AFRICAN BLACK OYSTERCATCHER

Between the tides

Text by Phil Hockey

The African Black Oystercatcher's first entry into the scientific 'ledger' happened only 141 years ago, when a specimen collected at the Cape of Good Hope was described by Bonaparte. Bonaparte named the bird moquini *after the French botanist, Horace Benedict Alfred Moquin Tandon, director of the Toulouse Botanical Gardens. Its first entry into the literature, however, predates this by more than 200 years.*

In 1648, Étienne de Flacourt, the Governor-General of Madagascar, visited Saldanha Bay. He wrote: 'There are birds like blackbirds, with a very shrill and clear cry, as large as partridges, with a long sharp beak and red legs: they are very good to eat and when young they taste like Woodcock'. The first descriptions of the bird's biology date from the late 19th century – much of what was written then was culled from knowledge of the European Oystercatcher, and much of it was wrong!

Now, at the end of the 20th century, it seems as though this striking bird may be moving from a confused past into an uncertain future.

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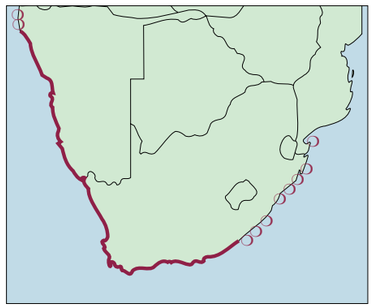
Although they can fly rapidly and strongly, African Black Oystercatchers, unlike their European relatives, do not migrate.

The African Black Oystercatcher *Haematopus moquini* is not only one of the world's more range-restricted oystercatcher species, it is also one of the rarest. In the early 1980s, the world population was estimated at about 4 800 birds – enough to earn it the dubious honour of a place in the International Red Data Book as 'near-threatened'. The Variable Oystercatcher is slightly rarer (2 000–3 000 birds), and the Chatham Island Oystercatcher, with a population numbering less than 150, is one of the rarest waders in the world.

The distribution of African Black Oystercatchers around the south-western corner of the continent is far from even. Despite the continent's long coastline, oystercatchers only breed on the relatively small section of coast between the Hoanib River in northern Namibia and Mazeppa Bay in the Eastern Cape Province. Namibia supports about 25 per cent of the total population, split roughly evenly between the mainland coast and the offshore islands. Between the Gariep (Orange) River and the Olifants River, oystercatchers are thin on the ground, but south of here numbers pick up rapidly. On slightly more than 1 000 kilometres of coast between the Olifants River and Mossel Bay, some 53 per cent of the world population can be found, and about 30 per cent of these birds are on the offshore islands, mostly in and around Saldanha Bay. East of Mossel Bay, there are about 950 birds. The African Black Oystercatcher is a vagrant north of the Kunene River and east of the Bashee River, with extreme records being from Lobito in Angola and Inhaca Island in Mozambique.



Life at the ocean's edge

African Black Oystercatchers obtain all their food from a narrow strip of the coast between the land and the sea – the intertidal zone. Consequently, all their feeding must be crammed into the low tide period. When there is a strong swell running, or barometric pressure is low, this gives them little time to satisfy their food requirements. But, like many other waders, they are adept at foraging by night, almost invisible under even a full moon as they move silently across dark, wet rocks.

They live on both rocky and sandy coasts and, to a lesser extent, in estuaries and lagoons. When feeding in soft sediments, such as sand, their diet is not very varied, consisting almost entirely of sand mussels. On rocky coasts there is a much greater variety of food on offer and the birds make good use of the more diverse cuisine. Even here, though, there are some staple food items, principal among which are limpets and mussels. Within even a short time of watching these birds feeding, it becomes obvious to what use the long, straight dagger-like bill and powerful neck muscles are put. Limpets are dislodged with a sharp blow to the edge of the shell – the blow is usually directed at the edge away from the limpet's head. (Try removing a limpet from the rocks yourself to appreciate the skill and strength involved.) The flesh is then neatly scissored out from the shell and swallowed.

Mussels require a quite different approach. The oystercatchers wait until the mussels themselves are feeding. Mussels feed by drawing water into their bodies and filtering out microscopic food particles, such as spores from marine algae. To do this, they have to open their otherwise tightly clamped valves. This is the oystercatcher's chance and, with a swift jab, the bird drives its bill between the gaping valves, cutting the strong muscle that holds the valves together. Once incapacitated, the meal can then be dealt with at leisure.

The choice of what to eat is determined largely by the abundance of different potential prey on the shore, the birds concentrating on prey that are common. Should the composition of prey on the shore change, oystercatchers change their diet in response. Over the past 20 years, there have been major changes in oystercatcher food on the west coast because of the invasion of the shore by an alien Mediterranean mussel, *Mytilus galloprovincialis*.

Scientists at the Percy FitzPatrick Institute at the University of Cape Town have been able to monitor this invasion by comparing the diet of oystercatchers from year to year. At the peak of the invasion, the alien mussel made up more than 90 per cent of the birds' diet, giving a good indication of just how successful an invasive it has been.

A web of interactions

The small islands around Saldanha Bay support perhaps the highest breeding densities of any oystercatcher species anywhere in the world. On the tiny eight-hectare island of Malgas, for example, there are more than 60 breeding pairs. The pairs' feeding territories are packed, side by side, along the shore. Given that a fully-grown oystercatcher may require up to the equivalent of 100 limpets per day, and the birds are rearing chicks on the territory, how, you may ask, can the food supply possibly support this density of birds? And it is not only oystercatchers that are so common along the shore; migratory shorebirds, especially Turnstones, occur at much higher densities on the islands than on the adjacent mainland. The answer is not immediately obvious, and much careful research was needed to unravel the web of ecological interactions that maintain the system.

The web was not a simple one involving just the oystercatchers and their food – also included were algae, seabirds, and even the geology.

The islands are important roosting and breeding places for tens of thousands of seabirds. Seabirds, as anyone who has ever visited a colony will know, produce a lot of guano. So much, in fact, that until recently guano was mined on the islands as a source of agricultural fertilizer. This guano is rich in nutrients, especially nitrogen and phosphorous, but what is particularly important is that the seabirds feed at sea and roost on land. In

Oystercatchers bathe regularly: this helps maintain plumage condition and probably also keeps down parasite loads.

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this way, they transport nutrients from a marine environment to a terrestrial one. Some of these nutrients are washed back into the sea by rain, and blown, as dust, by the wind.

The consequence of this is that the shallow waters around the island's edge become nutrient-rich, and these nutrients are used by the algae growing on the shore. Algae respond to the nutrients in the same way as a lawn responds to fertilizer – they grow faster and reproduce faster, producing millions of tiny spores which settle on the rock surface. It is these spores that provide the food for limpets, one of the main prey of the oystercatchers. Because they are living in such pastures of plenty, the limpets also grow and breed rapidly, providing food for oystercatchers. Because there are so many oystercatchers, however, these fast-growing limpets are being eaten at a prodigious rate. If all the oystercatchers were removed from the island, the balance between algae and limpets would be disrupted and the limpet populations would grow to the point where they eliminated most of the algal beds, with the result that there would be far fewer mature algae to provide the supply of sporelings. By keeping the limpet populations in check, the birds (albeit inadvertently) ensure a rich food supply for the remaining limpets.

But this is not the end of the story. In order for the limpet supply to support the high densities of oystercatchers, they too must have a very high reproductive rate (island limpets are eaten at about 60 times the rate of mainland limpets!). Because the limpets are kept at low density on the islands, they have superabundant food and grow very fast. Very small limpets are not worth an oystercatcher's while to eat, and very large ones are too big for the birds to dislodge. The limpets themselves are therefore only vulnerable for a certain stage of their life: if they grow beyond a certain size, they are safe. Some limpets spend their lives in sites inaccessible to birds – in deep cracks or on tall, steep rock faces – and others simply escape being eaten by good luck. It is these very large limpets that are the key to maintaining numbers. A very small percentage of the total limpet numbers (the very large ones) produce most of the limpet offspring. Thus, the limpet population is constantly replenished by breeding individuals that are in no danger of being eaten themselves. On the mainland, where nutrient levels are lower and algal growth is slower, limpets do not grow to such a size that they are safe from oystercatchers, so the shore cannot support the same high density of birds.

By keeping limpet numbers down on the islands, oystercatchers are instrumental in maintaining algal beds; it is these beds that explain the high densities of other shorebirds. Many small invertebrates settle in these algal beds – whelks, mussels, shrimps and others – and provide the birds with a rich source of food not available on the mainland.

Because their feeding is confined to a small area, oystercatchers can have a major impact on the structure of the shore community. Here, one of the author's hand-reared birds stands on the pile of limpets that it ate in one month.

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Danger time – the breeding season

African Black Oystercatchers are long-lived and faithful to their territories and their mates: some pairs are known to have been together in the same place for nearly 20 years. At the approach of the summer breeding season, however, there are some movements. Some pairs move away from rocky mainland coasts to breed on nearby sandy beaches or, if they can find room, on offshore islands. The islands are obviously the prize – some pairs manage to find a spot to breed on islands, but are unable to establish a feeding territory on the island shore. Instead, they fly to the mainland to feed. This may not be too much of an ordeal during the incubation period but, when they are feeding chicks, they must work hard to balance the energetic books because food items are brought to the young one at a time.

The reason that birds move to poorer-quality feeding situations in order to breed is almost certainly the risk of predation. Like almost all other waders, oystercatchers breed on the ground, laying their one or two eggs in a shallow scrape. They do their best to site the nest scrape so that it is either camouflaged (for example, next to a stone or shrub) or raised, so that they can see an approaching predator from afar. Outside the breeding season, one of the ways in which they avoid predators is to form communal roosts at high tide – when they are breeding, this option is no longer open to them.

The potential danger that predators can pose was well illustrated in an unfortunate 'natural' experiment in Saldanha Bay in 1976, when Marcus Island was connected to the mainland by a causeway. During the breeding season, adults were killed on an almost daily basis by terrestrial predators such as foxes and genets which could now reach the island, and the population of about 60 pairs was producing almost no young. Indeed, the rate at which they were rearing chicks was only one-tenth of the rate needed to maintain a stable population. Construction of a 'predator-proof' wall across the causeway helped to a small extent, but breeding success is still very low and the adult population is barely half of what it was 15–20 years ago. ▷

Although oystercatchers can re-lay if they lose a clutch, they can still only rear one brood of young in a season; the reason for this being the way they care for their young. Whereas the young of plovers are truly precocial, and can feed themselves from the day they hatch, the young of oystercatchers are fed by their parents, one food item at a time, until well after fledging. This is because the young have neither the apparatus nor the strength to tackle shellfish on the shore.

Because they are long-lived, a pair of oystercatchers does not need to breed successfully every year in order to replace themselves: if a pair succeeds in fledging one chick every three years, this should be sufficient. On predator-free islands, pairs on average achieve somewhere between a chick every two and every three years – enough to maintain the island population and perhaps provide some surplus. What happens to this 'surplus', if indeed it exists, is not clear. Although more than 1 500 chicks have been ringed on the islands since 1980, and several have subsequently been found breeding as adults on their island of birth, not one has ever been found breeding on the mainland.

A looming crisis?

African Black Oystercatchers are rare: they are approximately twice as common as black rhinos, but are rarer than southern right whales. Their rarity is not easily appreciated because they are so conspicuous – it is a lot easier for a black rhinoceros to hide than for an oystercatcher to do so. Because their entire lives are confined to the coast, they are potentially at risk from all sorts of human factors, ranging from pollution and coastal development, to straightforward disturbance by man, his pets and his toys. For example, there is an interesting and alarming correlation between a decrease in the breeding success of oystercatchers and an increase in the ▷

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Above right *When their young are threatened, oystercatchers indulge in noisy and conspicuous displays to lure danger away.*
Right *Oystercatcher chicks are very cryptically coloured. When danger threatens, they respond to their parents' alarm calls by remaining motionless, crouched among rocks or beach debris.*

sales of 4x4 vehicles in South Africa. Similar trends have been noted elsewhere – oystercatcher numbers around Hobart in Tasmania have decreased by some 40 per cent in the last 30 years, and human use of the shore in the Canary Islands undoubtedly contributed to the extinction of the islands' endemic oystercatcher.

In the breeding season of 1996/97, a survey of oystercatcher breeding success was organized by Cape Nature Conservation and the Percy FitzPatrick Institute. In the core of the species' west coast range, it seems as though breeding success was about 15 per cent of that needed to maintain a stable population: we recorded a ratio of 500 adults to nine fledglings. On 60 kilometres of the Eastern Cape coast, there was no evidence of successful breeding at all. It seems unlikely that it was just a poor breeding season, because it was 'business as usual' on the west coast islands.

Superimposed on the human impacts are episodic mass mortalities from natural causes. Twice in the past 20 years, oystercatchers on the Saldanha islands have experienced such events, which may kill 30–50 per cent of the population. One die-off was due to Paralytic Shellfish Poisoning, the other to an outbreak of avian cholera. Taken together, these statistics do not bode well for the species' future.

South Africa and Namibia between them hold the global responsibility for the conservation of this species – the only oystercatcher breeding in Africa. In addition to its own intrinsic value, this species is an excellent barometer of coastal change, both for the better and the worse, simply because it must find all that it needs within a relatively small area.

Because of increasing concern over the future of southern Africa's coast in general, and the African Black Oyster- catcher in particular, the Percy FitzPatrick Institute will be spearheading an Oystercatcher Conservation Pro- gramme (OCP), involving governmental and non-governmental conservation bodies. The first phase of the programme will run from 1998–2000.

The main aim of the OCP will be to provide a conservation strategy for the species: if we can cater for the needs of this special and charismatic bird, the spin-off benefits to other species along the coastline will be considerable.

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Because oystercatchers nest in the open, they often site their nests next to objects which break up the outline of the incubating bird.

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THE OYSTERCATCHER CONSERVATION PROGRAMME (OCP) 1998–2000

Need for the OCP

The African Black Oystercatcher is the only oystercatcher species breeding in Africa, where it is restricted to the coasts of Namibia and South Africa. It is the *third rarest oystercatcher in the world*, with a global population only twice that of the black rhinoceros. Because it is resident and territorial, it is very susceptible to disturbance and coastal degradation; it is therefore an excellent barometer of the health of the coast. Recent surveys suggest that its mainland breeding success is dangerously low and it is clear that a strategic plan for its conservation is a high priority.

Aims of the OCP

- To assess oystercatcher population trends on the South African coast over the past 20 years.
- Where changes (positive or negative) have occurred, to investigate why these changes have taken place.
- To develop a model of oystercatcher population dynamics which can be used to predict future changes in the oystercatcher population under different development/ conservation scenarios.
- To develop a conservation strategy for the oystercatcher which will also benefit other coastal species.
- Through practical demonstrations of successes, failures and their causes, to develop awareness of the conservation needs of South Africa's coast.

How you can participate in the OCP

Information gathering

The success of the OCP is very dependent on public participation in the data-gathering phase. We need volunteers who can help in monitoring breeding success, collecting chick feeding-piles at the end of the breeding season, and recording the size and age-structure of winter roosts. All the information needed is easy to collect, and every additional piece of information will help us improve the final conservation strategy.

Sponsorship

The project is currently being sponsored by the Mazda Wildlife Fund, the Cape Bird Club, the Endangered Wildlife Trust, Cape Nature Conservation, the Tony and Lisette Lewis Foundation, and MTN. However, what we can achieve will, to a large extent, depend on the total sponsorship.

How to get involved

If you are keen to participate in, and/or sponsor the OCP (either privately or as a corporate sponsor), please contact Prof. Phil Hockey, Oystercatcher Conservation Programme, Percy FitzPatrick Institute of African Ornithology, University of Cape Town, Rondebosch 7701, South Africa. Tel. (021) 650-3293; fax (021) 650-3295; e-mail ocp@botzoo.uct.ac.za