

WEBINAR

Running scared: when predators become prey

Speaker: Dr Alison Kock

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Host: SANParks Cape Research Centre

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Dr Alison Kock is a marine biologist at the Cape Research Centre, South African National Parks and an Honorary Research Associate at the South African Institute of Aquatic Biodiversity. Her current research focus is on evaluating marine protected area effectiveness and determining the role top predators play in shaping marine ecosystems.

https://www.sanparks.org/conservation/scientific_new/cape/research_staff/alison_kock.php

Apex predators play an important role in structuring food webs and are thus key components of healthy, stable ecosystems. While the loss of apex predators has been shown to disrupt ecosystems and trigger trophic cascades, the introduction of novel apex predators to functionally intact systems is less well understood. False Bay, South Africa, is an aggregation site for both white (*Carcharodon carcharias*) and broadnose sevengill sharks (*Notorynchus cepedianus*) which together fulfil the role of coastal apex predators. However, since 2009, their position at the top of the food chain has been subverted by the increased presence of killer whales (*Orcinus orca*) in False Bay. These super predators are known to specialize on certain prey species, and up until 2015 were only documented preying on marine mammals within False Bay. However, in 2015 and 2016, we recorded two events in which killer whales preyed upon broadnose sevengill sharks, using a specialized feeding method in which only the liver of each shark was consumed. Although selective feeding on shark liver by killer

whales is established, this is the first record of killer whale predations on sevengill sharks in False Bay, and the first documentation of a novel feeding technique, in which killer whales used force applied to the pectoral fins of each shark to rupture the pectoral girdle and thereby access the liver. These predation events resulted in the prolonged absence of sevengill sharks from what is the largest known aggregation site for this species globally, which remained abandoned for up to a month. We briefly review the literature on killer whale behaviour, dietary specialization, and population delineation globally and locally, and hypothesize that the novel predations on broadnose sevengill sharks in False Bay are possibly indicative of the arrival of a different sub-group or ecotype of killer whale in the bay, which habitually feeds on sharks. Due to the unique predatory niche occupied by sevengill sharks in False Bay, the increased presence of these particular killer whales in False Bay could have profound impacts throughout the ecosystem.

Engelbrecht, T, Kock, AA and O’Riain, MJ. 2019. Running scared: when predators become prey. *Ecosphere* 10: e02531. DOI: <https://doi.org/10.1002/ecs2.2531>