

A New Emperor Penguin Rookery of Riiser-Larsen Peninsula, East Antarctica

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リーセル・ラルセン半島の新コウテイペンギンルッカリー

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要旨: 1975年10月1日, 第16次越冬隊員4名により, コウテイペンギンのルッカリーが発見された。ルッカリーの所在地はほぼ $68^{\circ}50'S$, $34^{\circ}40'E$ で, リーセル・ラルセン半島の東岸, からめて岬 ($69^{\circ}09'S$, $35^{\circ}26'E$) の北西約47kmの位置であった。

この位置はリーセル・ラルセン半島の先端の開水面から25kmほどの所で, 摂餌には好都合の位置である。また, ルッカリーは棚氷の真下にあり, 東側には冰山列が認められ, 斜面下降風と北東からの卓越風とを避けえられる位置にあると考えられる。

個体数は10月24日, ひなも含めて約7,200羽であったが, 季節を追って減少した。また, 11月2日には, ペンギンの群は元の位置から約1km北東に認められた。11月8日には群が3分し, 11月29日には2群が認められた。さらに, 1976年1月6日には, ペンギンの群は分散し, 個体数も1,300羽となっていた。

Abstract: On October 1, 1975, an emperor penguin rookery designated Riiser-Larsen Peninsula rookery was discovered on the sea ice at the position of $68^{\circ}50'S$, $34^{\circ}40'E$, near Karamete Point on the east coast of the Riiser-Larsen Peninsula. Taking aerophotographs of the rookery, six aerial observations were made from October 22, 1975 to January 6, 1976. Population estimated on October 24 was 7,200 including chicks. The colony remained near the rookery site until late October but moved about 1 km NE of the original site by the beginning of November. Population decreased with the lapse of time. By the beginning of January 1976 the population was 1,300 and colonies started to disperse.

No emperor penguin (*Aptenodytes forsteri* GRAY) rookery had been reported in the vicinity of the Lützow-Holm Bay, but on October 1, 1975, during a radio

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communication test flight of the aircraft Cessna A 185F an emperor penguin rookery was discovered by four men of the wintering party of the 16th Japanese Antarctic Research Expedition (1975), G. NAGATA (pilot), M. KUROKI (aviation engineer), S. ITOH (radio operator) and the junior author (cartographer). On October 2, two biologists, H. SHIMIZU and the senior author flew over the rookery and ascertained the emperor penguin colony composed of adults and chicks. Thereafter six flights for taking aerophotograph with a Wild RC-9 (focal length 88 mm) were made at intervals to watch the temporal change of the colony. As it was impossible to land near the rookery, the numbers counted were not always sufficient to describe the details of the penguin population but seemed to be enough to show the general status of the colony from early spring to summer.

Observed Results

The position of the newly discovered rookery is $68^{\circ}50'S$, $34^{\circ}40'E$, about 47 km northwest of small ice-free Karamete Point ($69^{\circ}09'S$, $35^{\circ}26'E$) on the east coast of the Riiser-Larsen Peninsula (Fig. 1). The rookery was situated on

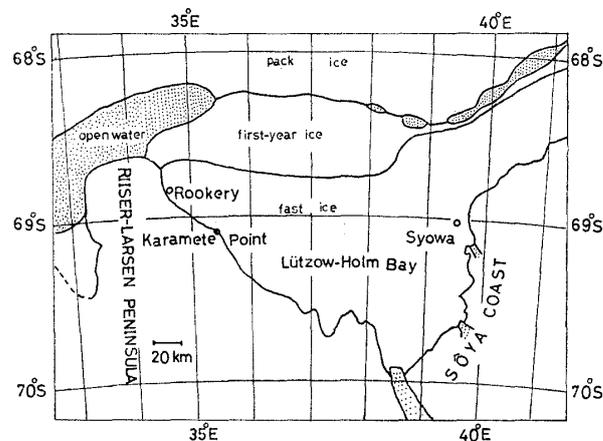


Fig. 1. Location of an emperor penguin rookery (Riiser-Larsen Peninsula rookery) found in Lützow-Holm Bay in October 1975.

the snow-covered sea ice at the foot of a cliff of the ice shelf of about 30 m in height (Figs. 2 and 3). Icebergs were distributed in rows from north to south along the coast of the Peninsula and the rookery was between a broken space in this iceberg row and the ice shelf.

After October 2, bad weather prevented the flying for three weeks, and the first aerophotograph of the rookery was taken on October 22. The shape and the position of colonies are illustrated in Fig. 4 and Fig. 5, respectively.

On October 22, the colony was compact and pear-shaped of $5,200 \text{ m}^2$ in

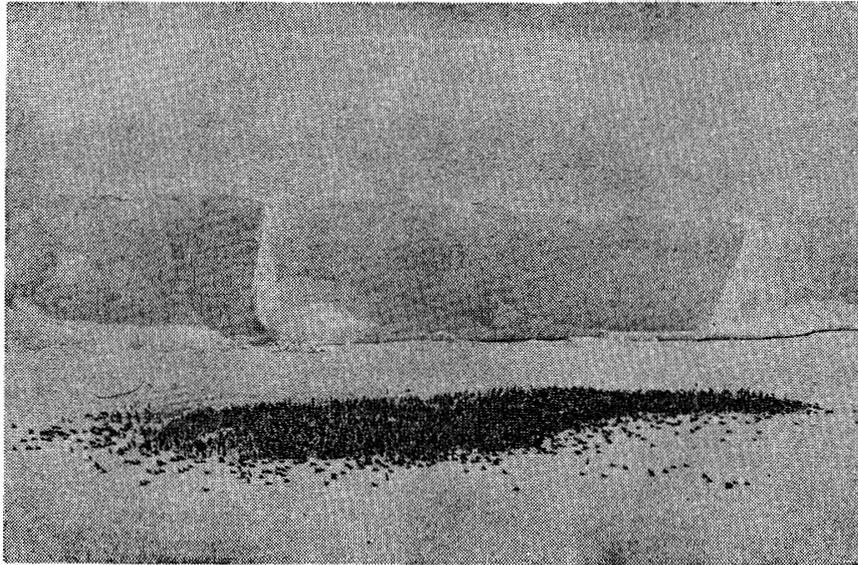


Fig. 2. Riiser-Larsen Peninsula rookery, from 100 m in height, looking to the west, on October 22, 1975.

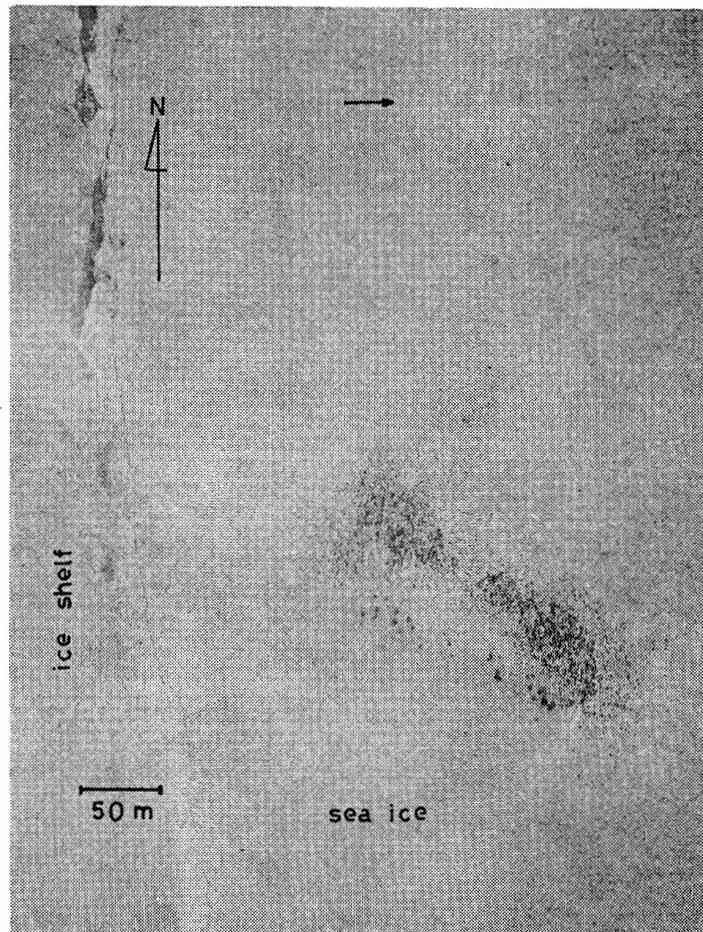


Fig. 3. An aerophotograph taken from 300 m in height on October 24, 1975. Arrow shows tracks of penguins for the open water off Riiser-Larsen Peninsula, the main feeding ground.

area but the population was not estimated because the aerophotograph was taken from *ca.* 600 m in altitude. Thenceforth, photographs were taken from *ca.* 300 m in height.

By October 24, the colony had shifted 200 m northward of the last position. It was of bottle gourd-shape with 15,000 m² in area and the population of 7,200 including chicks.

By November 2, the colony had moved 1 km northeast of the previous site. The colony expanded more or less to 16,200 m² in area and became D-shape. The population of birds was 6,800.

By November 8, the colony had been divided into three colonies, which were distributed in the area 300 m distant northeast from the last place. The population and the area of the three colonies were 2,700 and 10,400 m² in the

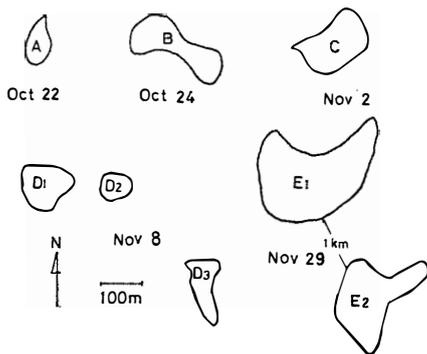


Fig. 4. Change in shape of colonies from October 22 to November 29, 1975.

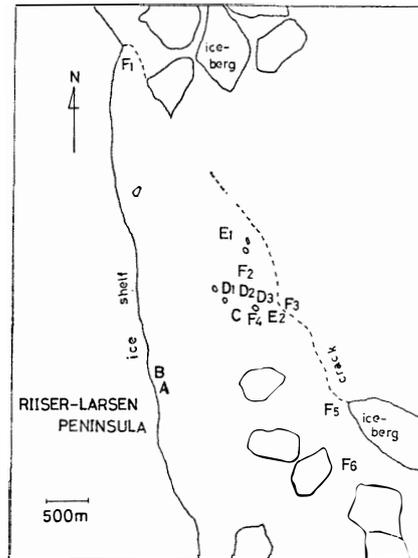


Fig. 5. Movement of colonies from October 22, 1975 to January 6, 1976. A: Oct. 22, B: Oct. 24, C: Nov. 2, D: Nov. 8, E: Nov. 29, F: Jan. 6.

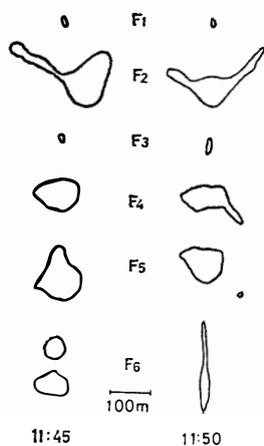


Fig. 6. Variation in shape of emperor penguin colonies between 11:45 (local time) and 11:50 on January 6, 1976.

north colony (D_1 in Fig. 5), 1,200 and 4,600 m² in the northeast colony (D_2 in Fig. 5) and 2,400 and 8,100 m² in the east colony (D_3 in Fig. 5), respectively.

On November 29, there were two colonies; one (E_1 in Fig. 5) was at 1 km NWN of the position on November 2 (C in Fig. 5) and the other (E_2 in Fig. 5) remained at the same place as the east colony of November 8 (D_3 in Fig. 5). These two colonies appeared to be of loose formation. However, data obtained in the present observations are not sufficient to clarify causes in moving, splitting and rejoining of colonies.

On January 6, 1976, the decrease in population was observed and there were 4 large colonies and 2 small ones (F_1 to F_6 in Fig. 5). The population decreased to 1,300 in total. The divided colonies scattered from 3 km northwest were 4 large colonies and 2 small ones (F_1 to F_6 in Fig. 5). The population the colonies was variable, in particular, F_2 , F_4 and F_6 colonies changed their forms within five minutes by aircraft noise (Fig. 6). This seemed to show instability of the penguin colony in the late breeding season. The seasonal change of the colony mentioned above is summarized in Table 1.

Table 1. Seasonal change of the emperor penguin colonies in the Riiser-Larsen Peninsula rookery.

Time/Date	No. of colonies	Sign in Fig. 5	Population	Area (m ²)
1975				
13 : 18 Oct 22	1	A	—	5,200
12 : 00 Oct 24	1	B	7,200	15,000
13 : 07 Nov 2	1	C	6,800	16,200
12 : 37 Nov 8	3	D_1	2,700	10,400
		D_2	1,200	4,600
		D_3	2,400	8,100
13 : 17 Nov 29	2	E_1	2,300	26,600
		E_2	2,400	43,900
1976				
11 : 45 Jan 6	6	F_1	75	300
		F_2	500	10,000
		F_3	20	200
		F_4	160	6,000
		F_5	400	6,900
		F_6	170	5,800

Discussion

KOROTKEVICH (1964) listed 21 nesting colonies of emperor penguin and 8 large summer groups which were presumed to be nesting colonies by him. If all

of these 8 groups are the nesting colonies, the Riiser-Larsen Peninsula colony is the 30th one.

From the results obtained at two rookeries near Mawson Station, the Auster rookery and the Kloa rookery, BUDD (1962) suggested that individual number of adults and chicks in November may be approximately equal to the number of breeding pairs in a rookery. On the other hand, PRYOR (1968) pointed out that a November adult/chick count is of limited value in computing breeding populations. In the Riiser-Larsen Peninsula rookery, the November population was variable; it was 6,800 at the beginning and 4,700 at the end with an average of 5,750. Assuming 5,750 as the nesting pairs, the Riiser-Larsen Peninsula rookery is of medium size among 21 rookeries by KOROTKEVICH (1964).

Except for two rookeries, the Dion Islands rookery (STONEHOUSE, 1953) and the Taylor Glacier rookery (BUDD, 1961) formed on the land, all the others are situated on the sea ice. BUDD (1961) discussed the preference of emperor penguin for nesting site and pointed out three factors that they nest on the stable fast ice which is sheltered from the severe prevailing wind in winter and is conveniently situated to get food. It is apparent that the Riiser-Larsen Peninsula rookery is situated on a favourable location concerning the three factors mentioned above. As shown in Fig. 1, the colony was formed on the fast ice near ice shelf and row of icebergs and the former serves a shelter from katabatic wind and the latter intercepts the northeast wind which prevails in the vicinity of the Lützow-Holm Bay. The colony was not so far from the open water off the Riiser-Larsen Peninsula. According to the verbal report of G. NAGATA, this open water had been recognized in the beginning of October.

PRÉVOST (1961) and STONEHOUSE (1960) reported that giant petrel (*Macronectes giganteus* (GMELIN)) attacks chicks of emperor penguin, but BUDD (1961) and PRYOR (1968) observed avian predation gave no effect on the mortality of chicks in four colonies near Mawson Station and in the Haswell Island colony. Few giant petrels had been seen in the vicinity of Lützow-Holm Bay. The possibility of predation by skua (*Catharacta maccormicki* (SAUNDERS)) was presumed, but we did not observe the predation by skua.

PRYOR (1968) carried out a continuous observation on the emperor penguin population in the rookery of the Haswell Island from March 1962 to January 1963. The rookery was situated on the sea ice on the east side of icebergs, east of the Island. The colony was formed adjacent to the east wall of the iceberg in April 1962. It moved from north to south and again to north, however, within the distance of about 500 m along the east wall of icebergs until November 15, 1962. Nevertheless, on November 16, 1962, the colony shifted 700 m southeast and was divided into two colonies. On December 4, the colonies united again moving 200 m northward. The colony began to disperse in the late December.

The behavior of the colony of the Riiser-Larsen Peninsula substantially agrees with that of the Haswell Island.

Acknowledgments

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