

Presence and First Breeding Attempts of Southern Gannets *Morus capensis* and *M. serrator* at Saint Paul Island, Southern Indian Ocean

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From banding recoveries, or more recently from genetic analysis (Ovenden *et al.* 1991), seabirds are known to be highly philopatric (e.g. Weimerskirch *et al.* 1985). One of the advantages of returning to, and breeding in, the natal colony is that the bird's parents of similar genetic constitution were successful there. Also the returning bird may well be related to its neighbours and thus enhance its future reproductive success in this area if this aspect influences mate choice (see Greenwood 1980). Advantages of philopatry may thus be higher

than those resulting from emigration and the establishment of a new colony, although the new site may possibly contribute more offspring to future generations if it is productive (Greenwood 1980; Nelson 1981; Nettle-ship & Birkhead 1985).

Because colonisations of new breeding sites by seabirds are not frequent and mainly concern breeding sites previously deserted or adjacent to other colonies (Storey & Lien 1985; Kharitonov & Siegel-Causey 1988; Podolsky & Kress 1989; Podolsky 1990), our un-

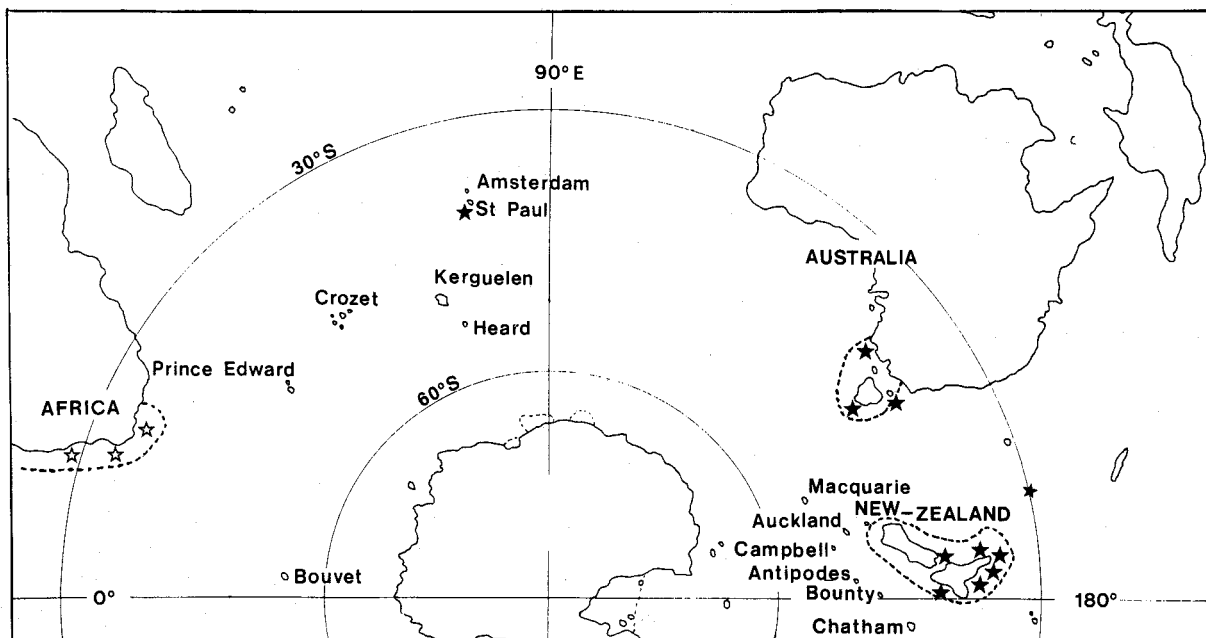


Figure 1 Breeding range (—) and main colonies of Cape (empty stars) and Australasian (black stars) Gannets, including the new breeding site at Saint Paul Island.

Table 1 Recent observations and breeding attempts of southern gannets at St. Paul Island from 1987 to 1993. Dates of visits are given for each breeding seasons. The number of individuals by species is given when recorded. Species determination uses tail colour (T) or head colour (H, see methods). * one bird presented a short gular strip but black outer rectrices; ** chick found dead on the 14 December 1988; *** plus one unidentified dead bird.

Dates	No. of individuals	Species recorded	Breeding records
1986-87	up to 13	not recorded	
21 February 1987	2	2 <i>Morus serrator</i> : T	not recorded
1987-88			
24-26 September 1987	5	— <i>M. serrator</i> : T	1 egg
24 November 1987	9	8 <i>M. serrator</i> : T 1 <i>M. capensis</i> : T+H	empty nests
1988-89			
13-15 December 1988	8-10	— <i>M. serrator</i> : T	1 egg, 1 chick**
1989-90			
16-19 October 1989	8	— <i>M. serrator</i> : T or H+T	empty nests
1-10 February 1990	6	6 <i>M. serrator</i> : T	empty nests
1990-91			
23 February 1991	7	6 <i>M. serrator</i> : T or H+T 1 <i>M. capensis</i> : H+T	1 young chick
1991-92			
17-22 October 1991	7	6 <i>M. serrator</i> *: H+T 1 <i>M. capensis</i> : H+T	empty nests
7 January 1992	—	—	empty nests
10 February 1992	1	1 <i>M. serrator</i> : H+T	1 egg
1992-93			
22 September 1992	5 ***	5 <i>M. serrator</i> : H+T	1 egg
20 January 1993	2	2 <i>M. serrator</i> : H+T	1 egg, 1 dead chick
17 February 1993	5	5 <i>M. serrator</i> : H+T	empty nests

derstanding of parameters underlying the establishment of new colonies needs to be improved (Brown & Oatley 1982). New evidence and characteristics of colonisations are therefore of great interest, particularly when the species is found far away from its normal breeding range.

The breeding ranges of Cape and Australasian Gannets (respectively *Morus capensis* and *M. serrator*) are distinct, being separated by some 8000 km of the southern Indian Ocean (O'Brien 1990; Fig. 1). This paper provides the first records of occurrence and breeding attempts of Cape and Australasian Gannets at Saint Paul Island (38°43'S, 77°30'E, southern Indian Ocean),

some 4000 km outside their previously known breeding ranges.

Methods

The observations were made during 14 visits (12 at land and two at sea) to Saint Paul Island from 1986 to 1993. At long range, *Morus capensis* and *M. serrator* can be differentiated by tail colour but there is some overlap in pattern (Broekhuyzen & Liversidge 1954; O'Brien 1990). However, a more accurate discrimination can be made at short range, using the length of the gular strip (Nelson 1978; O'Brien 1990), the shape of the perioph-

thalmic ring (Venn 1982; BL & DB pers. obs.), and the iris colour (Berruti 1988; BL & DB pers. obs.).

Results

Since 1987 both species have been reliably identified at Saint Paul Island at short range; Cape Gannets in November 1987, February 1991 and October 1991; Australasian Gannets in October 1989, February and October 1991, February and October 1992, and January and February 1993 (Table 1). It is not known how many different individuals this represents although up to ten were observed in 1988 and 13 in 1986 (Table 1).

Each breeding season, birds of the two species (although apparently only one individual of the Cape Gannet) occupied four to five nests constructed within tussocks on the north slopes of the entrance to Saint Paul's crater. They were about 30–50 m away from a small colony of Yellow-nosed Albatrosses *Diomedea chlororhynchos* and a larger one of Northern Rockhopper Penguins *Eudyptes chrysocome moseleyi* (respectively 12 and less than 5000 pairs, Jouventin *et al.* 1984).

Between the summers of 1987–88 and 1992–93, seven breeding attempts were recorded at Saint Paul Island (two in 1988–89 and 1992–93). We do not know how many of these attempts were successful, but three of them failed at egg or young-chick stage. We do not know if the chick found on 23 February 1991 fledged normally, but an immature Gannet (the first seen in this area to our knowledge) was observed at Amsterdam Island, 50 km further north, on 1 July 1991. Eggs were recorded from September to February and chicks observed from mid-December to February (Table 1).

Discussion

Adults of both species of gannets are mainly sedentary within their breeding range. However, immature Cape Gannets disperse to the north along the coasts of Africa up to Mozambique on the east coast and to the Gulf of Guinea on the west coast. Immature Australasian Gannets disperse around the south coast of Australia and up to the Tropic of Capricorn (Nelson 1978; Nelson 1981; Crawford *et al.* 1983; O'Brien 1990). The annual observation of up to 13 birds at Saint Paul Island since 1986 (however, we do not know if the birds observed each year were the same individuals) provides the first record of the Australasian Gannet for Saint Paul and Amsterdam Islands and confirms the occurrence of the Cape Gannet in the southern Indian Ocean. Records of

gannets (especially Australasian) in the Indian Ocean far away from their breeding range remain rare. However, 14 observations of Cape Gannets were made at Amsterdam and Saint Paul Islands from 1979 to 1985 (Roux & Martinez 1987) and one between 1989 and 1993 (Berteaux 1991; P. Vallas pers. comm.). Only two Cape Gannets have been observed off Australia (Venn 1982; Ross 1988); one Australasian Gannet has been recorded at Crozet (46°25'S, 51°45'E; Stahl *et al.* 1984) and Marion Islands (46°52'S, 37°51'E; Brown & Oatley 1982); and two others in South African waters (Cassidy 1983; Berruti 1988).

The records summarised here are, to our knowledge, the first indicating regular breeding attempts by southern gannets out of their normal breeding range (apart from that of a Cape Gannet breeding with an Australasian Gannet at a colony in south-east Australia [Venn 1982] and an Australasian Gannet breeding in South Africa [J.B. Nelson pers. comm.]). We do not know if the Cape Gannet, apparently present until 1992, attempted to breed. On the other hand, birds incubating on 10 February 1992, 22 September 1992 and 20 January 1993 were Australasian Gannets, and the chick observed in December 1988 may also have been of this species, since Cape Gannets breed later than Australasian Gannets (O'Brien 1990). Because the birds recorded were Australasian Gannets, this species has therefore been involved in these breeding attempts.

As other seabird species frequently visit several colonies before breeding (Fisher 1952; Nelson 1978; Kharitonov & Siegel-Causey 1988; Podolsky 1990), both species of southern gannets might have been attracted to Saint Paul Island by the breeding activities of Yellow-nosed Albatrosses and Rockhopper Penguins. Small and recently formed colonies usually have a high proportion of first-time breeders, immatures and other non-breeding birds (Kharitonov & Siegel-Causey 1988). Prospecting and colonisation of new potential breeding sites by immatures is generally observed in species whose numbers are increasing (Fisher 1952; Nelson 1981). This does not seem to be the case here, as the numbers of the Cape Gannet have recently decreased (Crawford *et al.* 1983) and those of the Australasian Gannet, which remains the second rarest sulid in world numbers (Nelson 1978), now appear to be stable after a slight increase between 1946–47 and 1980–81 (Harris & Norman 1981; Wodzicki *et al.* 1984; Waghorn 1983; O'Brien 1990). The new breeding site at Saint Paul Island needs to be surveyed regularly. It is, however, likely to face many difficulties because regular visits by

boats during the breeding season may disturb this susceptible species and the site may still depend on the arrival of other birds. These arrivals may be episodic and scarce because Australasian Gannets have not been seen there before (Roux & Martinez 1987).

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