



# IV ROSS SEA CONFERENCE 2023

Università degli Studi di Napoli "Parthenope"

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**Topic:** Marine biology and ecology



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**ABSTRACT Subject :**

Macrobenthic indicators as descriptors of the environmental status of shallow Antarctic coasts

**Abstract** 13/02/2023 16:31:12



Benthic communities exert a key function in the Antarctic marine ecosystem since they play a central role in the food web pathway. They consist of sedentary, sessile and motile species, belonging to all the domains of life, and represent the environmental "biological memory" able to provide information about the type and quality of the area where they are sampled. In this framework, the goal of this study is to evaluate differences in the composition and community structure of macrozoobenthic assemblages potentially affected by external pressures carried out by the human presence and penguin colony on the Antarctic coasts of Tethys Bay (Ross Sea). Four sites were sampled, accounting for different types and levels of pressure (anthropic vs. natural vs. two control non-impacted areas), during the two Italian expeditions in the austral summer of 2017/18 and 2018/19. The site neighbour the Italian Station is altered by ions and heavy metals, among which dominate nitrate (34%) and cadmium (40%), while the site affected by organic load from a close penguin colony is rich in phosphate ion (70%; among sites). Although the community patterns do not differ significantly among sites, the composition structure follows the environmental parameters. The disturbed areas are also validated by the dominance of few opportunistic polychaete species that are known to show adaptations in disturbed environments, such as the motile deposit feeder *Leitoscoloplos kerguelensis* (McIntosh, 1885) and the tube-dwelling *Spiophanes tcherniai* Fauvel, 1950. In the same way, the control sites are characterized by the dominance of large suspended feeder bivalve *Adamussium colbecki* (E. A. Smith, 1902) due to the high concentrations of total organic carbon (40%; among sites), and by the important presence of the deposit feeder *Aequiyoldia eightsii* (Jay, 1839) where the highest percentage of sandy sediment (52%) occurred, in agreement with species habitat preference. These results, together with future monitoring programs of macrozoobenthic communities, allow us to evaluate the magnitude of assemblage modifications over time in stressed environments and to suggest a management plan aimed to maintain a good environmental state of the ecosystem functioning.

