



Department: Biological Sciences

Research Project:

Impact of the black swan and other potential stressors on New Zealand seagrass ecosystems

Qualification: MSc

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Location: NIWA Hamilton (Gate 10)

Research Interest

Seagrass plays an important ecological role in estuarine environments. They contribute significantly to coastal primary production and provide shelter, habitat and nutrition for many organisms. Seagrass abundance has decreased worldwide including New Zealand. Understanding the factors that contribute to seagrass decline is important to protect and enhance remaining habitat. Nowadays a number of potential stressors of seagrass meadows have been identified including human impacts like wastewater discharges, eutrophication, sedimentation, harbour development and boat anchorage and natural or biological impacts like wasting disease, storms and grazing by herbivores. In New Zealand, the black swan (*Cygnus atratus*) is the sole seagrass macro-grazer. This species is thought to have colonised New Zealand by natural means, but has only become established in New Zealand in significant numbers within the last 150 years due to human introductions. Freshwater macrophytes are a preferred food source for this bird but recent declines in lake water quality and associated loss of macrophytes, may be increasing swan presence in estuaries and grazing pressure on seagrass. In contrast to some seagrass macro-grazers in other parts of the world (eg. the green turtle) black swans have not evolved alongside the New Zealand seagrass (*Zostera muelleri*) and may represent a relatively new 'stressor' on this habitat.

The overall objective of this project is to quantify the grazing pressure by the Australian black swan on seagrass beds and determine how this disturbance interacts with other potential stressors to affect seagrass biomass, productivity and condition. The project is divided into three parts:

Part I - Swan grazing behaviour and on the quantification of the consumption rate and damage to seagrass beds.

Part II - A multiple seagrass site survey in order to identify key environmental stressor variables impacting on seagrass condition.

Part III - A swan grazing simulation experiment occurring at selected areas from the second part to assess the interactive effects of black swans and other stressor on seagrass recovery.

Conference poster presentations and workshops:

Dos Santos, V. Impact of black swans and other stressors on New Zealand seagrass. *Coastal Science Meeting*, Hamilton, New Zealand, 28 August 2007.

Dos Santos, V. Matheson, F., Pilditch, C., Elger, A. & Park, S. Does the black swan have a major impact on NZ's seagrass decline? *New Zealand Marine Science Conference*, Hamilton, New Zealand, 29-31 August 2007.

About me

I was born in France where I did my Bachelor and Master in Ecology, then I decided to come to New Zealand for my PhD. I really enjoy discovering this beautiful country!!! Therefore as soon as I have time, I like photographing nice landscape, and drawing the nature!! I also like dancing, climbing, running and...I became a surfer addicted!!!!

