canon digital SLR camera was operated as a continuous HD video 1080p (30fps) but could be manually stitched to take stills (24 mega pixel) and had an optional high-powered flash. The set up included four 15000 lumen LED lights and dual scaling lasers (174mm apart). The Canon system had a maximum operating depth of 1500m.

2. The SubC camera was operated as continuous 4K video (8.3 MP; 30fps) with its own dual LED lighting system (15000 lumens) and laser scalers (100mm apart), this system was rated to 6,000m depth but limited to the STR SeaSpyder set up of 1500m depth.

The depth of the transect dives carried out at Central Lord Howe exceeded the depth rating of the working USBLs available on the vessel of 1000m so they were unable to be deployed at this site. Locational overlay on the video feed came from the stern of the *Seaworker*, and a layback can be applied.

Continuous video footage collected by the SubC camera was manually reviewed using DigitalEdge software. All visible fauna were identified to the lowest possible taxonomic level using regional taxonomic guides, and observations were recorded alongside substrate type, video timestamps, and relevant metadata in a shared Google Sheets database. Faunal observations were noted as presence within a given video frame rather than counts to avoid duplicate entries.

Once all transects had been reviewed and annotated by contracted experts, a subset of the Central Lord Howe site footage was selected for more detailed external quantitative analysis. This subset consisted of video sections where SPRFMO VME indicator taxa were observed. From these sections, frame grabs (i.e., still images) were manually captured at intervals that ensured the camera had advanced sufficiently to avoid visual overlap and prevent recounting the same individuals.

The resulting still images have been annotated using the online platform BIIGLE 2.0 (Langengkämper et al., 2017) for VME indicator analysis, which also included height estimates where possible. Each annotated image was assessed for whether it met criteria for a VME using the decision flowchart developed by Baco et al. (2023) (Figure 3) as a best practice for identifying VMEs from imagery. Following this framework, each image was categorised as 'Yes' (considered a VME), 'Maybe' (potential VME, requiring additional information), or 'No' (not considered a VME).

The data collected by Greenpeace on the Seamount Expedition will be available upon request by any Scientific Committee member for analysing direct observations from within the bottom fishing suspension area around the 2024 potential VME encounter. Any member wishing to obtain this data should email Ellie Hooper (ellie.hooper@greenpeace.org).

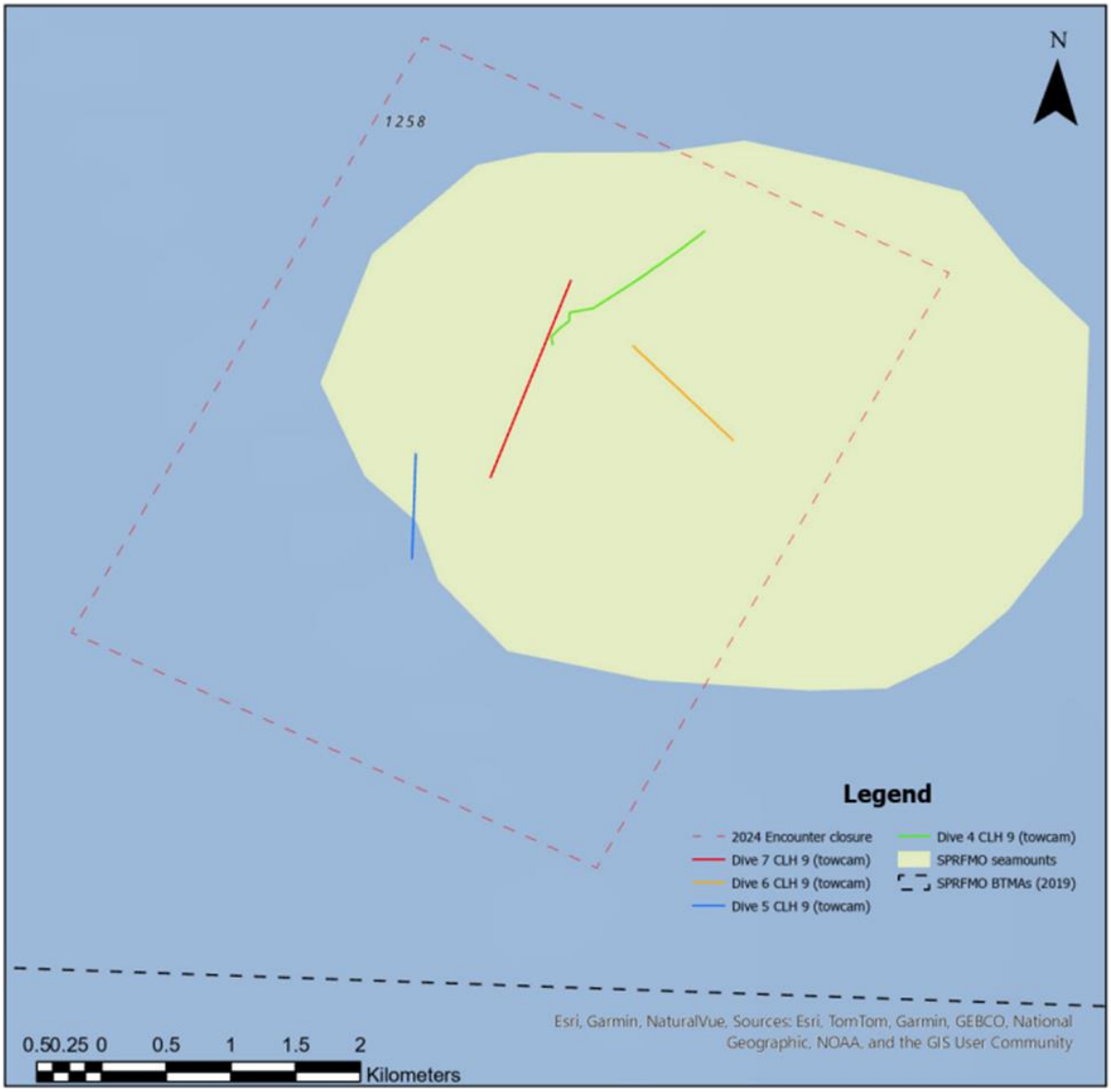

Figure 1: Seamount Expedition Central Lord Howe site showing the locations of the four survey transect lines (Dive 4 - Dive 7) within the bottom fishing suspension area around the 2024 potential VME encounter site (red hash line) within the Central Lord Howe Bottom Trawl Management Area (black hash line). All transects were carried out on seamount ID 1246.

Table 1: Coordinates of the bottom fishing suspension area around the Central Lord Howe potential VME encounter.

Point	Latitude	Longitude
1	36° 00.000' S	166° 10.620' E
2	36° 59.100' S	166° 8.400' E
3	36° 56.580' S	166° 9.78' E
4	36° 57.480' S	166° 12.000' E
5	36° 00.000' S	166° 10.620' E

Table 2: Greenpeace Seamount Expedition Central Lord Howe site transect line start and end coordinates.

Transect Dive No. (CLH)	Latitude (start)	Longitude (start)	Latitude (end)	Longitude (end)
4	35° 57.834' S	166° 10.3608' E	35° 57.3438' S	166° 10.9752' E
5	35° 58.7418' S	166° 9.807' E	35° 58.3098' S	166° 9.807' E
6	35° 58.2048' S	166° 11.124' E	35° 57.8298' S	166° 10.6962' E
7	35° 58.3938' S	166° 10.122' E	35° 57.5688' S	166° 10.4268' E

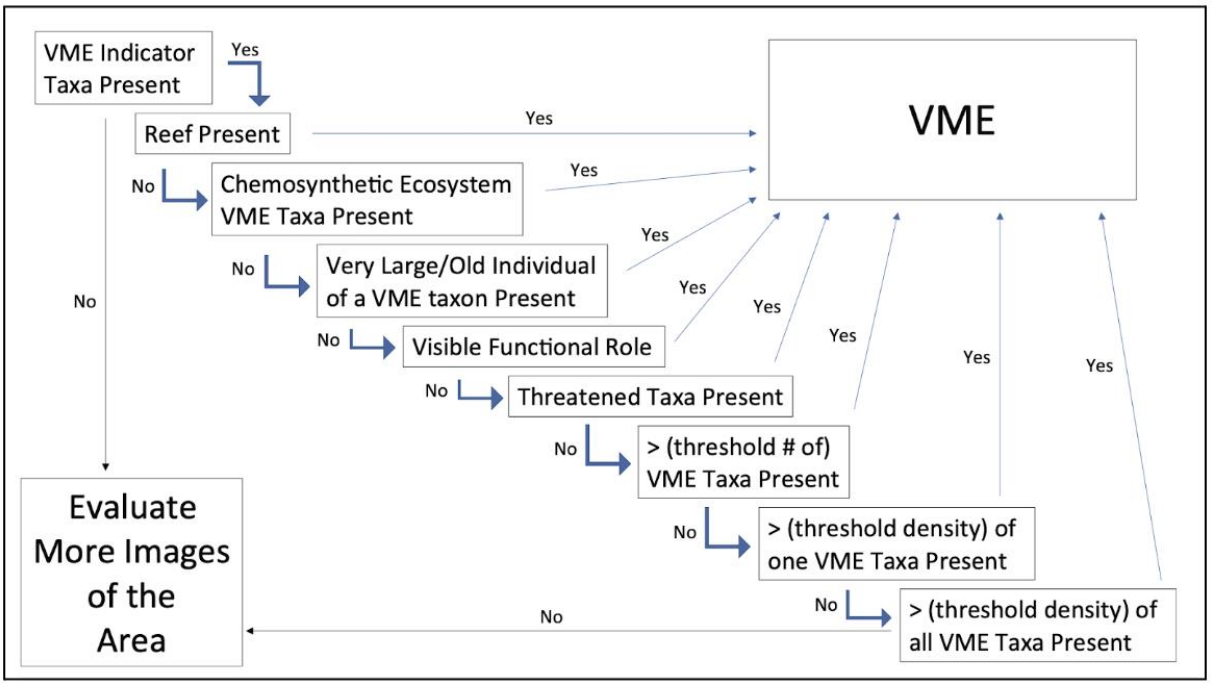

Figure 3. Flow chart for determining whether the faunal community in a single frame or image represents a VME. If a "Yes" is obtained in any step, the image can be considered a VME, and no further steps need to be tested. Reproduced from Baco et al. (2023).