

# White-fronted Plover

Charadrius marginatus

# Geographical variation and distribution

The White-fronted Plover is endemic to sub-Saharan Africa and Madagascar, occurring both on sandy coastlines and inland along large rivers and lake shores. Several subspecies have been described, but not all are widely recognised, and there is a lack of clarity concerning the subspecific status of birds in some regions. The nominate form occurs along the coast from the West Cape of South Africa northwards to southern Namibia, arenaceus from the south and east coasts of South Africa to southern Mozambique, and mechowi northwards from Angola along the coast and into West Africa. Birds inland from Zimbabwe and Botswana northward are widely considered as either mechowi or tenellus. Birds on the coast from central to northern Namibia are best considered as an arenaceus type until further taxonomic work is carried out (A.J. Tree in litt. 2006), this population presumably extending north into Angola. Dean (2000), however, considers that coastal birds in southern Angola belong to marginatus. The race tenellus occurs in Madagascar, where it has a mainly coastal distribution. Various authors, including Hayman et al. (1986), consider that all birds along the Indian Ocean coastline of Africa north of Natal in South Africa also belong to this form. Pakenham (1979) indicates that tenellus was collected on Zanzibar between February and April and recorded breeding there from May to July. Other proposed races are hesperius or pallidus (coastal West Africa, and lower Niger River east to Central Africa), nigirius or russatus (upper Niger River); and pons (south Somalia). These are generally included within mechowi.

Compared to the sandy-grey upperparts of the nominate race, *arenaceus* has warmer sandy-brown upperparts, with mantle feathers, scapulars and tertials edged a rusty cinnamon buff, whilst *mechowi* is tawnier and smaller than *arenaceus*, with legs and feet pale grey (Urban *et al.* 1986,

Hockey et al. 2005, A.J. Tree in litt. 2006). The race tenellus often has a concentration of rufous on the sides of the lower neck and upper breast, a characteristic also shared to some degree with nigirius/russatus in West Africa (Bannerman 1953, Hayman et al. 1986). The collar in most races is pale rufous, but white in the nominate and in the proposed race pons of southern Somalia (Hayman et al. 1986).

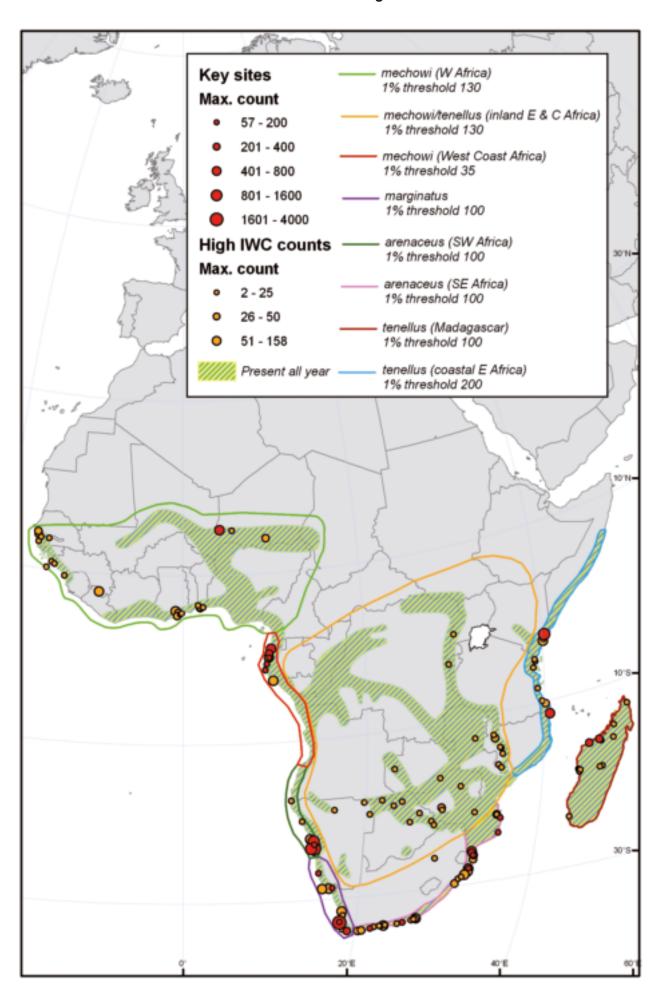
#### **Movements**

In Southern Africa, coastal populations are largely sedentary, although there are movements from exposed shores to more sheltered estuaries and bays during the stormy months of the austral winter (Tree 1997). Anderson (2006) describes it as resident in the Orange River estuary at the South Africa/Namibia border. Further north, Dean (2000) describes marginatus as resident along the coast of Angola north to about Cuanza Sul or 10°S, and mechowi as resident along the coast northwards, whilst both occur inland along the major rivers. The subspecific status of inland birds is unclear, with some authors ascribing them to mechowi (e.g. Urban et al. 1986 and Hockey et al. 2005) and others to tenellus (e.g. Benson et al. 1971, Britton 1980 and Dowsett-Lemaire & Dowsett 2006). This inland population is essentially migratory, moving seasonally in response to flooding of rivers and submergence of sandbanks in the late austral summer (January to April). After the rains, the large majority probably move to the east coast, although some birds remain inland throughout the year in times of drought (Tree 1997). However, count data from the east coast of South Africa do not show an increase in the austral winter (Taylor et al. 1999). and further count data from Mozambique are needed to confirm these movements. The race mechowi is found to be a sparse summer visitor (January to March) as far south as St Francis Bay (west of Port Elizabeth) on the southern coast of South Africa (Tree 2002). Ringing recoveries from South Africa show only very local movements, but ringing has only been carried out on the coast (Underhill et al. 1999).

Although it has been recorded in Zambia in every month

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of the year, the White-fronted Plover is usually absent during the high flood period between January and May, although some may take advantage of man-made wetlands (Leonard 1999). Birds gather outside the breeding season in Zimbabwe in small flocks, when the vast majority leave during the rains (Irwin 1981). In Malawi, it is probably resident on the shores of Lake Malawi, but with local movements elsewhere; all records near Lilongwe are between January and April (Dowsett-Lemaire & Dowsett 2006). Further north, birds at inland localities in Central Africa (race mechowi/ tenellus), where fluctuations in water levels are less extreme, may be more sedentary, but some movements coastward have been reported (Urban et al. 1986). It is widely distributed in Democratic Republic of Congo, mainly restricted to islands and banks of large rivers and lakeshores, quite commonly from areas of the mid-Congo River at both high water in December and low water in March (Chapin 1939). Schouteden (1961) detailed records from the Equateur Province of Democratic Republic of Congo, where most records fell between October and April. Carswell et al. (2005) consider that the race mechowi is scarce in Uganda, where it occurs on sandy beaches of the larger lakes and rivers between November and May.

There are relatively few records from several inland localities in Tanzania, suggesting that the inland population is highly mobile, even transient, although records at the coast suggest it is resident there (Baker & Baker 2005). In Kenya, it only occurs regularly at Lake Turkana in the north-west and on or near the coast in the south-east; seasonal occurrences (June-July) at a dam on the Athi River near Voi suggest there are some regular movements (Lewis & Pomeroy 1989). There are no inland records from Somalia, where it occurs as a breeding resident on the coast, mostly south of 3°N (Ash & Miskell 1998).

On the west coast, Christy & Vande Weghe (1999) describe it as resident from Congo through Gabon and Equatorial Guinea to Cameroon, but as a migrant in the Central African Republic. However, the resident population in Gabon is strongly augmented by non-breeding migrants from October to April, and various plumage variations have been observed here (Christy & Clarke 1994). During extensive January waterbird surveys of coastal Cameroon in 1998 and 1999, West et al. (2002) found only one bird on the northern coast (on the Meme River), with none in the Estuaire du Cameroon nor from the coastline around Limbe, although it was regular along the Sanaga River further south. In surveys of coastal Cameroon in January 2007, it was only found along the Sanaga River and at the Sanaga River mouth (Van der Waarde 2007).

In Nigeria, it occurs on sandy shores, both coastal and inland, with seasonal movements suggesting regular migration in some areas, with birds possibly leaving the coast and Lake Chad to breed centrally, though not always in the same months (Elgood et al. 1994). It is a common resident of the Togo and Ghana coasts and coastal lagoons (Cheke & Walsh 1999, Grimes 1987). However, further west it is a rare but regular visitor to the coastal zone of Liberia, with records between August and February (Gatter 1997). Such records may be from low-density breeding birds on sandy banks further up Liberia's rivers or from neighbouring countries. Year-round counts from lakes Debo and Walado Debo in the Inner Niger Delta of Mali reveal an extreme fluctuation in numbers, with hardly any records at all for most months, but a count of nearly 800 birds in August 1998 on the beaches and sandbanks of Lac Debo (Van der Kamp & Diallo 1999). This would suggest that birds here are highly migratory, but it is not known if they are moving along the Niger River or

if they travel as far as the coast. The White-fronted Plover appears to be a local resident in low numbers in coastal areas of southern Senegal, The Gambia and Guinea-Bissau, with breeding records from The Gambia in May, June and November (Morel & Morel 1990, Dodman *et al.* 2004, Barlow *et al.* 1999).

The race *tenellus* is resident along the entire coastline of Madagascar. However, the White-fronted Plover is an occasional visitor to Mayotte (or Maore), the easternmost of the Comoros island group (Louette 1988), so the possibility of connection between birds in Madagascar and on the east coast of continental Africa cannot be ruled out. The birds in Zanzibar and other coastal areas of eastern Africa may also belong to *tenellus*, but this requires further investigation.

Overall, the movements and status of the different forms of this plover are not entirely clear, and may well be subject to future revision. In summary, it would appear that there is a largely sedentary population of nominate marginatus along the west coast from the Cape of South Africa north to southern Namibia, and another largely sedentary coastal population occurring from southern Namibia to mid-Angola, treated here as arenaceus. A second largely sedentary population of arenaceus occurs along the east coast from the Cape of South Africa to southern or central Mozambique. Further north on both west and east coasts, there are two largely resident coastal populations, mechowi on the west coast from central Angola to central Cameroon, and tenellus on the east coast from northern Mozambique to southern Somalia. There is a largely migratory inland population extending from South Africa north to Central African Republic in the west and Ethiopia in the east, sometimes treated as mechowi and sometimes as tenellus; there is a resident and partially migratory population in West Africa, occurring along the coast from Senegal to Cameroon and at inland wetlands from Mali to Lake Chad, treated here as mechowi; and finally, there a resident population of tenellus in Madagascar.

# **Population limits**

Eight populations of the White-fronted Plover are here recognised in sub-Saharan Africa and Madagascar:

- marginatus, occurring on the south-west coast of Africa, from the Western Cape of South Africa north to southcentral Namibia;
- 2) tenellus, occurring in Madagascar;
- tenellus, occurring on the east coast of Africa, from northern Mozambique to southern Somalia (including pons);
- 4) mechowi or tenellus, occurring inland from northern South Africa to Democratic Republic of Congo and southern Central African Republic in the west and northern Kenya and the Ethiopian Rift Valley in the east; this population frequents the shores of tropical rivers and major lakes, and mingles with coastal populations outside the breeding season;
- 5) mechowi, occurring on the west coast from central Angola to the Sanaga River in Cameroon;
- 6) mechowi, occurring in West Africa, on the coast from Senegal to Cameroon and inland from the Inner Niger Delta to Lake Chad (including hesperius, nigirius and spatzi);
- arenaceus, occurring on the south-east coast of Africa, from the eastern Cape of South Africa to southern Mozambique;
- arenaceus, occurring on the south-west coast of Africa, from south-central Namibia to central Angola.

This treatment differs from that adopted in WPE4 in several respects. It assigns the birds on the east coast of Africa to tenellus rather than mechowi; it recognises two populations of arenaceus, one on the east coast and one on the west coast, rather than a single population in two parts, and it gives separate treatment to the birds occurring on the west coast from Angola to Cameroon and assigns them to mechowi, rather than including them within an enlarged population of arenaceus.

# Population size

#### 1. marginatus

Population estimate	1% threshold	Population trend
10,000	100	Unknown

Summers *et al.* (1987) provided an estimate of >18,000 for the White-fronted Plovers occurring along the coastlines of Namibia and South Africa. V. Parker (*in litt.* 2002) considered that this estimate was conservative and suggested retention of this figure for *marginatus* alone. However, this assumed a distribution of *marginatus* from the West Cape north to central Angola, whilst a good proportion of birds within this range are now ascribed to *arenaceus*. There are 2,000-4,000 in West Coast National Park in South Africa (Barnes 1998). Dodman (in press 2009) provides a new estimate of 10,000 for this population, based on former estimates, recent count data and densities. The estimate of 18,000 for *marginatus* in *WPE3* and *WPE4* includes a large number of birds here assigned to *arenaceus*.

#### 2. tenellus Madagascar

Population estimate 5,000-15,000	<b>1% threshold</b> 100	Population trend Unknown

F. Hawkins (*in litt.* 2002) reported that this species is usually considerably commoner than the Black-banded Plover *C. thoracicus* in Madagascar, with larger groups and a wider ecological tolerance, and estimated the total population size at 5,000-15,000 individuals. This estimate was adopted in *WPE3* and *WPE4*. High counts have included over 300 at two sites in the north-west. Zefania & Székely (*in litt.* 2008) recorded 505 individuals along the west coast of Madagascar between Boanamary in the north and Fort-Dauphin in the south between August 2003 and November 2004.

#### 3. tenellus Coastal Eastern Africa

Population estimate	1% threshold	Population trend
15,000-25,000	200	Unknown

There was a count of 500 birds at Sencara Island in the Quirimbas Archipelago of northern Mozambique in July 2003 (Bento in Diagana & Dodman 2007). Baker (1996) considered that there may well be some 5,000 birds along the coast of Tanzania. A high count of 1,070 was recorded at the Tana River delta on the Kenya coast in January 2004 (Bennun & Njoroge 1999), and the species has been described as common in Somalia (Ash & Miskell 1983). Dodman (2002) provided an estimate of 15,000-25,000 based on 5,000 on the Tanzania coast (although there may be additional birds on east-flowing rivers such as the Rufiji), some 5,000-7,500 on the Kenya coast and east-flowing rivers, perhaps 2,500-7,500 in southern Somalia, and some 2,500-5,000 in northern Mozambique. This estimate was adopted for this population in WPE3 and WPE4, although the birds were assigned to mechowi.

#### 4. mechowi/tenellus Inland East and Central Africa

1% threshold	Population trend
130	Unknown

Baker (1996) estimated that there may be some 3,000 birds at inland waters in Tanzania. It is scarce in Uganda (Carswell et al. 2005), whilst in the interior of Kenya it is only numerous at Lake Turkana in the north (Lewis & Pomeroy 1989). V. Parker (in litt. 2002) proposed an estimate of 10,000-15,000, taking into account the large number of potentially suitable localities inland, but noting that observed densities along rivers were lower than those at the coast. This estimate was adopted in WPE3 and WPE4.

#### 5. mechowi West coast of Africa, Angola to Cameroon

Population estimate	1% threshold	Population trend
3.500	35	Unknown

Dodman (in press 2009) provided an estimate of 3,500 for this resident coastal population, based on estimates for each country within the population's range. Population density appears to be generally low. In *WPE4*, these birds were included in a single enlarged population of *arenaceus*.

#### 6. mechowi West Africa

1% threshold	Population trend
130	Unknown

The White-fronted Plover occurs only at low densities along the coast of West Africa, and co-ordinated counts along the coast from Mauritania to Sierra Leone in January 2006 yielded only 52 birds. Schepers *et al.* (1998) estimated that some 100 birds occur in the Sine Saloum Delta of Senegal. Densities also appear to be generally low inland; e.g. Brouwer & Mullié (2001) estimated just over 250 birds for the whole of Niger. However, there are occasional high concentrations at some large inland wetlands, as evidenced by a count of 800 in Mali's Inner Niger Delta (van der Kamp & Diallo 1999). V. Parker (*in litt.* 2002) proposed an estimate of 10,000-15,000, and this was adopted in *WPE3* and *WPE4*. Dodman (in press 2009) has recently reassessed this population, and considers the estimate of 10,000-15,000 to remain valid.

#### 7. arenaceus South-eastern African coast

Unknown

V. Parker (*in litt.* 2002) proposed an estimate of 8,000-12,000 for this population of *arenaceus*, and this estimate was adopted in *WPE3* and *WPE4*. Dodman (in press 2009) arrived at a figure of 10,000 based on densities along relative lengths of the coastline, taking into account lower densities on the east coast compared to the west (Summers *et al.* 1987), and an estimate of "probably over 2,000" for southern Mozambique (south of the Save River) (Parker 1999). Counts at most sites along the south-east coast between 1992 and 1997 were fewer than 100, with a maximum of 127 from St Lucia (Taylor *et al.* 1999). The highest single count was of 617 at Salinas de Matola in Mozambique (AfWC database).

#### 8. arenaceus South-west African coast

Population estimate1% thresholdPopulation trend10,000100Unknown

Dodman (in press 2009) provided an estimate of 10,000 for this newly defined population, based on densities in coastal Namibia of 2.0-6.5 birds per kilometre given by Underhill & Whitelaw (1997), estimated lower densities in Angola, and known concentrations at Walvis Bay and Sandwich Harbour in Namibia. The maximum counts at Walvis Bay and Sandwich Harbour in the 1990s were 1,610 and 2,540, respectively (Simmons *et al.* 1998).

The combined estimates of 73,500-103,500 for the eight populations of this species agree reasonably well with the species estimate of c. 100,000 given by Fishpool & Evans (2001).

#### **Conservation status**

Trends in the eight populations are unknown, but the White-fronted Plover does not appear to be under serious threat. It shows tolerance for some human disturbance of its habitat. However, there are threats to nests from predation, floods, high tides and vehicles driving along beaches (Urban et al. 1986). Numbers of mechowi have been seriously affected on the Zambezi river by dam building and associated ecological changes that have occurred (Tree 1988). Global climate change may pose a long term threat, as some preferred coastal sites may be rendered unsuitable by rising sea levels, whilst sandy river habitat may be affected by changing rainfall and flood patterns.

# Habitat and ecology

The White-fronted Plover is commonest on both exposed and sheltered sandy beaches along the coast, and less common on rocky shores and other coastal habitats. It also occurs on sandy beaches along river banks and islands of large tropical rivers, and around the margins of large lakes. It is usually encountered in pairs, and some birds defend territories throughout the year. Birds on exposed seashores roost communally, with roosts numbering up to 400 birds (Hockey & Douie 1995). Birds along riverbanks are forced to move when their habitat becomes submerged, and some move to the coast, where they intermingle with resident populations. They feed on small invertebrates. Breeding generally occurs from February to September in West Africa, from May to July in East Africa, and from March to October in Madagascar (Wiersma 1996, Langrand 1990). Breeding has been recorded throughout the year along the coasts of Southern Africa, but most records are between August and February, whilst in Zimbabwe the race mechowi breeds mostly from July to October (Tree 1997). Similarly, the Whitefronted Plover breeds between July and October in Zambia and between August and October in Malawi (Benson et al. 1971, Dowsett-Lemaire & Dowsett 2006).

# **Network of key sites**

Across much of its range, the White-fronted Plover only occurs at low densities, and therefore the key site approach to conservation does not work especially well for this species. However, there are a few clearly identifiable key sites. The most important site for *marginatus* is West Coast National Park in the Western Cape, South Africa, where there are an estimated 2,000-4,000 birds and 100-200 breeding pairs, mostly concentrated around Langebaan Lagoon. The Orange

River Estuary on the Namibia/South Africa border and the Luderitz coastline in Namibia are also of importance for this population.

Two sites are of known importance for *tenellus* in Madagascar: Baly Bay and Bombetoka, both on the northwest coast, where there have been counts of over 300 birds (AfWC database). Along the eastern seaboard of Africa, key sites include the Quirimbas Archipelago in Mozambique and the Tana River Delta in Kenya. There are no count data in the AfWC database that meet the 1% criterion for *mechowi/tenellus* in inland East and Central Africa. One likely key site is Lake Turkana in Kenya. Five sites in coastal Gabon are important for the population of *mechowi* on the west coast of Africa: the Baie de Corsico, Baie de Cap Lopez, Baie de Mondah-Pointe Moka, Estuaire du Gabon and Barre de l'Arabe. Angola's Mussulo Lagoon is also of importance for this population. In West Africa, only Mali's Inner Niger Delta has been identified as a key site for *mechowi*.

Six sites in Mozambique have met the 1% criterion for the south-east African population of *arenaceus* on at least one occasion, but there is a paucity of records (few repeat counts). Of these, the Salinas de Matola is of greatest importance, followed by Maputo Beach, the Bazaruto Archipelago and Inhambane Bay. In South Africa, key sites include Botriviervlei estuary, Voelvlei, Sodwana Bay to Cape Vidal in the Greater St Lucia Wetland Park, and the Swartkops Estuary. In Namibia, two sites within close proximity of each other, Walvis Bay and Sandwich Harbour, support internationally important numbers of predominantly, *arenaceus*.

# Protection status of key sites

Langebaan Lagoon is fully protected as part of the West Coast National Park. It is a Ramsar site and an IBA, although the site is nevertheless prone to a number of threats including impacts of urbanisation and recreational developments at the lagoon (Barnes 1998). The Orange River Estuary is not a formally protected site, although negotiations to set up a trans-frontier conservation area have been underway since the mid-1990s (Anderson 2006).

In Madagascar, Baly Bay is a National Park, but Bombetoka is unprotected (ZICOMA 1999). Rabariosa *et al.* (2006) mention shrimp aquaculture within Baly Bay National Park, and recommend continued waterbird monitoring to provide an early warning of any changes at this site. The Quirimbas Archipelago in northern Mozambique is a National Park. The Tana River Delta in Kenya is unprotected and subject to a number of complex threats; Lake Turkana is also largely unprotected, although direct pressure on the lake is rather low (Bennun & Njoroge 1999). The coastal sites in Gabon are unprotected, as is most of Mussulo Lagoon in Angola. The Inner Niger Delta in Mali is a Ramsar site, but not formally protected.

Of the key sites for *arenaceus* in southern Mozambique, only the Bazaruto Archipelago is a protected area. In South Africa, the Greater St Lucia Wetland Park is a Ramsar site and an IBA; although it is at present partially protected, administration of the site is in a state of flux (Johnson *et al.* 1998). The Swartkops Estuary is also partially protected (Barnes 1998). Walvis Bay is a Ramsar site, and receives some measure of protection, although there are threats in the area from various development plans. Sandwich Bay is a marine reserve within the Namib-Nakluft National Park, managed by the Namibian Ministry of Environment and Tourism (Simmons *et al.* 1998). Both Namibian sites are IBAs.

Table 32. Key sites for White-fronted Plover. Sites where 1% or more of a population has been recorded

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Country	Site	Lat.	Long.	Season	Max total	Year A	verage total	Basis for average	Source	Population(s) at site
Gabon	Baie de Corisco	1.20	9.67	Feb-Mar	517	1992			Schepers & Marteijn 1993	mechowi coastal W Africa
Gabon	Barre de l'Arabe	-1.27	9.00	Feb-Mar	57	1992			AfWC database	mechowi coastal W Africa
Gabon	Baie de Mondah - Pointe Moka	0.65	9.45	July-August	400	2000	230	1998-00 (2)	AfWC database	mechowi coastal W Africa
Gabon	Baie du Cap Lopez	-0.59	9.20	February	167	1992			AfWC database	mechowi coastal W Africa
Gabon	Estuaire du Gabon	0.16	9.45	Feb-Mar	74	1992			AfWC database	mechowi coastal W Africa
Kenya	Tana River Delta	-2.50	40.33	Non-breeding	1070	1993			WBDB	tenellus coastal E Africa
Madagascar	Baie de Baly National Park	-16.05	45.33	Jul-Aug	313	1999	248	1999-01 (2)	AfWC database	tenellus Madagascar
Madagascar	Bombetoka Bay	-15.92		Jul-Aug	314	1999			AfWC database	tenellus Madagascar
Mali	Inner Niger Delta  Bay Inhambane	13.50 -24.18	-4.00 35.38	Non-breeding  July-August	791 130	1998-04 1999			Zwarts et al. 2005 AfWC database	W Africa arenaceus
	Bazaruto, Benguérena	-22.47	35.48		157	1999			AfWC database	SE Africa arenaceus
	& Magaruque Is Lake Xigunte	-26.48	32.80	Pre-breeding	104	1997			AfWC database	SE Africa arenaceus
Mozambique	Maputo beach	-26.17	32.58	•	216	1997			AfWC database	SE Africa arenaceus
Mozambique	Salinas da Matola	-25.95	32.55	migration Pre-breeding migration	617	1997			AfWC database	SE Africa arenaceus SE Africa
Mozambique	Sencara Island, Quirimbas Archipelago	-11.50	40.60	Non-breeding	500	2003			Diagana & Dodman 2007	tenellus E Africa coast
Namibia Namibia	Luderitz Coast: Total Orange river: Total	-26.58 -28.58	15.17 16.87	July-August Pre-breeding migration	185 200	2000 1996	104 64		AfWC database AfWC database	marginatus marginatus
Namibia	Sandwich Harbour	-23.38	14.48	•	3160	1998	1937	1992-00 (5)	AfWC database	arenaceus SW Africa
Namibia	Swakop - Walvis			July-August	183	2000			AfWC database	arenaceus SW Africa
Namibia	Walvis Bay Ramsar Site	-22.50		July-August	3108	1997-05		1997-05 (9)	Underhill	SW Africa
South Africa South Africa	Botriviervlei West Coast National Park	-34.35	18.10	Non-breeding  July-August	210 197	1994 1999	60 149	` ,	AfWC database  AfWC database	arenaceus SW Africa marginatus
South Africa	St Lucia Wetland Park	-28.02	32.48	Non-breeding	127	-	143	1997-00 (3)	Taylor et al. 1999	arenaceus SE Africa
South Africa	West Coast National Park			·	4000	-			WBDB Barnes 1998	marginatus
South Africa	Voelvlei	-34.27		July-August	140	1993	85	` ,	AfWC database	arenaceus SE Africa
South Africa	Zwartkops Estuary	-33.85	25.58	Jul-Aug	164	1994	104	1995-99 (5)	AfWC database	arenaceus SE Africa

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