

**DISTRIBUTION AND ABUNDANCE  
OF SUMMER BIRDS COMMUNITY FROM SOUTH BAY  
(LIVINGSTON ISLAND,  
SOUTH SHETLAND ISLANDS, ANTARCTICA).**

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**ABSTRACT.** The significant part of the clear from snow and ice shores of Livingston Island (South Shetlands), distribution and abundance of birds were studied during the austral summer of 2004. In the region of South Bay 9 nesting bird species were encountered of a total abundance of 6604 pairs. Two penguin species constituted 97.2% of bird community following by petrels (1.2%) and turns (0.5%).

**KEY WORDS.** Antarctica, Livingston Island, antarctic birds

**INTRODUCTION**

The aim of the present work was to estimate the distribution and abundance of a summer community of birds in the region of South Bay (Livingston Island, South Shetland Islands). So far, the avian fauna of this region has not been completely investigated. The quantitative census of the penguin rookery in the area „Caleta Argentina” was carried out by Metcheva et al. (2004). In the region of Admiralty Bay (King George Island, South Shetland Islands) related investigations have been provided by Gain (1914), Rakusa-Suszczewski (1977), Presler (1980) and Jablonski (1986). The above-mentioned authors recorded that on the greatest from the South Shetland Islands nesting the following bird species: *Pygoscelis papua* (Forster), *Pygoscelis adeliae* (Homborn and Jacquinet), *Pygoscelis antarctica* (Forster), *Macronectes giganteus* (Gmelin), *Oceanites oceanicus* (Kuhl), *Chionis alba* (Gmelin), *Stercorarius skua maccormici* (Saunders) and *Stercorarius skua lonnbergi* (Mathews) as well as *Larus dominicanus* (Lichtenstein) and *Sterna vitata* (Gmelin).

The study is a first attempting to systematize the ornithological information concerning the South Bay.

### MATERIAL AND METHODS

The observations were conducted in the summer season of 2003-04.

The abundance of penguins occurring in colonies was determined using digital photography (Metcheva et al. 2004) of the whole rookery and counting within 1m wide transects.

The abundance of the other birds was conducted using an itinerary method with 2 week frequency. It is important to mention that we were able to visit the colonies previously by boat, thus we cannot discard an underestimations of the overall populations.

The birds were determined after Couve and Vidal (2003).

#### *Study area*

Investigations were conducted from 20 December to 28 February 2004 at South Bay, Livingston Island ( $62^{\circ} 27' - 62^{\circ} 48' S$  and  $59^{\circ} 45' - 61^{\circ} 15' W$ ). The island lies in the zone of oceanic Antarctic climate. The total area of the island is  $845 \text{ km}^2$ . The length of the island is 250 km. The percentage of the area, which is not covered with ice, is only 10%. Numerous rocky bays and peaks form the landscape of Hurd Peninsula and the South Bay with average altitude about 20 m above the sea level.

### RESULTS AND DISCUSSION

The problem of estimation of abundance of birds in Antarctica is difficult due to the patchy occurrence of their communities along the coastline and poorly known distance of feeding penetration from the colony towards the sea. In most of ornithological investigations from the region of Antarctica observations conducted only on the shores the length of which may easily be calculated on the basis of a map. Against this manner of recalculation of data in this region is the occurrence of glaciers along the coastal lines, which are not settled by birds.

Birds settle the coasts of South Bay (Fig. 1.) in uneven way. Particular species nested in specific habitats. The results are presented on Tab. 1.

*Pygoscelis antarctica* nested most abundantly and they built their nests on rocky slates. 49% of nests of this species were situated on slopes of over  $40^{\circ}$  (Cape of Hurd peninsula Hannah Point). Tracks leading to these colonies had a slope of over  $70^{\circ}$ .

*Pygoscelis papua* on Livingston Island was represented by the „Southern” subspecies *Pygoscelis papua ellsworthii* (Metcheva et al.2005). On South Bay *Pygoscelis papua ellsworthii* nested most abundantly on Caleta Argentina and Caleta Buena Nueva (82% of nests) on raised terraces and slightly sloping faces of cliffs, which were covered with pebble and situated in the vicinity of flat coasts.

Nests of *Eudyptes chrysolophus* (Vieillot) were found only on Hannah Point among the nests of *Pygoscelis antarctica*.

89% of nests of *Macronectes giganteus* were at the edges of steeply sloping rocks. Such nesting place occurred mostly on Hannah Point.

The nests of *Oceanites oceanicus* occurred mainly under large pieces of rock, and only 14.8% of the nests were situated in the slits of rock. This species is most abundant on Playa Bulgara and Sally Rocks.

Colonies of *Larus dominicanus* usually occurred on platforms topping vertical rocks situated at the coast. Such nesting habitats occurred at Sally Rocks and Playa Bulgara.

*Sterna vitata* inhabited vast heaps of pebble and loose moraines, which occurred on Playa Bulgara and Caleta Argentina.

The abundance of nesting *Chatharacta skua* and *Chionis alba* depended not only on favorable habitats for laying eggs, but also on the distance from the feeding regions, which occurred in the colonies of the penguins. In the regions of the penguin colonies there occurs 80% of nests of *Chatharacta sp.* and 70 % of *Chionis alba*.

*Chatharacta skua* was represented by two subspecies: *Chatharacta skua maccormici* and *Chatharacta skua lonnbergi*, and by forms which were hybrids of these subspecies. These subspecies formed breeding pairs.

In the region of the South Bay sporadic visitors were following species: *Pygoscelis adeliae*, *Daption capense*, *Pagodroma nivea*, *Pagodroma brevirostris*, *Phalacrocorax bransfieldensis* and *Sterna paradisea*. All of them made their feeding flights along the coastline or they use it for resting places.

## CONCLUSIONS

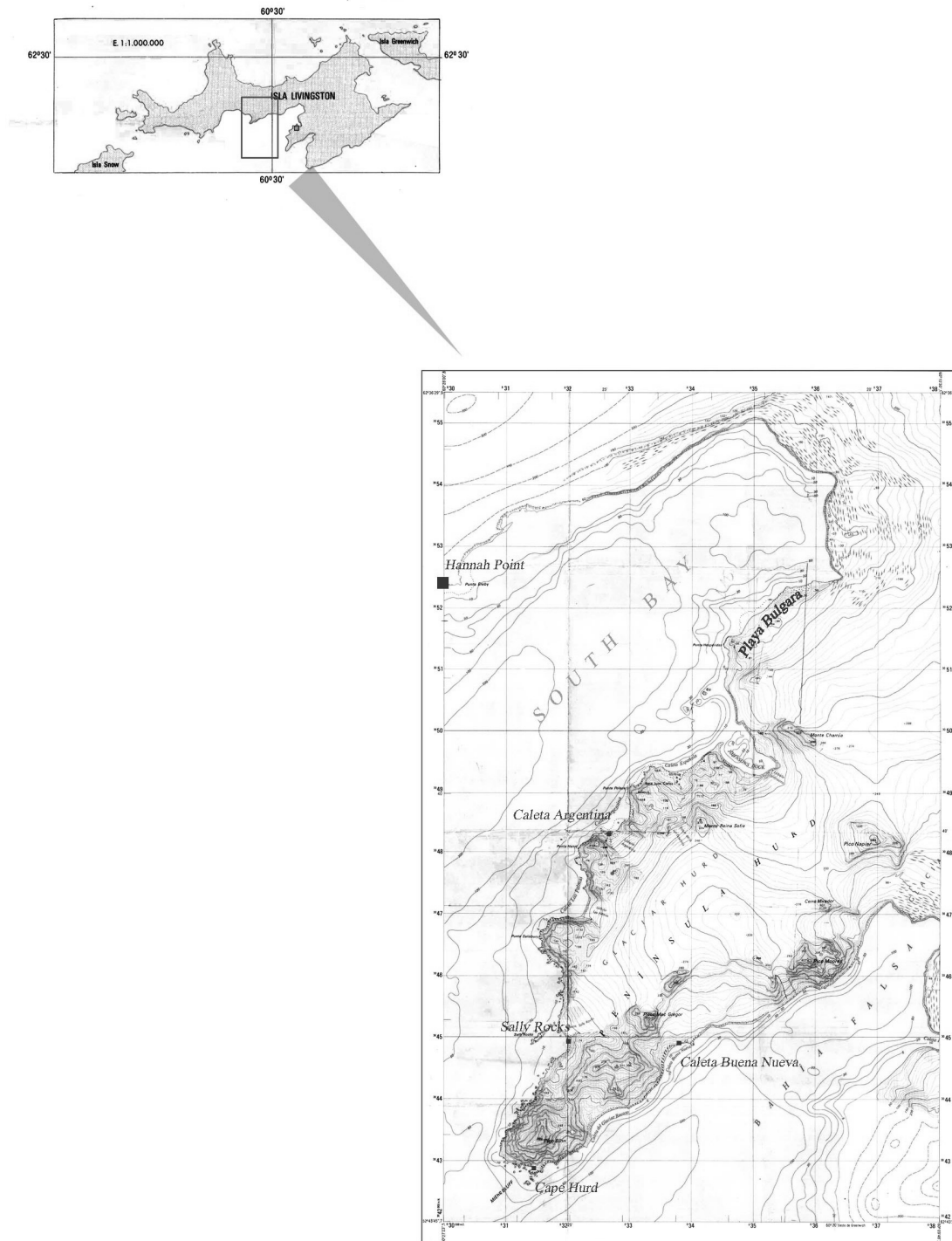
In the region of South Bay penguins constituted the dominant group of breeding birds (97.2% of the abundance of the community) following by the two species of petrels (1.2%) and the antarctic turn (0.5%).

## ACKNOWLEDGEMENT

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**Fig.1.** *The study area – the coast of South Bay, Livingston Island (South Shetlands, Antarctica)*

**Table 1.** Distribution and abundance of breeding pairs in the South Bay

Species	Number of nests particular regions of the South Bay						Total
	Hannah Point	Cape Hurd	Caleta Argentina	Sally Rocks	Caleta Buena Nueva	Playa Bulgara	
<i>Pygoscelis p. ellsworthii</i>	1 200	-	90	-	30	-	1 320
<i>Pygoscelis antarctica</i>	1 500	3 600	-	-	-	-	5 100
<i>Eudyptes chrysolophus</i>	5	-	-	-	-	-	5
<i>Macronectes giganteus</i>	56	-	-	-	-	-	56
<i>Oceanites oceanicus</i>	5	-	4	6	-	12	27
<i>Chionis alba</i>	6	10	-	-	-	-	16
<i>Chatharacta skua</i>	4	6	4	2	-	4	20
<i>Larus dominicanus</i>	-	-	-	11	-	15	26
<i>Sterna vitata</i>	-	-	9	-	-	25	34
<b>Total</b>							<b>6 604</b>