

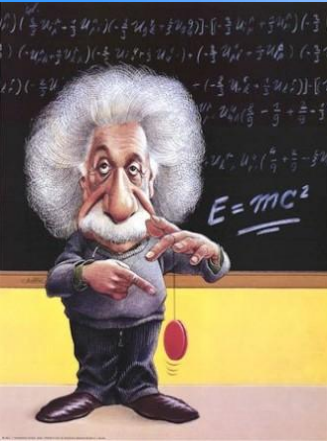
Seeking Refuge with White Sharks:

A test of the Risk Allocation Hypothesis



Just a theory?

Elements of our world that we now regard as facts (gravity, electricity, or even the existence of other planets) were not always so certain. They were all once innovative theories that were tested before being accepted



- some today are still debated! Utilizing the unique ecosystem dynamics of Dyer Island, this study will test a newly developed theory of behavioural ecology dubbed the “risk allocation hypothesis” (RAH). The RAH predicts how prey animals respond to varying levels of predation risk over varying periods of time. Applying these predictions to natural systems will then either support or oppose the validity of the theory, and my study aims to do just that. To accurately test the RAH, you would need a study site that contains reliable and predictable predator and prey interactions that fluctuate over time. The Dyer Island system is such a site.

There, great white sharks predate heavily and predictably on Cape fur seals during austral winter months. However, the seals are not just banal victims, they also take on the role as predator and prey on critically endangered African penguins. At Dyer island, sharks do not predate on penguins other than rare curious bites from juvenile sharks. During high shark presence, fewer seals traverse the deeper channel waters than during periods of low shark presence. The peak in seal predations on penguins coincides with the departure of hunting white sharks, leaving the waters safe for the seals - but much more risky for penguins. In this indirect way, shark presence may play a pivotal role in the predation risk African penguins face from Cape fur seals. Without the protection of the white sharks, penguin populations may decrease dramatically as predation from seals may occur year-round rather than a seasonal event as it currently is. If the penguins utilize the safer waters more (when sharks are present) which is a prediction of the RAH, then penguins may seek the refuge of the white sharks to forage safely.

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The way forward...

Weekly line-transect surveys via blimp mounted camera of the Dyer Island system will be conducted with the Dyer Island Conservation Trust research vessel, Lwazi. Seasonality of shark presence will be established by a concurrent project run by colleague DICT

researchers and seal & penguin presence will be evaluated within this study.

Three scientific journal publications discussing results and conclusions of the study will be submitted by June 2012 including sponsor lists and acknowledgements.

<i>Budget:</i>	
Boat fuel	30,000R
Harbour charges	3,500R
UCT Tuition	30,000R
GPS software	5,000R
Total	68,500R



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