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Antarctica in a Changing World

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ABSTRACT BOOK

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Abstract No : 603

Penguins living in a challenging environment: assessment of immuno-haematological parameters in specimens of Adélie penguin from the Ross Sea, Antarctica

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Human activities, pollution and biological invasions summed up to climate change represent an increasing pressure on the Antarctic ecosystem and its biodiversity. The Adélie penguin Pygoscelis adeliae is considered a sentinel species able to reveal the impact of anthropogenic pressures on the Antarctic ecosystem and reflecting changes in habitat quality and in the availability of marine resources. Here we investigate immune-haematological parameters (erythrocyte nuclear abnormalities, ENAs, and white blood cells, WBCs) as indicators of health status in specimens of Adélie penguin breeding in three colonies in the mid-Victoria Land, Ross Sea. Total ENAs including specific abnormalities and WBCs values did not differ between specimens from the three colonies. The discriminant functions reflecting variability in immuno-haematological parameters showed a low discriminatory power (ENAs cross-validated discriminant rate 37.9%; WBCs cross-validated discriminant rate 40.7%), and discriminant scores overlapped substantially among colonies, meaning that immune-haematological responses failed to explain the separation among breeding sites. Sex differences were found on total number of ENAs and WBCs, which were respectively ~30% and ~20% higher in males than in females. Our work integrated the measurement of immune-haematological parameters to identify a series of proxy of penguin's health by analysing small amounts of non-destructive samples and couple them with the bio-ecological responses, establishing a baseline against which signals of ecosystem change can be detected.

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