

Arrival and departure periods of Ruddy Turnstones from an especially favoured Namibian coastal locality

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Surveys show that the Patryberg section of the Namibian coast is exceptionally important for Ruddy Turnstones and seasonally supports at peak 1.4 % of the estimated Siberia–sub-Saharan Africa flyway population. They also show that published generalisations about the time of arrival and departure of Ruddy Turnstones mask considerable inter-annual variations, which can largely be attributed to conditions on the breeding grounds. They also suggest that the Ruddy Turnstones that occur in Namibia during the non-breeding season might come from two geographically distinct breeding populations.

INTRODUCTION

In less populated parts of the world the arrival and departure times of migrant birds are often poorly known. This is the case with the Ruddy Turnstones *Arenaria i. interpres* that breed in N Eurasia and occur on the coast of sub-Saharan Africa in the non-breeding season. Most statements on the arrival and departure times of this species are broad generalisations, often based on coarse impressions rather than data. This study uses 31 counts over a 29-month period at Patryberg on the central coast of Namibia to provide a better indication of the timing of such events, contradict some published generalisations, and show that Ruddy Turnstone migration is more pulsed than has been appreciated.

STUDY AREA AND METHODS

The coastline of Namibia is dominated by high energy conditions and less than 1% of its length comprises sheltered shallow waters (Noli-Peard & Williams 1991). The central coast of Namibia regularly supports in excess of 200,000 waterbirds at four large wetlands: Cape Cross Lagoons, Swakopmund saltworks, Walvis Bay lagoon and salt pans, and Sandwich Harbour (Whitelaw *et al.* 1978, Williams 1987, 1991). Each of these wetlands requires several people and/or considerable time to survey and so surveys are infrequent. The coast between the towns of Swakopmund and Walvis Bay, supports exceptionally large numbers of shorebirds (Barnes 1998). The Patryberg section of this coast is short, 6 km, narrow, and can easily be counted by one person in a period of 1–3 hours. Between June 1991 and October 1993 inclusive the shorebirds on this section of coast were counted 31 times on an effectively monthly basis and so provide a good indication of the time at which Ruddy Turnstones arrived at and departed from the central Namib coast.

RESULTS

Arrival

The surveys spanned three arrival periods. In 1991, the Ruddy Turnstone population increased from an austral winter level of 104 on 28 Aug to 931 by 3 Oct indicating a major arrival in Sept. Numbers continued to increase to a peak of 1,485 in March 1992 (Table 1). There was a two-phase return after the 1992 breeding season. Numbers rose from 23 on 7 July to 427 on 13 Aug and 593 on 27 Aug. After a slight drop, they increased again between 11 Sept, when there were 523, and 29 Sept when there were 896.

In 1993, turnstone numbers rose from 29 on 1 Aug to 659 on 6 Oct. They continued to increase to a peak of 1,480 in Jan 1993.

Thus in all three years the first substantial arrival of Ruddy Turnstones at Patryberg occurred in Aug or Sept. Arrival was earlier and two-phased in 1992 compared with 1991. The interval between counts in 1993 precludes comparison. In both the 1991–92 and 1992–93 austral summers, numbers continued to increase over several months after the initial major arrival. There was also some variation in numbers throughout each austral summer.

Departure

Departures of Ruddy Turnstones from Patryberg were recorded most intensively in 1992 when three counts were conducted in May. The main departure in that year was during the first week of May when numbers decreased from 994 on the 1st, to 301 on the 7th and to 268 on the 14th. In 1993, departure was two-phased. There was an early departure when numbers fell from 1,054 on 26 Feb to 501 on 25 March. There was a second phase of departure when numbers fell from 531 on 14 April to 14 on 18 May.



DISCUSSION

The four important wetlands of the central Namibian coast were all counted at various times between 1984 and 1993. The maximum number of Ruddy Turnstones at these sites was: 91 at Cape Cross Lagoons (Williams 1991); 242 at Swakopmund Saltworks (Williams unpublished data); 4,600 in the Walvis Bay lagoon and adjoining salt evaporation pans (Williams 1987, unpublished data); and 300 at Sandwich Harbour (Williams unpublished data). Patryberg supported maxima of 1,485, 1.4 % of the current flyway estimate of 100,000 (Wetlands International 2002). Given that Ruddy Turnstones are generally site-faithful during the non-breeding season (Burton & Evans 1997, Summers *et al.* 1987), the sum total of the maximum populations from these localities suggests that this 70-km stretch of coast supported >6,000 Ruddy Turnstones between the mid-1980s and the early 1990s, about 6% of the estimated flyway population.

Arrivals

General reviews indicate that Ruddy Turnstones arrive in the tropics in Aug–Sept (Cramp & Simmons 1983, Summers *et al.* 1989, Underhill 1997, Urban *et al.* 1986). Arrival along the northern coast of Namibia has been reported in late Sept to Oct (Tarr & Tarr 1987). The surveys at Patryberg indicate that arrival can vary considerably between years, probably reflecting conditions and reproductive success or failure on the tundra breeding grounds. In 1992, substantial arrivals occurred in the first half of Aug, far earlier than previously indicated for Namibia. In both years, there was a substantial influx in Sept and in 1992 the influx was in the second half of the month. Arrivals evidently continued throughout Oct–Jan.

Migration by high arctic shorebirds to their non-breeding quarters varies between years, sexes and age-groups. Migration is earliest in years of widespread breeding failure (Blomqvist *et al.* 2002, Meissner 2005). In successful breeding years, adult males migrate earlier than adult females, and juveniles follow 2–6 weeks later (Brenning 2001, Snow & Perrins 1998, Meissner 2005).

In 1992, there was a widespread failure of breeding by arctic shorebirds (Ganter & Boyd 2000). This has been attributed in part to cooling caused by atmospheric ash from the Mount Pinatubo volcanic eruption (Ganter & Boyd 2000), coupled with small numbers of rodents and an abundance of predators (Underhill *et al.* 1993). It seems likely that these conditions led to earlier than usual southward migration by failed breeders and to the early Aug arrival in Namibia. Assuming a 3–4 week migration period, these birds would have left the breeding grounds in early July. The second arrival phase, in Sept, was similar in timing to normal years and presumably was of birds that had bred successfully. Ruddy Turnstones share incubation so, in the event of failure during incubation, both sexes would leave the breeding grounds at about the same time.

Departures

The main departure of Ruddy Turnstones from South Africa is reported to be in April (Summers *et al.* 1989, Underhill 1997) and they have been recorded passing through N Namibia in April and May (Tarr & Tarr 1987). At Patryberg, there was a substantial departure of birds in March 1993. In

Table 1. Numbers of Ruddy Turnstones counted along the Patryberg coast during 1991–1993.

1991		1992		1993	
Date	Count	Date	Count	Date	Count
		Jan 16	834	Jan 21	1,480
		Feb 13	1,418		
		Feb 19	1,360	Feb 26	1,054
		Mar 5	1,485	Mar 25	501
		Apr 23	1,020	Apr 14	531
		May 1	961		
		May 7	301		
		May 14	268	May 18	14
Jun 28	335			Jun 24	0
Jul 24	120	Jul 7	23		
Jul 27	0				
Aug 28	104	Aug 13	427	Aug 1	29
		Aug 27	593		
		Sep 11	523		
		Sep 29	896		
Oct 3	931	Oct 15	1,102	Oct 6	659
Oct 25	940				
Nov 29	1,071	Nov 12	1,160		
		Dec 22	791		

that year, departure was two-phased with a second mass departure in early May at a time similar to the main departure in 1992. This two-phased departure in the season immediately following a two-phased arrival suggests that early failed birds in one season may be able to migrate northwards correspondingly early. This would give them opportunity for more extended refuelling en route and thus arrival on the breeding grounds in better condition than birds following the normal schedule.

Phased movements and differing breeding areas

The two-phased arrivals and departures suggest that the Ruddy Turnstones spending the non-breeding period on the Namibian coast might be derived from two distinct breeding areas: one where in 1992 there was breeding failure and early migration and another where breeding was more successful. The recovery of a Canadian-ringed Ruddy Turnstone on the Namibian coast (Tree 1999) raises the possibility that one of these populations might breed in the tundra zone of N America.

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