

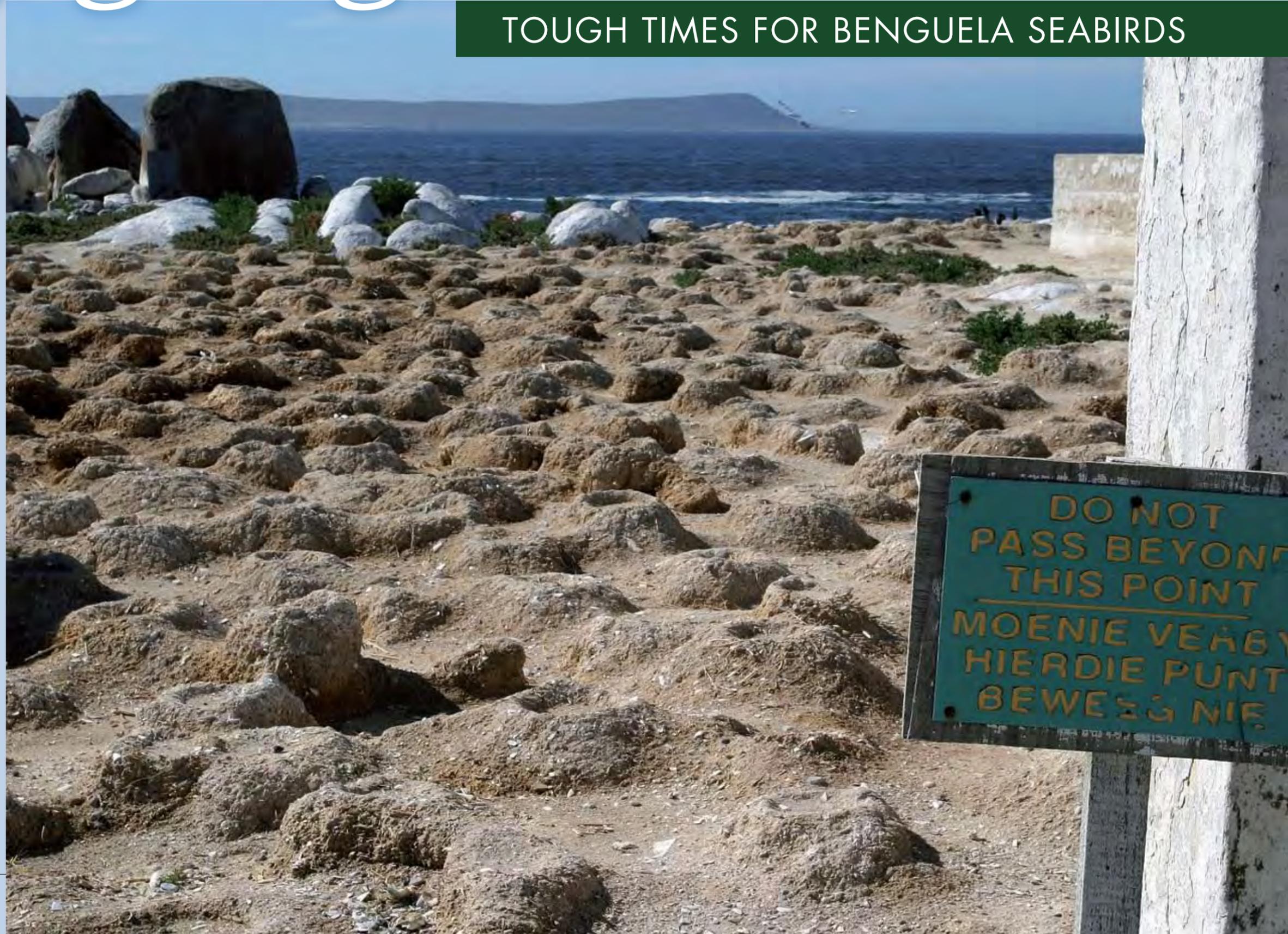
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TOUGH TIMES FOR BENGUELA SEABIRDS

The endemic Cape Gannet breeds at only six colonies, three each in Namibia and South Africa. The Namibian colonies have been decreasing for decades, following the collapse of pelagic fish stocks, but the South African colonies have held their own. Recently, however, the two west coast colonies at Lambert's Bay and Malgas Island have suffered a shortage of food and increased predation pressure, culminating in Lambert's Bay being abandoned in 2005 when Cape fur seals entered the colony to kill adult birds. Active management by CapeNature has tackled this problem, but the birds still face a daunting array of threats. ▶

TEXT & PHOTOGRAPHS
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This sign warning visitors to Malgas Island not to disturb gannets breeding near the old guano houses is now redundant. A few pairs attempted to breed there in 2006, but these peripheral groups suffered the heaviest predation pressure from gulls and pelicans.





The Benguela is one of the world's most productive coastal ecosystems. The prevailing southerly winds and Coriolis force combine to drive surface waters offshore, allowing clear, nutrient-rich bottom water to well up to the surface.

As this water warms up, large-celled diatoms flourish, forming dense blooms that provide food for zooplankton and filter-feeding pelagic fish such as sardines and anchovies. This predictable, highly efficient food chain supports a host of top predators, including three endemic seabirds: African Penguin *Spheniscus demersus*, Cape Cormorant *Phalacrocorax capensis* and Cape Gannet *Morus capensis*. These birds used to occur in such large numbers that their guano was mined for use as fertiliser. Now the populations of all three are decreasing, thanks to human impacts on the system.

A purse-seine fishery competes directly with the birds for pelagic fish and, in the 1970s, overfishing caused sardine stocks to collapse. Off Namibia, this led to a vast increase in the abundance of gelatinous animals such as jellyfish and salps. These indiscriminate filter-feeders now proliferate in Namibian waters, efficiently catching not only zooplankton but also the eggs and larvae of the few remaining pelagic fish, effectively trapping the pelagic ecosystem in a

new stable state dominated by species with little value to seabirds. As a result, Cape Gannet numbers have fallen dramatically, decreasing more than 80 per cent from some 125 000 pairs in the 1950s to fewer than 20 000 pairs today. The colony at Possession Island is on the verge of extinction, having plummeted from 15 000 pairs to only 750.

Off South Africa, anchovies largely replaced sardines. Anchovies are smaller and are less efficient for gannets to catch, but the gannet population remained stable or even increased, aided in part by fishing restrictions that saw a slow but steady recovery in sardine numbers in the 1980s. Interestingly, it was routine monitoring of gannet diet that first recorded this recovery, as seabirds are more efficient and selective predators than purse-seine boats. By the mid-1990s, sardine numbers had recovered to the point where a substantial fishery was once again possible. Gannet numbers peaked at around 11 000 pairs at Lambert's Bay and 58 000 pairs at Malgas Island.

Unfortunately, this happy state of affairs didn't last. Since the late 1990s, pelagic fish stocks have been moving steadily eastwards from their traditional west coast haunts onto the Agulhas Bank. Quite what is driving this shift is unclear, but the net result is that by 2004 there was little by way of sardines or anchovies left in the areas accessible to gannets breeding at west coast colonies. The birds have been forced to switch their diet, eating more saury, a warm-water pelagic fish found further offshore, as well as hake scavenged from demersal trawlers. Much of this hake is in the form of offal and discards, and is a lower quality than their normal prey. As a result, the gannets' breeding success has suffered, with some chicks abandoned or starving.

If this were the only problem facing the gannets, it might not be too serious. The Benguela is a variable system that has undergone significant changes historically, with large fluctuations in fish abundance and alternating dominance by sardines and anchovies. Gannets and other predators have evolved to cope with this variability and, given relatively slow changes, they could doubtless adapt. However, gannets face numerous other threats. At sea, some are killed when they become entangled in fishing gear or on long-lines. A recent study estimated that some 2 000 gannets are killed each year off South Africa alone. Mitigation measures have now been implemented by the trawl fishery, but the problem is likely to get worse as more gannets are forced to scavenge from vessels. Oil pollution can



also can be a major problem, not only from spills of crude oil and ship fuel, but also fish oil from processing plants.

But perhaps the most worrying issue is predation at the breeding colonies. Cape fur seals also are suffering from a shortage of fish prey, and some individuals have resorted to eating seabirds. This has happened from time to time in the past, but the numbers of seals involved (and hence the numbers of birds killed) has increased significantly in recent years. The most dramatic incident occurred at Lambert's Bay in 2005, when seals killed several hundred adult gannets in the colony (see *Africa – Birds & Birding*, April/May 2006). ▽

Opposite During the 1990s, when Malgas Island supported the largest Cape Gannet colony in the world, gannets covered most of the island's surface. By 2006, large gaps were obvious, making it easier for predators to enter the colony.

Above Some pairs of Kelp Gulls specialise in raiding gannet nests for eggs and chicks. Their impact can be estimated from the middens of broken eggs that accumulate near each nest, with pairs adding five to 10 new eggs every day.





This caused the entire colony to abandon the island, to the consternation of the local tourism industry. CapeNature, who manages the island, deployed gannet decoys to attract the birds back in 2006, and have installed a resident marksman who has permission to shoot any seals observed killing birds. The good news is that the gannets have returned and are currently breeding, albeit a little later than usual.

Seal attacks on land also occurred at Malgas Island in 2005, but most seal predation takes place at sea. Newi Makhado is studying seal attacks at Malgas Island, and estimates that up to 6 000 gannets are killed in waters just off the island each year. Most of these are newly fledged birds, representing as much as 80 per cent of chick production from the colony. Clearly such losses are not sustainable and, indeed, estimates of the population at Malgas Island made by Marine and Coastal Management indicate a steady decrease since the late 1990s. Similar attacks occur regularly at Lambert's Bay, although now the seals involved are being shot.

Seals are not the only predators targeting breeding gannets. Kelp Gulls *Larus dominicanus* are versatile predators, using a range of foraging techniques to obtain a great diversity of prey. At gannet colonies, some gulls specialise in stealing eggs and chicks. They cannot displace the larger gannets from their nests, but they either strike opportunistically when an incubating bird is squabbling with a neighbour, or a pair team up, with one distracting the gannet while its partner grabs the egg or chick. At Malgas Island at least 10 pairs of gulls target gannets, each taking five to 10 eggs a day. Over the course of a breeding season, this amounts to several thousand eggs and chicks, and the impact of these losses becomes increasingly serious as the colony gets smaller. At the same time, the gulls find it easier to get into the colony as it shrinks, with gaps forming among the once solid mass of gannets.

The other significant predator is a new arrival on the scene. The Western Cape population of Great White Pelicans *Pelecanus onocrotalus* has increased rapidly in recent years, fuelled in part by their scavenging chicken offal from farmyards. The pelicans breed on Dassen Island and, as their population grew, they began

feeding on seabird chicks on the island. By 2005 they had spread their attacks to the guano islands around Saldanha Bay, including Malgas Island. Every day, up to 120 pelicans descend on the gannet colony, each wolfing down a couple of chicks. Combined with the impacts of Kelp Gulls, relatively few chicks survive to fledge and run the gauntlet of seals patrolling the waters off the island.

Cape Gannets are not the only species affected by these changes. Cape Cormorants have been especially hard hit by pelicans. Researcher Marta de Ponte estimates that in 2006 fewer than 20 per cent of cormorant chicks escaped pelican predation at islands around Saldanha Bay. When researchers were present on Malgas Island they prevented pelicans from attacking cormorant nests close to the houses at the northern side of the island. However, during a hiatus of three days when no one was on the island, the number of Cape Cormorant nests fell from more than 1 200 to fewer than 300, with only those nesting under bushes or inside buildings surviving the attention of the pelicans. Cape Cormorants face additional threats. At their main stronghold, Dyer Island, off the south coast near Gansbaai, they have suffered repeated outbreaks of avian cholera, which has killed large numbers of birds.

African Penguins also are in trouble on the west coast. They are the least mobile of the three species that specialise on pelagic fish. While feeding small chicks, they require a reliable source of food within a 20- to 30-kilometre radius of their breeding islands. The virtual disappearance of pelagic fish from the west coast has reversed the gains made during the 1990s, with penguin populations once more decreasing.

This is not the first time that Benguela seabirds have faced severe challenges. During the initial guano rush in the 19th century, breeding islands were divided into cake-like segments among as many as 20 ships, each with a gang of diggers. This doubtless prevented all breeding activity during the initial few years of exploitation. Off Namibia, gannet colonies on Possession and Hollamsbird islands probably formed when birds from Ichaboe Island were displaced by guano

mining in 1843-'45. Then, however, they faced just the single threat – today, Cape Gannets are being challenged from all sides.

The only Cape Gannet colony that is still thriving is at Bird Island in Algoa Bay. If anything, these birds have benefited from the eastward shift of pelagic fish, and they appear to have fewer problems with predators. One option



for the west coast gannets would be to head east to join the colony at Bird Island. However, established breeders move colonies only under exceptional circumstances. It is likely to be up to the young adults, returning to breed for the first time, to shift allegiance eastwards. Another option would be to establish a colony on Dyer Island, close to the centre of current pelagic fish distribution. Cape Gannets bred on the island in the 19th century and attempted to breed there in the 1980s. They could be encouraged to settle on the island using decoys similar to those used to entice birds back to Lambert's Bay last year.

But moving east may be only a temporary solution. As fish stocks disappear along the west coast, the fishery is responding accordingly and heading east. Purse-seiners traditionally fishing out of west coast ports such as Lambert's Bay, St Helena Bay and Saldanha have moved to Gansbaai and Mossel Bay. Unless a long-term solution can be found that allows fisheries and other predators to coexist, we risk the spectre of a similar problem occurring on the south coast in a few years' time. □

Opposite The only Cape Cormorant nests to survive the pelican onslaught on Malgas Island are either inside buildings, such as this old guano-scraper dormitory (top) or out of reach on boulders or under bushes. In open areas (bottom), all the nests are abandoned, except for one nest on the side of a boulder. This nest contained five chicks huddled together, probably including some refugees from adjacent nests.

Above An adult Cape Cormorant valiantly defends its nest against a gang of marauding pelicans on the island. Such birds have to temper bravado with caution, however, because researchers have observed at least two adult cormorants being eaten.

