

Marion Island Marine Mammals: sentinels of change

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Following exploratory research done during the early 1950's, Mammal research at Subantarctic Marion Island (MI) became a priority scientific endeavour in 1973. Baseline southern elephant seal research was conducted intermittently until 1983, when the present Marion Island Marine Mammal Programme (MIMMP) was initiated. Precipitous global declines in elephant seal numbers prompted the inception of an intensive mark-recapture programme to better understand the demographics of the MI population in an effort to identify causal mechanisms for the declines there. Unparalleled longitudinal data over a 33-year timespan has highlighted both juvenile and adult female elephant seal mortality as proximate drivers of the declines. Food limitation has been suggested as the ultimate driver of the population decline, although various other hypotheses persist. Partly driven by these hypotheses and the evidenced recent stabilisation of the elephant seal population, intensive research on other mammalian top-predators within the Marion Island ecosystem has commenced during the past decade. Investigation of possible top-down control of the elephant seal population by a resident killer whale population has received intensive recent attention. Novel characteristics of killer whales here have stimulated parallel investigations into the basic biology of this species, with consequent global implications. Foraging ecology studies of otariid seals have furthermore assisted in disentangling questions pertaining to environmental change, interspecific interactions and important oceanographic features of importance to top-predators from this locality in general. I provide a synthesis of the research that has driven three decades of scientific inquiry into the population dynamics of mammalian marine top-predators and how this research continues to help to answer questions of global significance from a region experiencing increased environmental change.