

CONSERVATION BIOGEOGRAPHY OF THE ANTARCTIC: PAST PERSPECTIVES AND CURRENT APPROACHES

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We review the historical perspectives on Antarctic biogeography, from the relatively simple classifications of early studies to more recently suggested biogeographical boundaries. We then present analyses of current biodiversity and biogeography in Antarctica based on terrestrial data held in the SCAR Evolution and Biodiversity Database. Data were filtered for taxonomic reliability and spatial accuracy resulting in a usable subset of 48 339 records representing 1823 taxa. We used multivariate techniques on these data to assess the efficacy of the Environmental Domains of Antarctica in capturing biogeographic patterns. Similar analyses were also conducted on expert-defined bioregions and a 200 km square spatial framework. We found that while all three provided a useful, important measure of environmental variation across Antarctica, in isolation, none were an appropriate spatial framework on which to base biological management decisions. Nevertheless, the Environmental Domains can be considered essential as a first order assessment of likely systematic variation in biodiversity. However, for meaningful analysis at the finer spatial scales typically used in protected area designation, all of the spatial frameworks tested need to be supplemented with more biodiversity data. The current data available in the SCAR biodiversity database are useful for this task, but considerably greater data input and survey effort will be required before there is sufficient coverage necessary for systematic conservation planning to assess the representativeness of the Antarctic protected area network. At present, modern systematic conservation planning in Antarctica is constrained by an absence of appropriate, spatially explicit and readily available biodiversity data.