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MARINE BIOLOGY AND ECOLOGY

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ABSTRACT Subject :

Integrated approach to climate change impacts on pteropods abundance and distribution in the western ross sea (antarctica)

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At present, we lack information on plankton distribution in large parts of the Southern Ocean surrounding Antarctica. Characterizing zooplankton communities in space and time is challenging: zooplankton communities are ecologically complex, spatial heterogeneity of zooplankton is high, intergenerational periods of zooplankton are short, and zooplankton can hardly be identified to the genus or species level by in situ instrumentation, though recent developments are promising (Pinkerton et al. 2020). Although Limacina helicina antarctica is a keystone species in the polar regions, information on its ecology and trophic functioning is scarce in the northwestern Ross Sea. When they migrate to the surface, they may do so in unbelievably huge numbers. These aggregations usually attract their predators, like the sea angel Clione limacina, baleen whales, chunk salmon, pink salmon, herring and certain seabirds. The major aim of this study was to document pelagic pteropods with a detailed inventory recorded from the northwestern Ross Sea. Here we determine the population structure and standing stock biomass of Limacina helicina antarctica and Clione limacina, prey-predator species in the Ross Sea region, and use this information to derive estimates on their horizontal and vertical distribution, in relation to environmental parameters, different seasons and long-term time series. In 1987, Italy started a series of oceanographic cruises to the Southern Ocean. During the last 35 years we have collected zooplankton in all regions of the Ross Sea and adjacent waters, using both standard models of opening-closing plankton nets Bongo and WP2 and BIONESS electronic multinet 0.50 m-2 and 1-m-2 with 200- and 500-□m standard mesh sizes. Global warming occurred in the Southern Ocean has a clear potential to affect zooplankton and ecosystems. This could form the basis for a Pan-Antarctic comparation of fauna, including vertical distribution of species richness and diversity and vertical structure of the zooplankton communities. In particular, data from the Ross Sea, will be compared with data collected by the Australian Antarctic Division and the University of Tasmania in the Indian Sector of Antarctica.