

# BREEDING FLYING BIRDS IN THE REGION OF THE FILDES PENINSULA, KING GEORGE ISLAND, SOUTH SHETLAND ISLANDS, ANTARCTICA, 1995/96

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## SUMMARY

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During the summer breeding season of 1995/96 we obtained information on the abundance and distribution of breeding flying birds on the Fildes Peninsula, King George Island, South Shetland Islands, Antarctica. Nine breeding flying birds were recorded: Pintado or Cape Petrel *Daption capense*, Southern Giant Petrel *Macronectes giganteus*, Wilson's Storm Petrel *Oceanites oceanicus*, Black-bellied Storm Petrel *Fregetta tropica*, Greater Shearwater *Chionis alba*, South Polar Skua *Catharacta maccormicki*, Subantarctic Skua *C. antarctica*, Kelp Gull *Larus dominicanus* and Antarctic Tern *Sterna vittata*. The data are compared with those reported by other authors. The value of the surveyed area from an environmental view point is considered in light of its importance as a rich feeding area for seabirds and a significant increase in human activities in the area during the last decade.

## INTRODUCTION

The Antarctic islands of the Scotia Arc serve as an important breeding area for seabirds. Several studies of breeding seabirds have been carried out at the South Shetland Islands (e.g. Trivelpiece & Volkman 1979, Volkman *et al.* 1980, Jablonski 1986, Roby *et al.* 1986, Peter *et al.* 1988, Pereira *et al.* 1990, Favero *et al.* 1991, Peter *et al.* 1991, Sierakowski 1991, Aguirre 1995, Coria *et al.* 1995). Penguin populations in the region have been reviewed by Croxall & Kirkwood (1979) and Woehler (1993). However, in spite of the fact that the South Shetland Islands have been extensively surveyed, there is a need for up-to-date information for several breeding localities. Several reports and publications provide information from the Fildes Peninsula region (e.g. Bannasch & Odening 1981, Bannasch *et al.* 1984, Kamenev 1987, Kaiser *et al.* 1988, Peter *et al.* 1988).

The surveyed area has been subject to a significant increase in human activities during the 1980s. Thus, the collection of comprehensive information on the location of breeding colonies and baseline data on the sizes of breeding populations of seabirds is essential to assess future population changes. The aim of this work is to assess breeding population sizes and distribution of flying bird colonies on the Fildes Peninsula and adjacent areas. The results of this study are compared with previous published information.

## METHODS

We conducted our study from 23 December 1995 to 20 January 1996 on the Fildes Peninsula (containing Site of Special

Scientific Interest No. 5) and surroundings, including Ardley Island in Maxwell Bay (SSSI No. 33), on southern King George Island (62°13'S, 58°54'W, Figs. 1 & 2).

The Fildes Peninsula is the most extensive coastal area free of snow in summer in King George Island. Vegetation cover, though sparse, can be considered rich by Antarctic standards, with lichens, mosses and the flowering grass *Deschampsia antarctica* characteristic of the Maritime Antarctic Zone (Holdgate 1977) or the Cold Antarctic Zone of other authors (Longton 1988, Young 1991).

We surveyed the entire area by boat and on foot. For all the species of breeding flying birds, breeding population size was determined; censuses were made during the incubation period. Census data for the Pintado or Cape Petrel *Daption capense* were obtained during the second half of the incubation period, when the variability in colony attendance is low. In order to obtain an estimation of total population, data were adjusted by comparing census results obtained by boat and on foot. Such counts exclude failed breeders that were not present in the colony, but include a certain number of non-breeders that occupied nest sites (Cramp *et al.* 1974). For storm petrel species that breed in holes or crevices accurate counts are virtually impossible. Reported numbers are therefore estimates based on personal impressions and on extrapolation from some well-known areas. The Antarctic Terns *Sterna vittata* population was estimated from adult counts with an error of ±10–15% (coded N3 by Croxall & Kirkwood 1979). South Polar Skuas *Catharacta maccormicki*, Subantarctic Skuas *C. antarctica* and mixed skua pairs were counted together.

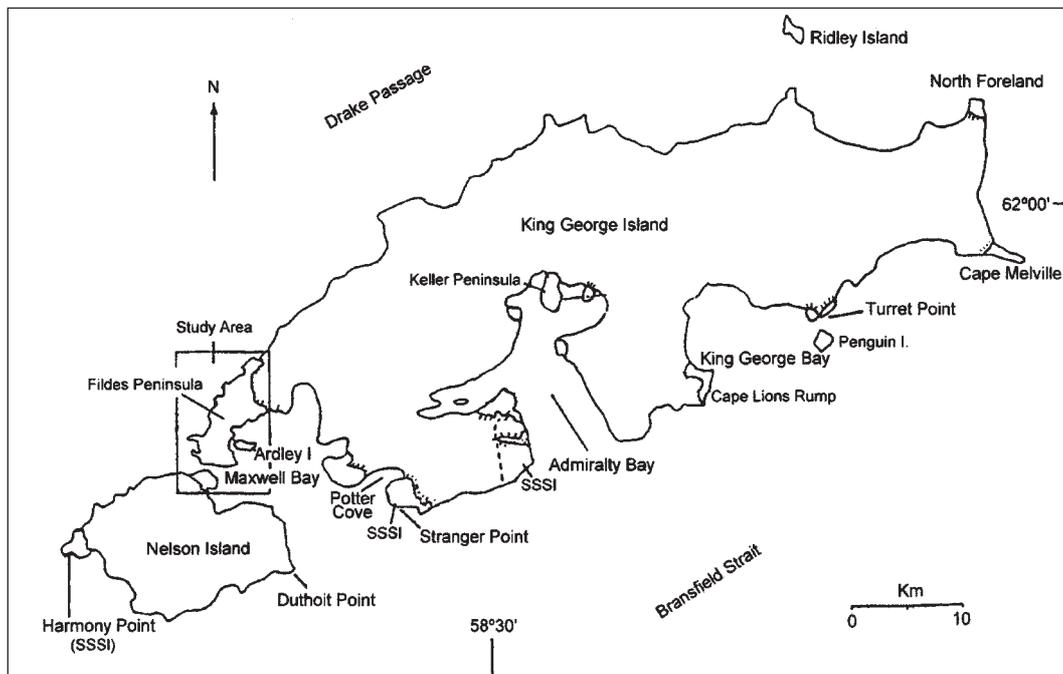


Fig. 1. King George and Nelson Islands, South Shetland Islands, showing the study area.

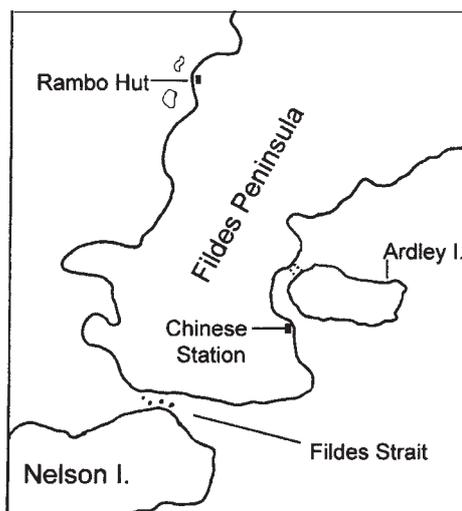


Fig. 2. Fildes Peninsula.

## SPECIES ACCOUNTS

In the area of study nine breeding flying bird species were recorded: Pintado Petrel, Southern Giant Petrel *Macronectes giganteus*, Wilson Storm Petrel *Oceanites oceanicus*, Black-bellied Storm Petrel *Fregatta tropica*, Greater Sheathbill *Chionis alba*, South Polar Skua, Subantarctic Skua, Kelp Gull *Larus dominicanus* and Antarctic Tern. Numbers of breeding pairs and comparisons with previous studies in the area and surroundings are provided in Table 1.

### Pintado Petrel *Daption capense*

A total of 1081 pairs was counted, which makes this species one of the most abundant flying breeding birds in the area of study. The more important breeding areas for this species are the coast and islets of Fildes Strait (Fig. 2), where 811 pairs

were counted. Two hundred and forty pairs were counted at Rambo Hut and two close islets ( $62^{\circ}10'S$ ,  $58^{\circ}58'W$ ). In addition, 30 breeding pairs were counted on Ardley Island.

Peter *et al.* (1988), recorded a minimum of 300 breeding pairs of Pintado Petrels in the area studied in the 1984/85 breeding season and Weidinger (1996) estimated the total population for Nelson Island and adjacent areas as 2000–3000 pairs in the 1991/92 breeding season. Our estimation of Pintado Petrels breeding in the area is 1500 pairs. The population of Pintado Petrels may have been decreased between the 1991/92 and 1995/96 breeding seasons, but results of counts are not totally comparable with Weidinger (1996) since he provided only an approximate estimation of the breeding pairs of Fildes Strait. Nevertheless, we agree with Weidinger (1996), that the observed increase between 1984/85 and 1995/96 may be due to an increased research effort.

### Southern Giant Petrel *Macronectes giganteus*

Of the 115 nests recorded, 108 were scattered over Fildes Strait, and only seven were found at Ardley Island. Breeding populations of this species on the Fildes Peninsula decreased during the 1995/96 breeding summer when compared with the 1984/85 season. Peter *et al.* (1991) counted 231 breeding pairs in the beginning of the 1984/85 breeding season; in the following two summers he observed that number of breeding pairs decreased by 40% and 21%, respectively. This decrease could be explained by the impact of the establishment in the area of the Chinese Station 'Great Wall' in February 1985 (Peter *et al.* 1991). The number of breeding pairs recorded in 1986/87 (110 pairs) by Peter *et al.* (1991) was similar to that of the 1995/96 breeding season in our study (115 pairs).

### Wilson's *Oceanites oceanicus* and Black-bellied *Fregatta tropica* Storm Petrels

Only at night, when many birds flew around, was it possible to get an impression of the abundance of these two species.

An estimated total of 700 pairs of Wilson's Storm Petrel breeds on Ardley Island, the major breeding area of this petrel in the Fildes Peninsula region. The total breeding population of this species in the whole area may reach 2000 to 3000 pairs. Obviously, the total population was underestimated due to their nocturnal activity habits and the difficulty in counting cavity-nesting species. We estimated 30 breeding pairs of Black-bellied Storm Petrel for the whole area.

#### Kelp Gull *Larus dominicanus*

A total of 136 nests was found on the Fildes Peninsula and adjacent areas. Twenty-eight nests were counted along the coast of the Drake Passage, 96 in the Fildes Strait and 12 on Ardley Island. The breeding population of this species in the Fildes Peninsula is poorly documented. Our counts were similar to that reported from 1984/85. (Peter *et al.* 1988, Table 1).

#### South Polar *Catharacta maccormicki* and Subantarctic *C. antarctica* Skuas and mixed pairs

One hundred and fifty nests were counted in the surveyed area. Both species have increased their populations at various localities on the South Shetland Islands in the last decade (Harmony Point, Silva *et al.* 1998; Potter Peninsula, Hahn *et al.* 1998; Halfmoon Island, García Esponda *et al.* 2000). In contrast our numbers have remained stable between the 1984/85 (Peter *et al.* 1988) and 1995/96 breeding seasons (Table 1).

#### Antarctic Tern *Sterna vittata*

An estimated 500 ( $\pm 10$ –15%) pairs breed in the area of study. A similar number was recorded by Peter *et al.* (1988) (Table 1).

#### Greater Sheathbill *Chionis alba*

Only four nests were counted in the Fildes Strait.

#### The Imperial Cormorant or Blue-eyed Shag, *Phalacrocorax atriceps*

This species has been observed frequently in the area but breeding on the Fildes Peninsula has not been confirmed.

The nearest breeding localities are on Nelson Island (Favero *et al.* 1991, Coria *et al.* 1995).

## DISCUSSION

When comparing our results with those of previous studies (e.g. Peter *et al.* 1988, 1991, Roby *et al.* 1986) the sizes of breeding populations at Fildes Peninsula show several changes. The breeding population of Southern Giant Petrels decreased, Pintado Petrels appear to have increased and other species showed no clear trends.

The surroundings of Shetland Islands represent a rich feeding area. Heinemann *et al.* (1990) examined the relationships between the abundance of birds and that of their principal prey species, Antarctic Krill *Euphausia superba*, in the southern Drake Passage and Bransfield Strait during the 1985 breeding season. These authors encountered the largest aggregations of Pintado Petrels near King George Island. Both Pintado Petrel and Chinstrap Penguin *Pygoscelis antarctica* achieved their highest abundance in the vicinity of South Shetland and Elephant Islands, an area that shows a strong mixing among three parent water masses (Pacific Basin, Bellingshausen Sea and Weddell Sea). A similar distribution is reported by Starck & Wyrzykowski (1982), who surveyed the same area from February to March 1981.

On the other hand, the Fildes Strait seems also to be a rich feeding area outside the summer breeding season. Observations by Peter *et al.* (1988) suggested that the concentrations of feeding non-local birds are a regular phenomenon (Weidinger 1996). During October 1984 Peter *et al.* (1988) observed more than 5700 Pintado Petrels feeding in the area. In the study area, the large numbers of breeding pairs of flying bird species as well as the significant size of Chinstrap Penguin colonies (Woehler 1993), and the concentration of feeding birds in the non-breeding season, could be explained on the base of a number of related factors, of which food availability would play a basic role.

The importance of the study area is substantial, in view of its role as a breeding area but also as feeding area, both in breeding and non-breeding periods. The significant increase in human

TABLE 1

Estimates of population sizes (breeding pairs) for flying birds on the Fildes Peninsula and at nearby localities

Place & season	MG	DC	OO	FT	PA	LD	CH	SV	Csp	Source
Fildes Peninsula 1984/85	231	>300	1550	18	0	153	5	550?600	154	Peter <i>et al.</i> (1988)
Fildes Peninsula 1991/92	–	2000–3000	–	–	–	–	–	–	–	Weidinger (1996)
Fildes Peninsula 1995/96	115	1500	2000–3000	30	0	136	4	500	150	This study
Duthoit Point 1994	118	14	2	4	113	18	2	29	6	Coria <i>et al.</i> (1995)
Admiralty Bay 1978/79	506	88	4420	?	295	537	39	1603	325	Jablonski (1986)
Admiralty Bay 1988/89	315	45	?	?	83	52	9	188	38	Sierakowski (1991)
Potter Peninsula 1988/89	75	0	200	?	0	44	15	100/200	22	Aguirre (1995)
Potter Peninsula 1997/98	46	?	5201	?	?	?	?	250	83	Hahn <i>et al.</i> 1998
Harmony Point 1997/98	500	300	?	?	110	120	110	30	40	Favero <i>et al.</i> (1991)
Turret Point 1990	210	15	?	?	16	40	0	10	0	Pereira <i>et al.</i> (1990)

MG: *Macronectes giganteus*; DC: *Daption capense*; OO: *Oceanites oceanicus*; FT: *Fregatta tropica*; PA: *Phalacrocorax atriceps*; LD: *Larus dominicanus*; CH: *Chionis alba*; SV: *Sterna vittata*; Csp: *Catharacta maccormicki* and *C. antarctica*

activities on King George Island during the 1980s, largely in relation to the settlement of Antarctic stations from nine nations as well as of numerous summer refuges (Harris 1991), makes the information on location and size of breeding populations fundamental baseline data to assess the effects of human disturbance on future population changes.

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