An acoustic approach to investigate micronekton dynamics at seamounts in the South West Indian Ocean

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Seamounts are ubiquitous topographic features across all ocean basins. They rise steeply from abyssal depths, sometimes reaching the upper mixed layer of the water column. Depending on their size, shape and summit depths, seamounts have an impact on the physical flow regimes by influencing tidal currents, forming enclosed circulation cells, Taylor columns or cones and enhancing vertical mixing. Ultimately, seamounts may promote the aggregation of zooplankton, micronekton, and hence top predators above or in the immediate vicinity of their summits. Seamounts are thus under enhanced fishing pressure worldwide and there is an urgent need to study these vulnerable ecosystems. The dynamics of micronekton was investigated as part of a multi-disciplinary research project carried out at two shallow seamounts of the South West Indian Ocean: La Perouse (19 °40'S, 54 °09'E, summit depth 55m) and "MAD-Ridge" (27 °25'S, 46 °15'E, summit depth 200m), based on data collected during cruises carried out in 2016. Physical parameters (nutrient, chlorophyll a, temperature, salinity, dissolved oxygen) were sampled and measured using a CTD Rosette system. Micronekton were sampled using an International Young Gadoid Pelagic Trawl which was towed for 30 min-1 hour at a speed of 3-4 knots. Acoustic data were collected continuously during the day and night at 4 frequencies: 38, 70, 120 and 200 kHz. Preliminary results suggests that seamounts aggregate specific communities of fishes at their summits, responding equally to the 38 and 70 kHz frequencies. A greater micronekton acoustic density was detected at the seamount summits during the day and night compared to the slopes of the seamount. Comparisons on the diel migration characteristics are made using similar measurements performed in a seamount-free area. These results will be discussed in the light of the environmental characteristics recorded at the two seamounts studied.