

Evolution and Biodiversity in the Antarctic: the Response of Life to Change (EBA) – Brazil

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The SCAR Programme EBA (so far, 22 nations, over 70 researchers) will explore the evolutionary history of selected modern Antarctic biota, examine how biological diversity in the Antarctic influences the way present-day ecosystems function, and thereby predict how the biota may respond to future environmental change. For the first time it will integrate understanding across the major realms of Antarctic biology (marine, terrestrial, freshwater) into the cohesive picture which is a prerequisite of Earth-System Science. EBA will advance evolutionary and ecological theory using model systems and organisms from the Antarctic.

The Antarctic environment offers a unique opportunity to address these globally significant questions in an interdisciplinary and multidisciplinary (molecular biology, ecophysiology, microbiology, taxonomy, organism biology, etc) approach, essential for understanding the structure and functioning of the earth system. EBA will involve fieldwork and labwork, in Antarctica and home institutions. There are clear synergies with other projects, e.g. CAML and ICEFISH-2007 (an international and multidisciplinary programme centered on a Sub-Antarctic cruise). Exploration of some areas will require new technology (e.g. benthic landers or ROV for the deep-sea, AUV for work beneath ice shelves).

EBA will liaise with the relevant physical and historical disciplines to ensure use of the most recent data and insights in interpreting the biological results. Combining these approaches with our increasing understanding of the tectonic, climatic and glacial evolution of Gondwana offers a uniquely powerful opportunity to advance our understanding of how evolutionary processes are related to the physical setting. The EBA science plan clearly shows that it will make a significant contribution to IPY by undertaking a focused initiative elucidating the evolutionary response of organisms, populations and communities to environmental change. EBA will leave a legacy of evolutionary and biodiversity information, which is the hallmark of IPY.