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Introductory Chapter: Seabird Occurrence in the Open Arctic Sea during the Breeding Season

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Additional information is available at the end of the chapter

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1. Introduction

I undertook my first long sea voyage between June 21 and July 1, 1965 from Tromsø, Norway, to Spitzbergen-Svalbard (only Spitzbergen used from now onward), and back. Tromsø city is 350 km north of the Arctic Circle [1] and the southern tip of Spitzbergen is 660 km from the North Cape [2]. Bear Island is halfway between Spitzbergen and the N-Norway [3]. My destination for a 1 week stay was Kapp Linné at the entrance of Isforden, the second largest fjord in Spitzbergen. It lies on the west side of the archipelago, which is about midway between Norway and the North Pole. Kapp Linné's coordinates are 78°03'44.7" N and 13°37'04.0" E and it is named after the Swedish botanist Carl von Linné [4]. This site used to be the location of Isfjord radio and weather station, which operated from 1933 until 1999 when it was automated and depopulated. During my visit, however, the station still had eight staff members who proved to be extremely helpful and knowledgeable concerning the birdlife and the polar bears. Nowadays, parts of Kapp Linné are a bird sanctuary, which may not be visited between May 15 and August 15.

2. Material and methods

During the slow steamboat trip, all seabirds that were sighted around the vessel were recorded during 15-minutes/each hours [5]. The bird count was mainly undertaken by myself but during my short breaks for rest and refreshments the observations were undertaken by four of my fellow birdwatchers: E. Kotanen, J. Salokoski, P. Susiluoto, and O. Toivonen. According to the captain, the average speed of the boat was 11 nautical miles/hour (NM = nautical mile = 1852 m), which was used to calculate the distances for the seabird observations (**Table 1**). To avoid any confusion, it is important to note that **Table 1** lists only birds within the 15-minute observation periods/hour during the sea trip from Tromsø to Kapp Linné in

Species	Coastal waters of Norway (only)	Norway coast and largest distance	Bear island waters and largest distance	Spitzbergen coast and largest distance	Total number recorded
<i>Somateria mollissima</i>		Yes	Yes	Yes	61
<i>Alca torda</i>	Yes	36	None	None	69
<i>Stercorarius parasiticus</i>		None	60	100	12
<i>Larus argentatus</i>		60	None	None	151
<i>Larus marinus</i>		50	65	None	5
<i>Larus hyperboreus</i>		None	22	35	11
<i>Larus fuscus</i>	Yes	None	None	None	Several
<i>Larus canus</i>	Yes	None	None	None	Several
<i>Sterna paradisaea</i>		Yes	None	None	Several
<i>Uria aalge</i>		Yes	Yes	None	44
<i>Uria lomvia</i>		None	Yes	Yes	122
<i>Uria</i> sp.		None	Yes	None	380
<i>Cephus grylle</i>		Yes	Yes	More than before	50
<i>Fratercula arctica</i>		80	None	A few only	465
<i>Fulmarus glacialis</i>		30 First seen	Yes	Yes	300
<i>Rissa tridactyla</i>		Yes	Yes	Yes	312
<i>Alle alle</i>		None	33 After first seen	Yes	277

Table 1. Occurrence of seabirds on steamship trip from Tromsø, Norway to Kapp Linné, Spitzbergen June 21–24, 1965.

Spitzbergen. Seabird species seen in Kapp Linné during the last week of June 1965 are listed in **Table 2**.

3. Results by species

Common Eider (*Somateria mollissima*) occurred only in the coastal waters, the last five were seen 2 hours after passing Fugleøya just at the beginning of the open sea. Only once was a single male seen in the open sea near the ridged ice edge between Spitzbergen and Bear Island. Although common eider was not sighted more frequently from the ship, it is a very common breeding bird in Bear Island and Spitzbergen. In Kapp Linné alone I counted 163 pairs in a lagoon area and 168 pairs close to the Isfjord radio station.

Razorbill (*Alca torda*) occurs mainly in the coastal waters and was not seen further north than 4 hours from Fugleøya, and 33 NM from the Norwegian mainland.

Arctic Skua (*Stercorarius parasiticus*) is also called the **Parasitic Jaeger**. Like the previous species, it prefers coastal waters, but it was also sometimes spotted out on the open sea. Before

Species	Kapp Linné	Bird mountain	Bird island
<i>Gavia stellata</i>	2 pairs		2
<i>Fulmarus glacialis</i>	Over 30	50	
<i>Clangula hyemalis</i>	4–5 pairs		1 pair +1
<i>Melanitta nigra</i>	1 pair +1		
<i>Somateria mollissima</i>	340 pairs		76 pairs
<i>Somateria spectabilis</i>	12 pairs		18 pairs
<i>Anser brachyrhynchus</i>	10		
<i>Branta bernicla</i>	12		
<i>Arenaria interpres</i>	2 pairs		
<i>Calidris maritima</i>	Over 100	5	
<i>Calidris alpina</i>	10		
<i>Phalaropus fulicarius</i>	10	6	5
<i>Stercorarius parasiticus</i>	1 pair	3	1 pair
<i>Stercorarius pomarinus</i>		1 pair +1	
<i>Larus hyperboreus</i>	13	20	15
<i>Rissa tridactyla</i>	Over 50	Ca. 1000	
<i>Sterna paradisaea</i>	100		
<i>Alle alle</i>		Many	
<i>Uria lomvia</i>		Many	
<i>Cephus grylle</i>	1		2
<i>Fratercula arctica</i>	1	2	

Table 2. Seabird records from Kapp Linné and nearby bird mountain and bird island, Spitzbergen from June 24–28, 1965.

arriving at Bear Island, single Arctic Skuas were spotted twice in the open sea some 60 NM from land, and individual birds were even noted some 100 NM from the land between Bear Island and Spitzbergen. Arctic Skuas occurred in all study sites in Spitzbergen (**Table 2**).

European Herring Gull (*Larus argentatus*) was following the ship until 60 NM from the Norwegian mainland but did not occur within Bear Island or Spitzbergen waters.

Great Black-backed Gull (*Larus marinus*) was not seen in the waters between Bear Island and Spitzbergen but some birds were following the ship until some 50 NM from the Norwegian coast and a single gull appeared behind the ship some 65 NM from Bear Island.

Glaucous Gull (*Larus hyperboreus*) clearly replaced the great black-backed gull within Bear Island and Spitzbergen waters but it did not follow the ship as eagerly. The first Glaucous Gull was noted 22 NM from the Bear Island and 35 NM from the Spitzbergen coastline. These distances seem to indicate that the species is not too fond of the open sea.

Lesser Black-backed Gull (*Larus fuscus*) and **Common Gull** (*Larus canus*) were following the ship only in the fjord area after leaving and before arriving at Tromsø harbor.

Arctic Tern (*Sterna paradisaea*) was only sighted once from the ship some 11 NM from Tromsø when still not in the open sea. It is a common breeding bird in Bear Island and Spitzbergen but obviously sticks mostly near the shoreline during the breeding season. They are obviously not attracted to passing ships in the same manner as the gulls.

Common Guillemot (*Uria aalge*) is also called the **Common Murre**. It occurred everywhere until Bear Island and was observed in each count period but was not sighted at all in Spitzbergen waters.

Brúnnich's Guillemot (*Uria lomvia*) is also named the **Thick-billed Murre**. It lives mainly in Spitzbergen waters and was sighted in each observation period.

Common or Brúnnich's Guillemot (*Uria sp.*) seemingly filled the waters near Bear Island. Within 30–60 NM out from the island small flocks appeared to be everywhere. Single unidentified guillemots were seen all around Bear Island during each observation period.

Black Guillemot (*Cepphus grylle*) is also named **Tystie**. It was constantly sighted during the whole trip and often in pairs, even in the open sea but was clearly more common in Spitzbergen coastal waters than the open sea.

Common Puffin (*Fratercula arctica*) is also called the **Atlantic Puffin**. It was seen often beyond 80 NM from the Norwegian coast but was not recorded in the Bear Island waters and only rarely sighted on the Spitzbergen coast. However, the species breeds commonly both on Bear Island and Spitzbergen.

Northern Fulmar (*Fulmarus glacialis*) was the only bird recorded within every counting period after reaching the open sea from the Norwegian coast. The first fulmars were sighted some 30 NM from the coast and after that between 1 and 30 birds were seen in every 15-minute period until landing at Kapp Linné, Spitzbergen.

Black-legged Kittiwake (*Rissa tridactyla*) like the previous species is one that was recorded in all except one hourly count during the trip. Copious numbers were recorded near Bear Island (up to 80 birds per count) and the influence of Bear Island already started to impact the numbers some 100 NM from the island. The largest number of kittiwakes, however, was recorded during the last hour count on the coast of Spitzbergen (100 birds).

Little Auk (*Alle alle*) is also called the **Dovekie**. It was observed only shortly after the leaving the Bear Island and Spitzbergen coastal waters where the species was clearly more numerous than before. Tens of the birds started to be seen 36 NM before the coast of Spitzbergen.

Table 2 shows 21 seabird species recorded in the Kapp Linné area. In Spitzbergen, there are no real birds of prey or owls as there are no small mammals for them to eat. It is obvious that Glaucous Gull and skuas replace predatory birds in Spitzbergen as they eat other seabird eggs and young.

4. Discussion

Arctic open waters, far away from any land area, is preferred by only a few seabird species, such as guillemots, kittiwakes, and fulmars, which were observed practically everywhere during the trip. It is interesting that the most common open water seabirds were guillemots, which have the highest flight cost, for their body size, of any animal [6]. Brünnich's Guillemot, Little Auk, and Glaucous Gull were only seen within Spitzbergen waters, while Common, Herring, great and lesser black-backed gulls and Razorbill occurred in the coastal waters of N-Norway.

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Reference

- [1] Wikipedia. Tromsø. 2018a, <https://en.wikipedia.org/wiki/Tromsø>. [Accessed May 10, 2018]
- [2] Wikipedia. Svalbard. 2018b, <https://en.wikipedia.org/wiki/Svalbard>. [Accessed May 10, 2018]
- [3] Wikipedia. Bear Island (Norway). 2018c, [https://en.wikipedia.org/wiki/Bear_Island_\(Norway\)](https://en.wikipedia.org/wiki/Bear_Island_(Norway)). [Accessed May 10, 2018]
- [4] Stange, R. Kapp Linne. 2013, [https://spitsbergen-svalbard.com/spitsbergen information/settlements- and stations/kapp-linne.html](https://spitsbergen-svalbard.com/spitsbergen%20information/settlements-and%20stations/kapp-linne.html). [Accessed May 10, 2018]
- [5] Mikkola, H. Merilintujen esiintymisestä avomerellä pesimisaikaan. 1965, Molekyyli 22: 107-108
- [6] Elliott KH, Ricklefs RE, Gaston AJ, Hatch SA, Speakman JR, Davoren GK. High flight costs and low dive costs support the biomechanical hypothesis for flightlessness in penguins. *Proceedings of the National Academy of Sciences of the United States of America*. 2013; **110**(23):9380-9384. DOI: 10.1073/pnas.1304838110

