Waders (Charadrii) and other waterbirds at Dyer Island, Western Cape, South Africa

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Dyer Island, with a perimeter of 4 km, lies near Cape Agulhas, at the southern tip of Africa. Regular surveys of the shorebirds were made between September 1999 and November 2001. 14 Palearctic migrant wader species have been recorded, eight as vagrants. Ruddy Turnstones and Curlew Sandpipers were the most abundant, with median counts of 213 and 66, respectively. Of the non-Palearctic migrants, the African Black Oystercatcher was most abundant, with a median count of 58. Dyer Island qualifies as a Ramsar site. The possibility that Dyer Island could be used as remote site, part of a network of sites to monitor trends in Palearctic waders, is suggested.

INTRODUCTION

Dyer Island (34°41'S, 19°25'E) (Fig. 1), South Africa, is a provincial nature reserve and was designated an Important Bird Area (Barnes 1998). It lies 55 km west of Cape Agulhas, the southernmost point of Africa and the "official" boundary between the Atlantic and Indian Oceans. In the 1970s, this island supported the world's largest colony of African Penguins *Spheniscus demersus* at about 25,000 pairs. By 2001, however, the population had plummeted to 2,088 pairs, and was the sixth largest colony (Crawford *et al.* 1995, Wolfaardt *et al.* submitted). A range of other seabirds breed on the island (Barnes 1998): White-breasted Cormorants *Phalacrocorax lucidus*, Cape Cormorants *P. capensis*, Bank Cormorants *P. neglectus*, Crowned Cormorants *P. coronatus*, Kelp Gulls *Larus dominicanus*, Hartlaub's Gulls *L. hartlaubii*, Swift Terns *Sterna bergii* and Roseate Terns *S. dougallii*. Large roosts of terns, mainly the migratory Common Tern *S. hirundo* and Sandwich Tern *S. sandvicensis*, occur in summer; Antarctic Terns *S. vittata*, which breed on subantarctic islands, roost there in winter and early spring (Barnes 1998, Whittington 2002). Dyer Island is internationally distinguished as supporting the first-known breeding population of Leach's Storm Petrels *Oceanodroma leucorhoa* in the southern hemisphere, discovered in 1995 (Whittington & Dyer 1995, 2000; Ryan & Whittington 1997; Whittington *et al.* 1999a,b, 2001).

The island has an area of 20 ha; the *c.* 4 km of shoreline is entirely rocky. Guano-scraping took place almost annually from the commencement of records in 1896 until 1973, with a maximum yield of 604 tonnes in 1916. After World War II, yields were mainly in the range 40–70 tonnes (Marine and Coastal Management unpubl. data). The guano was scraped in five of the 12 years between 1974 and 1985, but not since. The interior of the island is flat, and has a surface of pebble and sand. In spite of the lack of guano-scraping for 16 years, there is relatively little accumulation of guano. The vegetation consists mostly of low shrubs, including the indigenous herb *Mesembryanthemum aitonis* and exotic weeds, of which *Lavatera arborea* is the most abundant. In areas in which seabird colonies form, fresh guano kills the vegetation. In areas where seabirds have not bred for several years, there is lush vegetation for several months during spring and early summer, after the winter rains.

This paper primarily reports the results, with respect to waders (Charadrii), and other birds found on the shoreline, of two years of bird monitoring on Dyer Island, from September 1999 to November 2001. It also reviews earlier observations of waders on the island, which go back to 1981. It is the third of a series of papers reporting counts of waders on the offshore islands of South Africa (Underhill 1992, Underhill *et al.* 2001).

METHODS

During September 1999 to November 2001, the reserve manager (ADV) or, when he was on leave, his substitute, undertook a census around the perimeter of Dyer Island on a fortnightly basis. At times this was not feasible because of weather conditions, or because the presence of an observer might disturb cormorants, penguins or other sensitive breeding species off their nests so that eggs or small chicks became vulnerable to predation by Kelp Gulls. Not all species were counted simultaneously; in particular, as close as possible to spring tides, dedicated counts of African Black Oystercatchers were made both at high tide and low tide on the same day

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or consecutive days. September 1999 to November 2001 is referred to below as "the survey period". Prior data consist of a single complete survey of the shorebirds, made on 22 January 1981 (Ryan *et al.* 1988), and a series of incidental observations made by PAW and BMD between October 1993 and May 1999.

For each of the migrant species, we defined, by inspection of the data, a summer period during which numbers were relatively stable. For some species, we also defined an arrival and departure month. Scientific names of the study species are set out in Tables 1 and 2.

RESULTS AND DISCUSSION

Fourteen species of Palearctic migrant waders were recorded on Dyer Island. Of these, six occurred regularly and eight as vagrants (Tables 1 and 2). Ruddy Turnstones were the most abundant, followed by Curlew Sandpipers, Grey Plovers and Whimbrels. These are the typical species of rocky shorelines of southern Africa (e.g. Summers *et al.* 1977).

Ruddy Turnstone numbers were relatively constant during the summer period of mid-September to April. The median summer count for the whole survey period was 216. The medians for the summers of 1999/2000 and 2000/2001 were 208 and 237 respectively, and for the winters of 2000 and 2001, 181 and 60 (Table 3). The maximum count of turnstones within the survey period was 366, on 3 March 2000; seven consecutive counts between January 2000 and mid-April 2000 exceeded 215. Overwintering turnstones are mostly first-year birds, which do not generally migrate north towards the breeding grounds until at least their second year (Summers *et al.* 1987). It is therefore likely that the large number of overwintering birds in winter 2000 are indicative of a successful breeding season in 1999. The Siberian tundra, the nesting area of most Ruddy Turnstones migrating to southern Africa (Summers *et al.* 1987, Underhill *et al.* 1999), is known to have had a fairly successful breeding season that year.

The number of turnstones recorded in the January 1981 survey was 396, greater than the number observed on any of the counts during the survey period, or from the incidental observations between 1995 and 1999. The breeding season in the Siberian tundra immediately prior to the 1981 survey (i.e. 1980) was marked by high fox predation pressure and poor breeding productivity for birds, including Ruddy Turnstones (Summers & Underhill 1987). Therefore the 1981 total of 396 birds was not inflated by the presence of a large proportion of first-year birds. Although the evidence is fragmentary, this observation fits the pattern observed on Robben Island, that numbers of turnstones reaching southern Africa have decreased over the past two decades (Underhill *et al.* 2001).

Curlew Sandpiper numbers were variable. Between May and August, none were recorded during 11 of 16 surveys, with no records in June or July of both 2000 and 2001. On 28 August 2001, there was an incidental record of 19 Curlew Sandpipers, probably birds on passage. The median of 25 counts made in the summer period, defined for this species as October to March, was 73 (range 25–167, interquartile range 52–81). The largest counts of Curlew Sandpipers on Dyer Island (270, 215 and 210 during the survey period, and an earlier record of 370 on 22 October 1995 (PAW)) were made in the late evenings, when birds presumably fly from wetlands on the adjoining mainland to roost on the island. Arrival was mainly in late August and September,

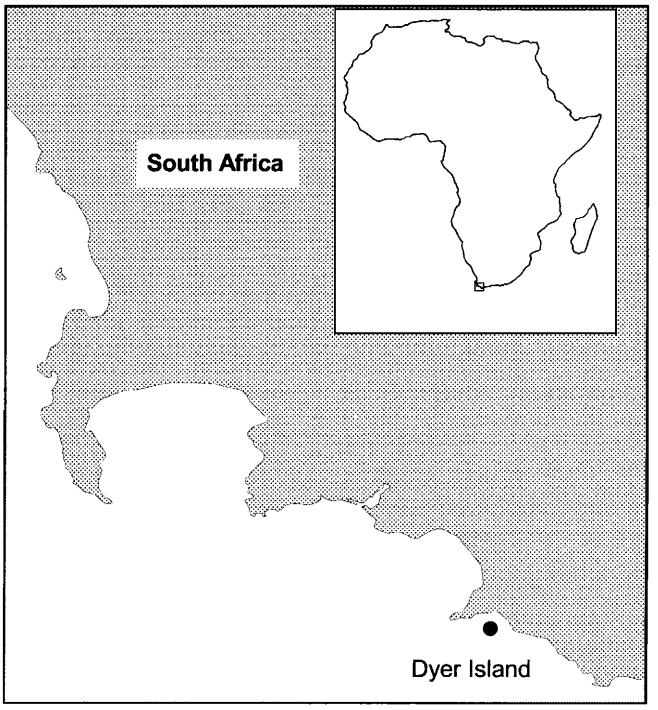


Fig. 1. The location of Dyer Island in South Africa.

which had a maximum count of 33 birds. Numbers decreased sharply from March to April in both years, so that April (counts of 3, 6, 8 and 15) is the period of emigration.

Grey Plover numbers were more variable than those of Curlew Sandpipers. Departure was mainly in May, and arrival in September. Taking the summer period for this species as October to April, the median of 29 counts made in these months was 23 (range 0–72, interquartile range 8–38). The largest counts were 72 on 13 April 2000 and 58 on 25 October 2001; summer counts of fewer than 10 birds have occurred in November, December (3/4 surveys), February (3/4 surveys) and April. The median number of overwintering birds during surveys in June, July and August was 3 (range 0–12), with an incidental record of 36 Grey Plovers on 25 August 2000, presumably of birds on passage. The median of seven counts in September was 18, and the median of four counts in May was 11. Given the variability in the numbers of Grey Plovers, the count of only two birds in January 1981 (Table 1) cannot be taken as evidence that numbers of Grey Plovers at Dyer Island have increased.

Whimbrel occurred in small numbers (2–10) during most counts, with relatively little seasonal pattern (median of 5 during October to March, and 3 during April to September). Occasionally larger numbers were recorded: 21 on 27 September 1999, 21 on 4 April 2000, 26 on 13 April 2000 and 21 on 12 August 2001. These counts were made during periods when Whimbrels could be expected to be on passage in southern Africa. The count of six birds in January 1981 is consistent with the results of the current series of surveys.

Ringed Plover had a maximum count of four during the surveys, on 16 April 2001, and is occasionally recorded in ones and twos. PAW observed 15 on 27 November 1996. Sanderlings were recorded during six surveys. A further nine species of Palaearctic waders occurred as vagrants (Table 2).

Three wader species breed on Dyer Island (Table 1): African Black Oystercatcher, White-fronted Plover and

Table 1. Waders (Charadrii) and other waterbirds recorded on more than six occasions on Dyer Island. For the African Black Oystercatcher, counts made at low tide were used for the calculation of the median (see text).

Species	22 Jan 1981; P.A.R. Hockey, P.G. Ryan	Median count, survey period	Months used to compute median	Maximum count, March 1995 to November 2001	Date of maximum count	Status on Dyer Island
Little Egret *Egretta garzetta*	4	4	All year	8	8 July 2001	Feeds in intertidal, breeds in small numbers
Egyptian Goose *Alopochen aegyptiacus*				6	12 July 1998	Breeds
African Black Oystercatcher *Haematopus moquini*	54	58	All year	121	5 March 2000	Breeds along shoreline
Ringed Plover *Charadrius hiaticula*	4			15	27 November 1996	Regularly observed
White-fronted Plover *C. marginatus*	8	10	All year	19	20 October 2000	Breeds along shoreline
Kittlitz's Plover *C. pecuarius*	12	*c.* 20	All year	*c.* 20		Breeds in interior
Grey Plover *P. squatarola*	2	23	Oct–Apr	72	13 April 2000	Common migrant, some birds overwinter
Ruddy Turnstone *Arenaria interpres*	396	216	mid-Sept- April	366	3 March 2001	Abundant migrant, many birds overwinter
Curlew Sandpiper *Calidris ferruginea*	16	73	Oct–Mar	215	30 November 1999	Common migrant, few overwinter, night roosts supplemented by mainland birds
Sanderling *C. alba*	0			6	27 April 2000	Rare
Whimbrel *Numenius phaeopus*	6	5	Oct–Mar	26	13 April 2000	Common migrant, many birds overwinter
Pied Kingfisher *Ceryle rudis*	0			4		Visitor, mainly in winter

Kittlitz's Plover. The oystercatcher is endemic to southern Africa, and is listed as "Near-threatened" in both international and national Red Data lists (BirdLife International 2000, Underhill 2000), so is given more detailed treatment than the other two species.

The maximum count for African Black Oystercatcher was 121, at high tide on 5 March 2000. However, counts of this species at high tide were invariably larger than counts at low tide on the same day (range of differences 6–56 birds, median difference 23, interquartile range 16–28, n = 36). Surveys elsewhere have demonstrated that oystercatchers are relatively easy to count accurately (e.g. Spearpoint *et al.* (1987)); so this is likely to hold for Dyer Island as well. These birds cannot be arriving from the adjacent Geyser Island, which is separated from Dyer Island by a narrow channel, because Geyser Island is almost entirely occupied by a colony of Cape Fur Seals *Arctocephalus pusillus*, and supports few waders (BMD pers. obs). The most straightforward explanation for the increased numbers at high tide is that birds fly the *c.* 4 km from the mainland to roost on Dyer Island at high tide. Such movements from the mainland to high-tide roosts on offshore islands have previously been recorded, although the distances involved have been far shorter, such as 0.5 km (Hockey 1985). The adjacent mainland supports terrestrial mammals that are potential predators of oystercatchers including foxes, genets and mongooses, whereas Dyer Island has no such predators. These observations support Hockey's (1985) hypothesis that African Black Oystercatchers roost on islands to reduce the risk of predation.

Table 2. Waders (Charadrii) and other waterbirds recorded as vagrants on Dyer Island.

Species	Observations
Grey Heron *Ardea cinerea*	1 on 11 October 1994
African Crake *Crex egregia*	1 on 18 May 2000
Eurasian Oystercatcher *Haematopus ostralegus*	1 on 10 October 1997
Greater Sand Plover *C. leschenaultii*	1 on 26 March 2000
American Golden Plover *Pluvialis dominica*	1 on 17 March 1995 (Hockey and the Rarities Committee 1996)
Blacksmith Plover *Vanellus armatus*	1 on 12–13 August 1999
Greenshank *Tringa nebularia*	1 on 17 October 1997, 1 on 14 October 2001
Knot *Calidris canutus*	3 on 22 January 1981, 3 on 14 October 1999, 2 on 4 December 2000
Little Stint *C. minuta*	1 on 17 October 1997, 3 on 9 October 1999, 1 on 17 December 1999
African Snipe *Gallinago nigripennis*	1 on 19 May 2000
Bar-tailed Godwit *Limosa lapponica*	1 on 22 January 1981, 1 on 10 November 1998, 1 in October 1999, 1 on 7 April 2001
Curlew *Numenius arquata*	1 on 11 October 1993, 2 on 11 October 1994
Red-winged Pratincole *Glareola pratincola*	1 on 22 December 1999

Table 3. Summary statistics of Ruddy Turnstones on Dyer Island. For this species, summer is taken as the period 16 September to 30 April and winter as 1 May to 15 September. Summer 2001 is the period 16 September to 16 November 2001.

	Summer 1999/2000	Winter 2000	Summer 2000/2001	Winter 2001	Summer 2001
Median	208	181	237	60	175
range	135–274	62–212	144–366	42–89	125–246
n	14	9	15	9	5

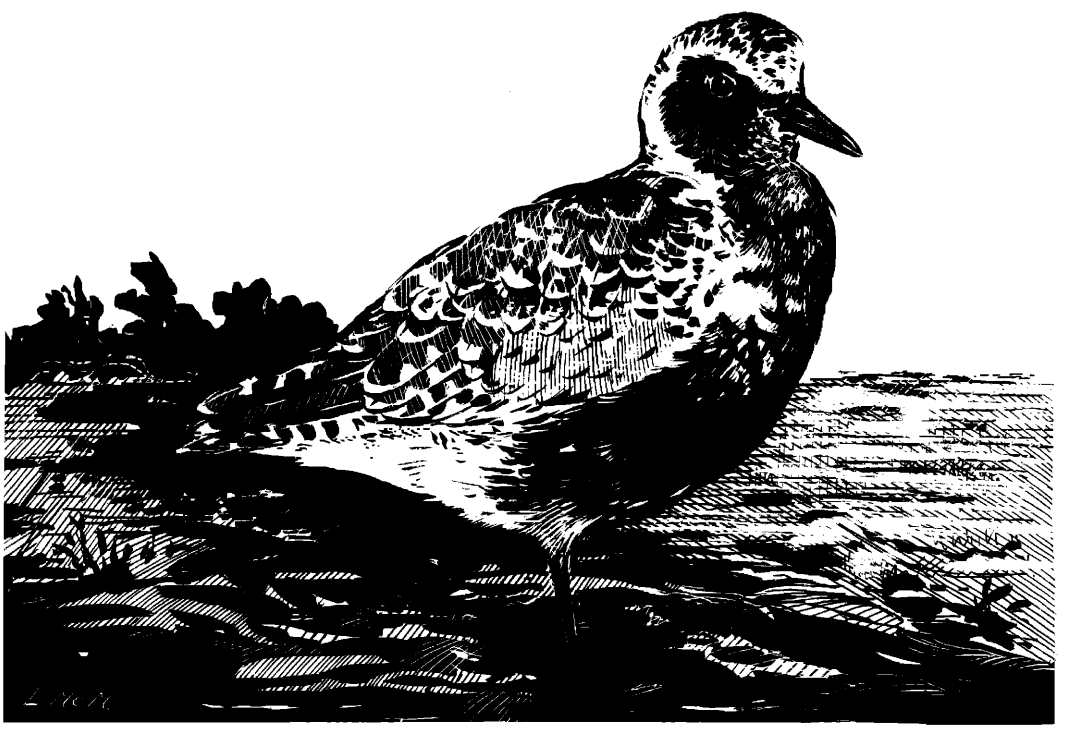
Counts made at low tide therefore provide the best estimates of the oystercatcher population that belongs to Dyer Island. There were 44 such counts during the survey period with a median of 58 birds. The medians of the counts of oystercatchers in the first and second years of the surveys, taken as October to September of the following calendar year, were 58 birds for 1999/2000 and 55 for 2000/2001 (n = 19 for both periods), indicating no between-year trend. The overall range was 51–75 birds, and the interquartile range 55–63. The interquartile range is remarkably short, and 75% of the counts lie in the range 51–63. Given that some fraction of the variability in counts is attributable to observer errors, with birds being either overlooked or double-counted, it is clear that the population of African Black Oystercatchers at Dyer Island showed little variation over the 26 month period of these surveys. This indicates that adult birds must have stayed on the island (and probably on their territories) throughout the year, that Dyer Island is at carrying capacity for oystercatchers, and that fledglings must have left the island soon after independence from their parents. The last point is further supported by the fact that birds seen on the island, both during high- and low-tide surveys, are mostly adults or sub-adults, and juveniles are rare.

During the January 1981 survey, 54 oystercatchers were recorded, close to the median for the survey period. In addition there is a published count of 44 oystercatchers, made on 16 June 1979 (Hockey 1983), which is smaller than any subsequent count. Numbers of oystercatchers on Dyer Island have thus been stable, or perhaps shown a slight increase over these two decades. Unfortunately there are no counts for the period prior to 1973, when guano was scraped annually. The impact of the resulting disturbance is therefore not measurable, but must have been eliminated by 1981, when the carrying capacity for African Black Oystercatchers on Dyer Island appears to have been reached.

There was no seasonal pattern in the numbers of assumed visitors from the mainland at high tide. For example, one might predict few visitors during the breeding season, on the expectation that adults would then be closely attached to their mainland territories. However, the median count of visitors during the breeding season (November to February) was 20 (range 6–32, 9 surveys), similar to the median of 24 during the remainder of the year (range 9–56, interquartile range 19–31, 27 surveys) (normal approximation to Mann-Whitney test = 1.3, n.s.).

There was no seasonal pattern in the number of birds at low tide. On the mainland, some oystercatchers move away from their breeding territories during the winter months, when storms occur (e.g. Underhill *et al.* 1999). At Dyer Island, the median low-tide count in the stormiest months (June to August) was 58, whereas during the summer breeding season it was 57. There is thus no indication that territory holders leave Dyer Island during the winter storms.

Kittlitz's Plovers occur mainly in the interior of the island, and seldom occur in the intertidal zone. They were therefore not counted during the surveys of the perimeter of the island.



The size of the population is about 20 birds. They nest in areas bare of vegetation, mainly in spring and summer, from October to January. In contrast, most White-fronted Plovers are found within the intertidal zone, or in the area immediately above it. They also breed mainly in spring and summer. The median count of White-fronted Plovers was 10 (range 1–19, interquartile range 7–12, n = 46).

African Snipe and Blacksmith Plover breed commonly on the adjacent mainland, but occur on the island only as vagrants (Table 2). Red-winged Pratincole, a nomadic species that rarely occurs south of KwaZulu-Natal (Maclean & Herremans 1997), was recorded on 22 December 1999 (Table 2).

Apart from cormorants, gulls and terns, two waterbird species occur and breed on Dyer Island. Little Egrets, which feed in rock pools in the inter-tidal (median count 4, maximum count 8), were first recorded breeding in February 2000 (4 nests) and bred again in spring 2000 and spring 2001. It is likely that some of the breeding adults commute to the mainland to feed, because the numbers of Little Egrets on the shoreline of the island do not increase while breeding is taking place. One or two pairs of Egyptian Geese have bred on the island in recent years. For example, there were two adults with four feathered young on 12 July 1998. This species breeds along the shoreline at various places in the Western Cape (summarised in Underhill *et al.* 2000).

Pied Kingfishers occasionally visit the island, mainly during winter. They are most frequently observed perching on the landing jetty or hovering over rock pools along the shoreline. The maximum count was four (Table 1).

Dyer Island qualifies as a Wetland of International Importance in terms of the Ramsar Convention because it supports more than 1% of the global population of the African Black Oystercatcher (Barnes 1998), a near-threatened species (Underhill 2000).

As suggested by Underhill *et al.* (2001) for Robben Island, Dyer Island could, for Turnstones at least, form part of a network of remote monitoring sites for Arctic-breeding waders. The current twice-monthly monitoring programme is building up an impressive record of baseline data from which future changes can be determined with considerable statistical power. It is therefore recommended that this monitoring be continued into the future.

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