

ASSESSMENT OF THE COASTAL MARINE ENVIRONMENT AT ADMIRALTY BAY, KING GEORGE ISLAND, ANTARCTICA

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The Antarctic Brazilian Station “Comandante Ferraz” (EACF) was established in Admiralty Bay, in 1984. This work is an evaluation of the marine benthic environment considering the abiotic characteristics of the bay, and changes observed in benthic community structure in space and time. The following questions have been assessed: How do long-term time scale changes in communities compare to short-term? Is there a difference in benthic community structure near EACF related to the human population increase during the summer? How do the trophic webs function, considering natural *versus* potential human affected areas within the bay? A Beyond BACI strategy was used taking into account the sewage outfall and oil tanks near EACF as the main contamination sources, and 5 other reference areas at Admiralty Bay. Faecal sterols and petroleum hydrocarbons concentrations have increased slightly throughout the summer near EACF, but values were very low indicating their contribution has not been significant. *E.coli* and *C.perfringens* have been found mainly near the sewage outfall. *C.perfringens*, either from anthropogenic or animal origin, has been detected in 2 reference areas. Biogenic methane has indicated a possible enrichment of methanogenic communities near EACF. Intra- and inter-annual differences in densities of benthic macrofauna have been more significant than their spatial variation. Benthic faunal abundances change in relation to the water column production. Carbon and Nitrogen stable isotopic analysis have not indicated differences between areas related to organic enrichment in the food web. This study indicates that a suitable temporal replication within each year in sampling surveys is necessary in order to avoid confounding effects in long term trends assessments within Antarctic environmental programmes. Natural rather than anthropogenic processes are the main cause of sedimentary changes. The effects of the contamination sources are chronic and very restricted in extent (maximum 200m from the shoreline in front of EACF).