Waders respond quickly and positively to the banning of off-road vehicles from beaches in South Africa

A.J. WILLIAMS[1,2], V.L. WARD[1,2] & L.G. UNDERHILL[1]

[1]*Avian Demography Unit, University of Cape Town, Rondebosch 7701, South Africa. tony@adu.uct.ac.za*
[2]*Western Cape Nature Conservation Board, Private Bag X9086, Cape Town 8000, South Africa*

Williams, A.J., Ward, V.L. & Underhill, L.G. 2004. Waders respond quickly and positively to the banning of off-road vehicles from beaches in South Africa. *Wader Study Group Bull.* 104: 79–81.

Off-road vehicles (ORVs) were first identified as a threat to breeding shorebirds along the South African coastline in the mid-1970s. The use of ORVs on South Africa's beaches was banned from 21 December 2001. The impact of this ban on five species which breed on the coastline, two waders, two terns and a cormorant, was evaluated at two localities, one on the west coast of the Western Cape and one on the south coast, in the first breeding season following the ban. The changes were measured as increases in numbers of birds, increases in numbers of breeding pairs, and/or increased breeding productivity. Each of the five species reacted positively to the ban. The results provide a strong case for continuing the ban on ORVs from driving on South African beaches.

INTRODUCTION

Off-road vehicles (ORVs) were first recognized as a threat to breeding waders along the South African coastline by Summers & Cooper (1977) who discussed the negative impact of "the recent proliferation of off-road vehicles". Two wader species breed almost exclusively just above high-tide level in this region. The African Black Oystercatcher *Haematopus moquini*, is classified as "near threatened" both globally and regionally (BirdLife International 2000, Barnes 2000), and has a global population estimated at 5,000–6,000 birds. The White-fronted Plover *Charadrius marginatus* has a South African population of *c.*13,000 birds (Summers *et al.* 1987). Both these species breed during midsummer, during the period of peak recreational usage of the South African shoreline.

By the 1990s, beaches totally churned up by ORV tracks were a common sight along the South African coastline, even at isolated places (pers. obs). ORVs pose several threats to birds breeding on beaches: vehicles drive over the nests or chicks, destroying or killing them; churned up beaches are unsuitable as breeding habitat; the occupants of the vehicles, mostly recreational fishermen, cause disturbance to breeding pairs by keeping them off their nests, frequently at sites that would be otherwise be deserted because of distance from beach access points (Jeffery 1987, Martin 1997, Adams *et al.* 1999, Leseberg *et al.* 2000). Besides waders, ORVs on the shoreline impact colonies of cormorants, gulls and terns, mainly as a result of disturbance of isolated sites.

The South African Minister of Environmental Affairs and Tourism banned the use of ORVs from South Africa's beaches with effect from 21 December 2001. For most of the species impacted by ORVs, this was during the middle of the 2001/02 breeding season.

The ban was prompted by a range of considerations. One of them was the expectation that disturbance of birds breeding along the shoreline would be reduced, and consequently they would increase in numbers and experience greater breeding productivity than previously.

We provide initial results on the apparent effect of the ban in summer 2002/03, the first full breeding season after it was introduced. We examine changes, before and after the ban, in the numbers of waders and other shorebirds along two sections of coast in the Western Cape, South Africa: one on the west coast and one on the south coast.

LAMBERT'S BAY

Lambert's Bay (32°05'S, 18°18'E) is a fishing and holiday resort town along the west coast of the Western Cape (Fig. 1). Immediately offshore of the town is Bird Island, an Important Bird Area for breeding seabirds (Barnes 1998). Both to the north and south of the town are long sandy beaches from Deurspring in the north to Elandsbaai in the south, covering 39 km of shoreline. Most recreational activity (swimming, picnicking, sunbathing, walking dogs, etc.) is focused on a 1 km beach adjacent to Lambert's Bay. In the pre-ban period, ORV activity extended onto both the northern and southern beaches, mainly at weekends during summer. Peak ORV activity occurred in the holiday periods around Christmas and Easter (pers. obs.). ORVs enabled recreational angling to extend along the entire shoreline. As a result of the frequent passage of ORVs, the section of the beaches above the high tide level was frequently substantially churned up by ORV tracks, both to the north and south of the town (pers. obs.). This is the area in which African Black Oystercatchers and White-fronted Plovers attempted to breed.

Shorebirds were counted along the coast near Lambert's Bay in Feburary 1981, prior to ORVs becoming ubiquitous, in October 1997 when large numbers of ORVs were on these beaches, and in October 2002, after the ban. The numbers of African Black Oystercatchers along 39 km of beaches to the north and south of Lambert's Bay were 39, 12 and 42, respectively. The decrease between 1981 and 1997 is attributed to the cumulative impact of reduced breeding productivity due to ORV disturbance. The rapid increase to 42 birds within a year of the ban being implemented is likely to be due

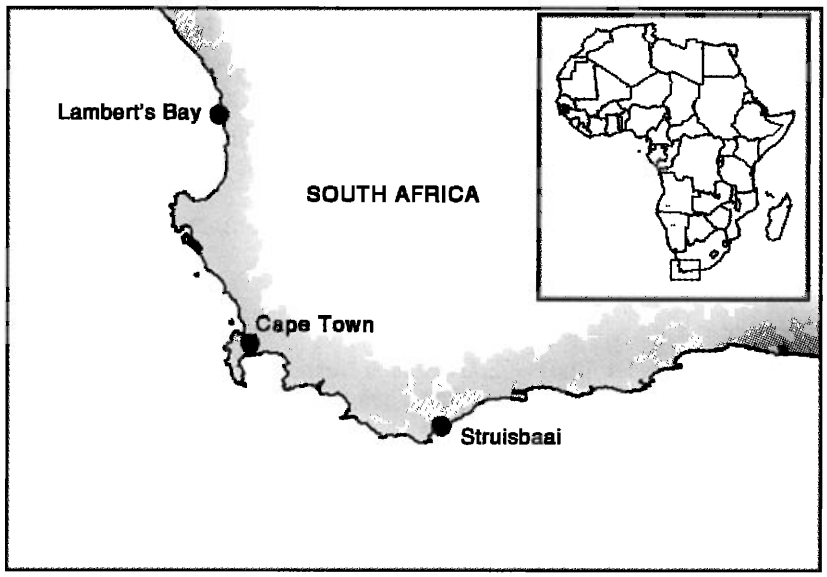

Fig. 1. Location map showing the two study sites: Lambert's Bay on the west coast and Struisbaai on the south coast of the Western Cape, South Africa.

to immigration of young oystercatchers raised on offshore islands, where populations are currently increasing rapidly due mainly to reduced human disturbance in the past decade (Barnes 2000, Calf & Underhill 2002). In 1997, there were three breeding pairs of African Black Oystercatchers on this 39-km section of coastline north and south of Lambert's Bay. One year after the ban, there were eight pairs.

The number of White-fronted Plovers counted along the 9-km section north of Lambert's Bay was 51 (5.7 birds/km) in 1981, decreased to 24 (2.7 birds/km) during the ORV period in 1997, and recovered to 52 (5.8 birds/km) in 2002. There were also increases, after the ban was imposed, in numbers of Crowned Plovers *Vanellus coronatus*, Blacksmith Plovers *V. armatus*, Sanderlings *Calidris alba* and Common Terns *Sterna hirundo* present along the shore.

HEUNINGNES RIVER ESTUARY TO STRUISBAAI

The 20-km stretch of sandy shoreline between the Heuningnes River Estuary (34°43'S, 20°00'E) and Struisbaai, along the south coast of the Western Cape (Fig. 1), is arguably the most sensitive in South Africa in terms of the number of Red Data Book species which breed there. The Heuningnes River estuary, at the eastern end of the section, falls within the De Mond Nature Reserve, a Ramsar site and an Important Bird Area (Barnes 1998). Near the estuary is South Africa's second largest breeding colony of Damara Terns *Sterna balaenarum* (11 pairs, 15% of the national population) and one of the largest colonies of Caspian Terns *Hydroprogne caspia* (35 pairs); along the beach are breeding pairs of African Black Oystercatchers. The first of these species is classified as "Vulnerable", and the other two as "Near-threatened" in the regional Red Data Book (Barnes 2000).

This beach was used extensively by ORVs for at least a decade prior to the ban. An indication of the usage by local residents alone was that 120 ORV drivers attended a public meeting in October 2002 to protest against the closure of the beach to vehicles. An unassessed, but substantially larger, number of visiting ORV drivers used the beach during weekends and in particular during the December–January mid-summer holidays. This beach is particularly attractive to fishermen because it benefits from the dispersion of line fish from the adjacent De Hoop Marine Reserve, an 11-km stretch of coastline in which no angling is permitted and which acts as a source population for the fish caught by the anglers (Bennett & Attwood 1991, Halpern 2003).

The conservation importance of the Damara Tern colony led the Western Cape Nature Conservation Board to monitor the number, distribution and breeding success of Damara Terns, and to a lesser extent other birds, on this stretch of beach from 1997 onwards.

During the 1997–2002 summer monitoring seasons, the beach between Struisbaai and the Heuningnes River mouth generally supported three pairs of African Black Oystercatchers and breeding success was poor. In the first post-ban season five pairs established themselves along the Struisbaai beach and two had already raised chicks to fledging by the middle of January 2003; prior to the ban on ORVs, this would have been a period of maximum disturbance.

The breeding success of Damara Terns was assessed over a six year period along the beach between Struisbaai and the mouth of the Heuningnes River. Surveys in the first five years, 1977 to December 2001, were prior to the ban on ORVs. The final survey was in the first post-ban summer. The breeding population remained at 11 pairs throughout the six years. During the pre-ban years some pairs raised their chick to fledging before December but most pairs still had an egg or small chick at the beginning of December. In South Africa, December and early January are the main summer holiday period. The beach favoured by the terns is a popular fishing area. Every holiday during the pre-ban years it was heavily used by ORVs; many of the holiday drivers were inexperienced and drove higher up the beach than local residents. This took them into the raised beach area where the terns bred. Further, while the menfolk fished, attendant families often roamed about the breeding area, increasing the disturbance. Through the five pre-ban years most Damara Tern egg or chick loss occurred during the holiday period. After the holiday peak, Damara Tern pairs which had lost eggs or chicks relaid and most fledged their chick in Febru-

ary or March inclusive. In the first year after the ORV ban all 11 pairs raised a chick to fledging before the end of January. This was the only year during the six year study period in which this happened. The implication is that ORVs directly, or indirectly through the actions of the people from them, caused most of the egg and chick loss in December. The breeding success in the first year after the ORV ban is therefore thought to substantially be the result of the massively reduced degree of ORV disturbance on this beach, especially during the critical midsummer holiday period.

Damara Terns migrate along the west coast of African to spend the southern winter along the shoreline of countries in the Gulf of Guinea, such as Liberia, Sierra Leone and Ghana (Underhill *et al.* 1999). Chicks that fledge earliest have the longest time to prepare for this migration and are therefore likely to have a better chance of survival to adulthood.

In the summer seasons of 1997–2002, colonies of Caspian Terns and White-breasted Cormorants *Phalocrocorax carbo* bred between dunes east of the Heuningnes River estuary. In the 2002/03 summer season, these colonies shifted, for the first time on record, west of the Heuningnes River estuary to an area where disturbance by ORVs had previously been heavy. The absence of ORVs is the most likely explanation of this abrupt change in breeding location. The cormorants bred in larger numbers than in previous seasons and more successfully. The cormorants and terns do not readily tolerate disturbance; successful breeding west of the estuary suggests a major reduction in disturbance in the region.

DISCUSSION

These observations indicate that ORVs disturbed waders and other shorebirds and caused them to move from preferred sites to other, presumably in some ways less desirable, localities. The birds have quickly responded to the lifting of the ORV disturbance pressure and have moved back onto beaches or rocky shores. The banning of ORVs has enabled several shore breeding birds – and especially the "endangered" Damara Tern, and the "near-threatened" African Black Oystercatcher – to again breed successfully in beach areas. Furthermore, in the case of the Damara Tern, it has enabled them to breed successfully far earlier in the season than in other monitored years.

These results needs to be tempered with the observation that data for a single year after the ban do not provide conclusive evidence of the benefits of banning ORVs from the coast because additional factors may have applied in this one season. However, the changes observed are consistent and substantial, and involve several species. They cannot readily be attributed to any other cause. Taken together, they provide strong circumstantial evidence that ORV disturbance has a significant negative impact on coastal birds, especially on coastal breeders. What is now needed is continuation of the monitoring of these stretches of coast to determine whether the increases continue over the next five or more years, and at what level the populations stabilize. This assumes that the ban is maintained. If the ban is lifted then monitoring is needed to assess whether there is a reversal to the situation that applied in the pre-ban period.

The information presented here provides a strong case for continuing the ban on ORVs being driven on South African beaches.

ACKNOWLEDGEMENTS

Our research is supported by the National Research Foundation, Pretoria, the University of Cape Town Research Committee, the Earthwatch Institute and the Darwin Initiative of the United Kingdom Government. The Western Cape Wader Study Group provided information from counts made in 1981. We thank Brian Harrington for comments on an earlier version of our paper.

REFERENCES

Adams, N.J., Kerley, G.I.H. & Watson, J.J. 1999. Disturbance of incubating African Black Oystercatchers: is heating of exposed eggs a problem? *Ostrich* 70: 225–228.

Barnes, K.N. (ed.) 1998. *The Important Bird Areas of southern Africa.* BirdLife South Africa, Johannesburg.

Barnes, K.N. (ed.) 2000. *The Eskom Red Data Book of birds in South Africa, Lesotho and Swaziland.* BirdLife South Africa, Johannesburg.

Bennett, B.A. & Attwood, C.J. 1991. Evidence for the recovery of a surf-zone fish assemblage following the establishment of a marine reserve on the southern coast of South Africa. *Mar. Ecol. Progr. Ser.* 72: 173–181.

BirdLife International. 2000. *Threatened birds of the world.* Lynx Edicions and BirdLife International, Barcelona and Cambridge.

Calf, K.M. & Underhill, L.G. 2002. Productivity of African Black Oystercatchers *Haematopus moquini* on Robben Island in the 2001/02 breeding season. *Wader Study Group Bull.* 99: 45–49.

Halpern, B.S. 2003. The impact of marine reserves: do reserves work and does reserve size matter? *Ecol. Appl.* 13: 117–137.

Jeffery, R.G. 1987. Influence of human disturbance on the nesting success of African Black Oystercatchers. *S. Afr. J. Wildl. Res.* 17: 71–72.

Leseberg, A., Hockey, P.A.R. & Loewenthal, D. 2000. Human disturbance and the chick-rearing ability of African Black Oystercatchers (*Haematopus moquini*): a geographical perspective. *Biol. Conserv.* 96: 379–385.

Martin, A.P. 1997. African Black Oystercatcher *Haematopus moquini.* pp. 374–375 *in* Harrison, J.A., Allan, D.G., Underhill, L.G., Herremans, M., Tree, A.J., Parker, V. & Brown, C.J. *The atlas of southern African birds* Vol 1. Non-passerines. BirdLife South Africa, Johannesburg.

Summers, R.W. & Cooper, J. 1977. The population, ecology and conservation of the Black Oystercatcher *Haematopus moquini. Ostrich* 43: 28–40.

Summers, R.W., Underhill, L.G., Pearson, D.J. & Scott, D.A. 1987. Wader flyways in southern and eastern Africa and western Asia. *Wader Study Group Bull. 49, Suppl./Int. Waterfowl Res. Bur. Spec. Publ.* 7: 15–34.

Underhill, L.G., Tree, A.J., Oschadleus, H.D. & Parker, V. 1999. *Review of ring recoveries of waterbirds in southern Africa.* Avian Demography Unit, University of Cape Town, Cape Town.