BEN ARNOLD

NEW RESEARCH BOAT TRACKS AFRICAN PENGUINS' PREY

The African Penguin *Spheniscus demersus*, the only penguin species in Africa and confined to Namibia and South Africa, is now Endangered. Population trends of this species are closely linked to the availability of its prey, especially sardines and anchovies.

Dr Lorien Pichegru and Lloyd Edwards, owner of Raggy Charters, aboard the newly launched boat. Although it looks like a fairly standard ski-boat, its gleaming hulls conceals a state-of-the-art multiscan sonar system that will allow researchers to estimate the abundance and movements of the fish prey of the endangered African Penguin.

Recent dramatic decreases in penguin numbers, apparently associated with a lack of food close to penguin colonies, led Oceans and Coast (previously known as Marine and Coastal Management) to close a 20-kilometre-radius area to purse-seine fishing around St Croix Island in Nelson Mandela Bay, the site of the world's largest remaining African Penguin colony (see *Africa – Birds & Birding*, June/July 2009).

In a study led by post-doctoral fellow Dr Lorien Pichegru, we documented the foraging behaviour and breeding success of African Penguins at the island before (2008) and after closure to fishing (2009 and 2010). To help interpret our findings we conducted a parallel study on a neighbouring colony at Bird Island, where the surrounding waters remained open to fishing. In 2009, the closure at St Croix resulted in a rapid reduction in the effort that breeding penguins at the island had to expend on finding food: most birds fed in the protected area (whereas prior to the closure they foraged much further away). This was in stark contrast to the situation at Bird Island, where penguins continued to travel long distances in search of food. However, in 2010, an increase in fishing pressure around the edge of the St Croix reserve seemed to decrease the benefit of the closure for penguins.

In order to manage the purse-seine fishery in conjunction with conserving penguins, we need to understand the movement of the penguins' prey across the borders of the closed area and to relate such movements to fishing pressure. Populations of small pelagic fish are thought to undergo large-scale movements, but the evidence to support this contention is scant.

Equipped with a state-of-the-art multiscan sonar, our new research vessel *Winkle* will locate and track schools of fish around penguin colonies that are either closed or open to fishing. Not only will this allow us to determine the effect of fishing on the local abundance of penguin prey, but we will also be able to assess the scale of the fishes' movements.

If the fish do travel long distances in short periods of time, then small no-take zones are probably insufficient to increase their accessibility to penguins and it may be necessary to consider spatial management at a larger scale or even a reduction in national fishing quotas to limit competition between predators and fisheries. However, if the fish move over much shorter distances, then small no-take zones may be sufficient to increase food abundance for the birds and halt their precipitous decline. If the latter turns out to be true, it would have considerable significance for the conservation of threatened seabirds in upwelling ecosystems worldwide.

The launching of the *Winkle* would not have been possible without the generous support of a number of organisations. We are very grateful to Bay Electrical, Bridgestone, the Butt Cat Factory, the Charl van der Merwe Trust, Commercial Marine, Galvaspin, Harvey's Composite, Indigo Boats, Radioholland, Riggifoam, Stainless Steel Fabrication and Tunstead Marine.

If you would like to be part of our bursary and research fund-raising drives, please contact the Institute's Director, Prof. Phil Hockey, Percy FitzPatrick Institute, University of Cape Town, Rondebosch, South Africa 7701.
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