

BREEDING BIRDS AT HALFMOON ISLAND, SOUTH SHETLAND ISLANDS, ANTARCTICA, 1995/96

CESAR M. GARCIA ESPONDA¹, NESTOR R. CORIA² & DIEGO MONTALTI^{2,3}

¹*Cátedra de Anatomía Comparada, Fac. Ciencias Naturales y Museo, Paseo del Bosque s/n, 1900 La Plata, Argentina (cesponda@museo.facnym.unlp.edu.ar)*

²*Instituto Antártico Argentino, División Biología-Aves, Cerrito 1248, 1010, Buenos Aires, Argentina*

³*Cátedra de Fisiología Animal, Fac. Ciencias Naturales y Museo, Paseo del Bosque s/n, 1900 La Plata, Argentina*

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SUMMARY

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During the summer breeding season of 1995/96, we obtained information on the distribution and abundance of breeding seabirds on Halfmoon Island, South Shetland Islands, Antarctica. Ten breeding species were counted: Chinstrap Penguins *Pygoscelis antarctica* (3342 pairs), Pintado or Cape Petrels *Daption capense* (8), Wilson's Storm Petrels *Oceanites oceanicus* (377), Black-bellied Storm Petrels *Fregatta tropica* (7), Antarctic Cormorants *Phalacrocorax atriceps bransfieldensis* (29), Subantarctic Skuas *Catharacta antarctica* (3), South Polar Skuas *C. maccormicki* (103), Kelp Gulls *Larus dominicanus* (39), Antarctic Terns *Sterna vittata* (125) and Greater Sheathbills *Chionis alba* (11). We present information on population size and distribution for each breeding species, with comments on putative factors related to changes recorded.

INTRODUCTION

The South Shetland Islands support important breeding populations of seabirds. Several surveys have been conducted on King George Island, South Shetlands (Jablonski 1986, Peter *et al.* 1988, Aguirre 1995), and on Nelson Island (Favero *et al.* 1991, Coria *et al.* 1995). In addition, censuses of penguin populations in the region have been collated (Croxall & Kirkwood 1979, Shuford & Spear 1987, Woehler 1993). The only quantitative data available for Halfmoon Island, a small South Shetland Island, dates from 1991 (Favero & Silva 1991). Earlier records of breeding populations are scattered (Olrog 1958). Since the 1993/94 summer, an extensive study of the ecology of skuas *Catharacta* spp. and Antarctic Cormorants *Phalacrocorax atriceps bransfieldensis* at Halfmoon Island has been undertaken, including a survey of the distribution and number of breeding birds on the whole island in the 1995/96 summer. The aim of this paper is to present the results of this study. Whenever possible, data are compared with information provided by other authors.

STUDY AREA AND METHODS

Halfmoon Island (62°36'S, 59°53'W) is situated between Livingston and Greenwich Islands, one of the South Shetland Islands in the eastern part of MacFarlane Strait (Fig. 1). It is a small island named after its halfmoon-like contour, whose concavity opens toward the north-west. There are two bays, Menguante Cove, facing to the north, and Luna Bay facing to the west. The northern part of the island is the broadest (up to 700 m) and has the highest relief. Most of the island is ice-free, and there are four hills informally known as Xenia (96 m) and Gabriel (101 m), in the northern part of the island, and La Morenita (93 m) and Baliza (40 m), in the southern part

(Martinez & Massone 1995, Fig. 2). The Argentine Station Camara, which was established in 1952/53 in the proximity of La Morenita (Fig. 2), was the first human settlement on the island. During the 1980s it was closed for a ten-year period, and later reopened in the 1990/91 summer.

Surveys were undertaken from December 1995 to February 1996. The numbers of pairs of breeding birds were estimated by direct counts of nests with the exception of storm petrels and terns. The breeding habits of storm petrels make it difficult to estimate the number of breeding pairs of these species. However, relative numbers of Wilson's Storm Petrels were estimated by counting: (1) resting individuals in colonies at night, (2) those entering nests (Wasilewski 1986), and (3) of storm petrels calls. In the case of the Antarctic Tern *Sterna vittata*, we counted individuals or pairs showing territorial behaviour. Counts of Kelp Gulls *Larus dominicanus* and Antarctic Cormorants were performed during the brooding period, and those of the other species during the incubation period. Count accuracy was $\pm 5\%$ for Chinstrap Penguins *Pygoscelis antarctica*, Pintado or Cape Petrels *Daption capense*, Subantarctic Skuas *Catharacta antarctica*, South Polar Skuas *C. maccormicki*, Greater Sheathbills *Chionis alba*, Kelp Gulls, and Antarctic Cormorants (N1, following Croxall & Kirkwood 1979), and an accuracy of 10–15% for Wilson's Storm Petrels *Oceanites oceanicus*, Black-bellied Storm Petrels *Fregatta tropica*, and Antarctic Terns (N3/A3). Distribution of breeding colonies was plotted a map (Fig. 2) based on that of Favero & Silva (1991).

SPECIES LIST

Ten species were found to breed on Halfmoon Island, discussed separately below.

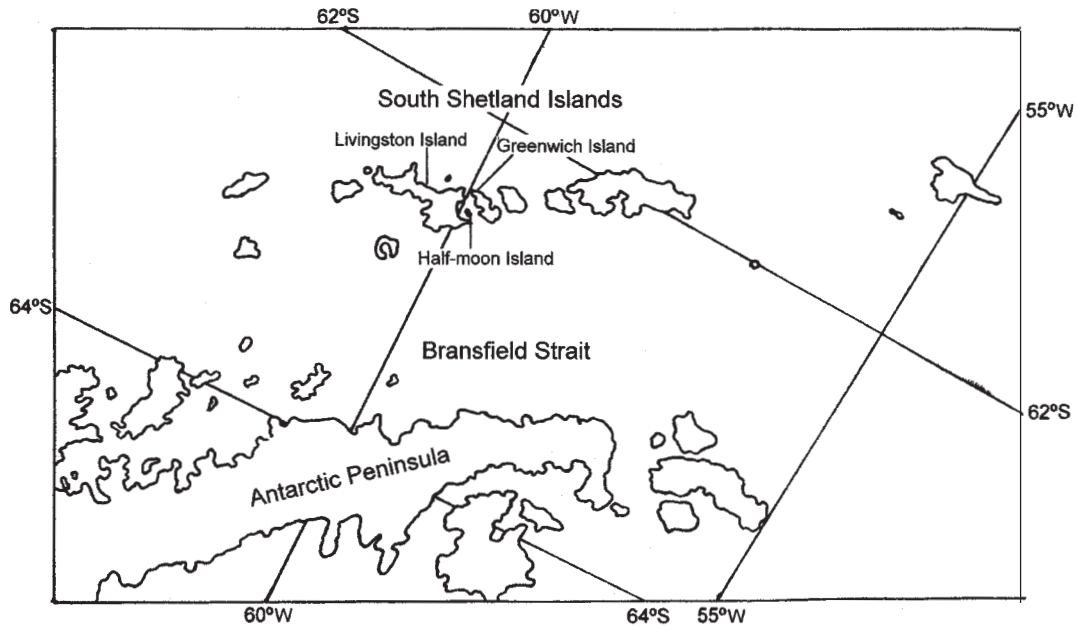


Fig. 1. The South Shetland Islands, showing Livingston Island, Greenwich Island and study area.

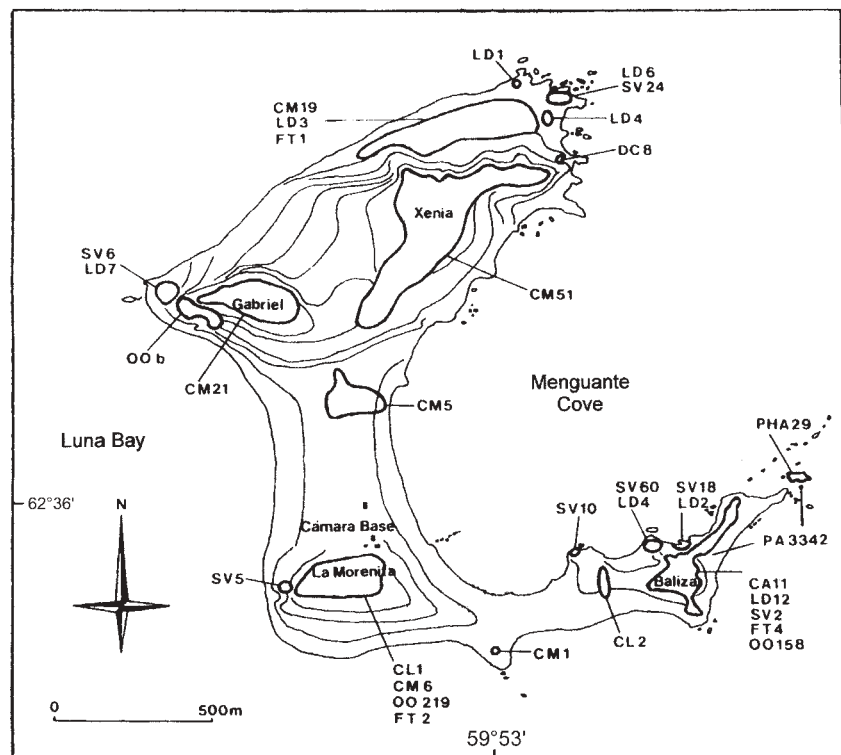


Fig. 2. Distribution and abundance (pairs) of breeding species at Halfmoon Island:

- PA *Chinstrap Penguin* *Pygoscelis antarctica*
- DC *Pintado Petrel* *Daption capense*
- OO *Wilson's Storm Petrel* *Oceanites oceanicus*
- FT *Black-bellied Storm Petrel* *Fregetta tropica*
- PHA *Antarctic Cormorant* *Phalacrocorax atriceps bransfieldensis*
- CL *Subantarctic Skua* *Catharacta antarctica*
- CM *South Polar Skua* *C. maccormicki*
- LD *Kelp Gull* *Larus dominicanus*
- SV *Antarctic Tern* *Sterna vittata*
- CA *Greater Sheathbill* *Chionis alba*
- b *breeding.*

Chinstrap Penguin *Pygoscelis antarctica*

The Chinstrap Penguin was the most abundant species breeding in the study area, with a total of 3342 pairs. Previous counts of the breeding population of Chinstrap Penguins on Halfmoon Island are scarce. M. G. White reported 1197 breeding pairs in the 1965/66 breeding season (in Croxall & Kirkwood 1979) and S. Poncet & J. Poncet recorded 2500 pairs in the 1986/87 breeding season (in Woehler 1993). In a more recent survey, Favero & Silva (1991) recorded a total of 1747 pairs in January 1991. The 1991 count revealed that a decrease in the breeding population had taken place between 1986/87 and 1990/91. The 1995/96 counts show that the breeding population of Chinstrap Penguins on the island increased substantially since 1965/66.

Pintado Petrel *Daption capense*

Only one small Pintado Petrel colony was found in the study area. This colony, consisting of eight active nests during the 1995/96 breeding season, was located on Xenia Hill. There are no previous records of this species breeding on Halfmoon Island (Olrog 1958, Favero & Silva 1991). The nearest known breeding locality is that of Rugged Rocks on Livingston Island (N.R. Coria, unpubl. data).

Wilson's Storm Petrel *Oceanites oceanicus*

Wilson's Storm Petrel is an abundant species on Halfmoon Island. At least three breeding colonies were identified on the slopes of Gabriel, La Morenita and Baliza Hills. On La Morenita Hill, about 219 apparently occupied nests were located by calls at night. During the laying period, 158 breeding pairs were counted directly on Baliza Hill. A third breeding group was found on Gabriel Hill although no census was conducted. The breeding population of Wilson's Storm Petrels on Halfmoon Island is poorly documented. Favero & Silva (1991) reported 60 nests in two breeding colonies, however, their counts are obviously different from our censuses, and due to differing methods employed for the studies no comparisons can be made.

Black-bellied Storm Petrel *Fregetta tropica*

Seven pairs of Black-bellied Storm Petrels were counted scattered on medium-sloped rocky cliffs of Halfmoon Island. Favero & Silva (1991) did not find this species. In the 1994/95 summer we caught two specimens with a chick within a cavity.

Antarctic Cormorant *Phalacrocorax atriceps bransfieldensis*

The location of the Antarctic Cormorant colony on Halfmoon Island is similar to that reported by Favero & Silva (1991). Our record of 29 breeding pairs compared with that of 1991, reflects a 34% decrease in five years, which is consistent with censuses carried out in other localities of South Shetland Islands. For instance, the population of Antarctic Cormorants at Harmony Point and Duthoit Point decreased by 60% and 40% in a period of seven (1989–1996) and five years (1991–1996), respectively (Casaux & Barrera Oro 1996). This species shows a considerable interannual variation in timing and breeding of population size, which makes assessment of population trends difficult (Anon. 1993). Birt *et al.* (1987) suggested that cormorants exert enough predator pressure to deplete prey resources adjacent to their breeding colonies.

Casaux & Barrera Oro (1996) have associated the decrease in the South Shetland Islands with the decreasing trend also observed in the abundance of the fish species *Gobionotothen gibberifrons* and *Notothenia rossi*. On Halfmoon Island, the decrease of the population of the Antarctic Cormorant seems to result, at least in part, from local depletion of prey. However, others factors such as human activities and/or environmental conditions may also be significant.

Subantarctic Skua *Catharacta antarctica*

In 1995/96, three breeding pairs of Subantarctic Skuas were observed on the island, although only one pair produced eggs. Two pairs were located near the Chinstrap Penguin colony. The third nest was found on La Morenita Hill. During the 1993/94 and 1994/95 seasons, similar numbers of pairs were recorded (five and six breeding pairs, respectively, D. Montalti unpubl. data). Favero & Silva (1991) reported up to 26 pairs of Subantarctic Skuas in 1990/91.

South Polar Skua *C. maccormicki*

In 1995/96, 103 pairs of South Polar Skuas were counted breeding on Halfmoon Island. Most nests of this species were found in the north of the island. A similar number was recorded in the 1993/94 and 1994/95 seasons (89 and 99 breeding pairs, respectively, D. Montalti unpubl. data). Olrog (1958) observed three South Polar Skuas during the 1952/53 summer, but found no nests. Favero & Silva (1991) did not mention this species as breeding, although it seems probable that these authors did not distinguish between both skua species. In addition, 110 South Polar Skuas were observed grouped in two clubs of non-breeders. Fifty birds were located on the northern shore and 60 in the centre of the island.

In the 1995/96 season, four mixed pairs of Subantarctic and South Polar Skuas were found. When considering both skua species altogether, 110 pairs were found in 1995/96, a number that largely exceeds that given by Favero & Silva (1991). They reported a delay of about three weeks in hatching dates of skuas due to the considerable snow fall during the summer of 1990/91. Unfortunately, no counts have been made on the island previous to Favero & Silva's observations. However, data available indicate the occurrence of possible short-term increases in skua populations. We believe that the 1990/91 summer season was unfavourable for skuas on Halfmoon Island, based on the low number of birds that returned to their breeding grounds. It is probable that the low number of skuas reported as breeding in January 1991 was related to the scarcity of food.

Kelp Gull *Larus dominicanus*

In 1995/96, 39 pairs were found breeding on Halfmoon Island. The distribution of these nests coincides with that reported by Favero & Silva (1991). The breeding population on Halfmoon Island has apparently decreased from 57 nests in 1990 (Favero & Silva 1991) to 45 nests in 1992/93 (M. Favero unpubl. data).

Antarctic Tern *Sterna vittata*

The population of this species on Halfmoon Island appears to have remained stable: 122 nests were recorded in 1990 (Favero & Silva 1991), 120 nests in 1993 (N.R. Coria unpubl. data) and 125 nests in 1995 (this study).

Greater Sheathbill *Chionis alba*

Greater Sheathbills nest on Halfmoon Island in close association with Chinstrap Penguins. In the 1995/96 season, 11 occupied nests were found. Olrog (1958) confirmed that this species breeds on Halfmoon Island but did not record population numbers. Favero & Silva (1991) recorded six pairs on the island.

DISCUSSION

Data available on seabird breeding populations on Halfmoon Island are still insufficient to interpret population changes recorded. These may reflect actual population decreases or increases, differences in counting accuracy, natural annual variation, impact of human disturbance or influence of environmental factors. With the exception of the Antarctic Cormorant and Kelp Gull, the population sizes of all species breeding on Halfmoon Island have remained stable or have increased. This increase is attributable to some extent to more accurate censuses (in the case of Chinstrap Penguins and skuas) or more extensive census coverage (storm petrels). However, there is still a need for more accurate counts, particularly of such species as Wilson's and Black-bellied Storm Petrels.

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