

DET KONGELIGE INDUSTRI-, HÅNDVERK-
OG SKIPSFARTSDEPARTEMENT

NORSK POLARINSTITUTT

SKRIFTER

Nr. 103

STUDIES ON THE AVIFAUNA OF SPITSBERGEN

BY

H. L. LØVENSKIOLD



I KOMMISJON HOS
BRØGGERS BOKTRYKKERIS FORLAG
OSLO 1954

NORSK POLARINSTITUTT

(Formerly Norges Svalbard- og Ishavs-undersøkelser.)

Observatoriegaten 1, Oslo

SKRIFTER

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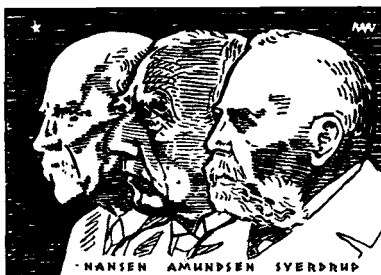
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A. W. BRØGGERS BOKTRYKKERI A/S

Introduction.

In the years 1948, 1949, 1950 and 1952 I took part in Norsk Polar-institutt's expeditions to Spitsbergen. My purpose was to study the birdlife.

The main point of the first summer's investigations was that I should get my bearings as to where it might pay to work in the following years. Mr. Axel Sommerfelt was my assistant, later on Mr. T. Gaasvær, quartermaster of the R. Norw. Navy, joined the expedition.

The departure from Norway took place a little late in the summer, and we arrived at Longyearbyen on July 21st. During the summer we visited Forlandsundet, Ny-Ålesund, the outer parts of Van Mijenfjorden with Akseløya, Mariaholmen and the mountain Midterhuken. Then we started for Storfjorden on the eastern side of Spitsbergen on board the expedition ship M/C "Minna", passed through Heleysundet up to Hinlopenstretet, where we were stopped by the pack-ice which blocked the sound. On the return passage we passed Freemansundet between Barentsøya and Edgeøya. We were put ashore at Calypsobyen in Bellsund, and later on at Kapp Martin on the northern side of that fjord.

After a stay at Russekeila, near Kapp Linné at the mouth of Isfjorden, we were fetched by the "Minna" again and went up to Danskegattet between Amsterdamøya and Danskøya. We put up for the night in Virgohamna, where we saw the ruins of the balloon-house of S. A. Andrée. From there we went to Biskayerhuken where we met Mr. S. Kristoffersen who was going to pass the winter here.

Later on we came to the Sveagruva. Here I got the opportunity to visit Paulabreen at the south-easternmost bay of Van Mijenfjorden, where we looked for a breeding place of the Ivory Gull.

Besides these territories different localities at Isfjorden were visited, among these Kapp Linné, Rundodden, Gåsøyane, Deltanaset, Skansbukta, Pyramiden in Billefjorden, and Coraholmen in Ekmanfjorden. Departure from Spitsbergen September 8th, 1948.

In the summer of 1949 my friend, Professor Hans Johansen of the University of Copenhagen, took part in the expedition. I was also accompanied by Mr. Lars Myhrvold. We came to Longyearbyen on June 23rd,

and three days later we went north. We passed Prins Karls Forland on the western side and visited Ny-Ålesund. From there we came to Sørgattet where we occupied the hut belonging to the trapper Alfred Johansen, and stayed here until June 29th. From now on we used our own boat, a dory with an outboard motor, and went to Biskayerhuken. During the passage we stayed for some hours at Sallyhamna in Birgerbukta. — We stayed in the hut of Mr. Kristoffersen at Biskayerhuken from July 7th to the 20th.

Our purpose was to seek for the nests of *Crocethia alba* and *Calidris canutus* on Reinsdyrflya (the Reindeer Peninsula), but we got the most dreadful weather and for several days we could not go out of the hut. Moreover we were also shut in by the drift-ice. The only thing we could accomplish was some small trips in the nearest vicinity.

On July the 20th we started towards the east at 19⁴⁵ and out to sea we were nearly blocked up by the pack-ice. We passed Velkomstpynten at the mouth of Woodfjorden at 0³⁰ and went to the head of the fjord. Here we came to our goal, a small hut at the mountain Siktefjellet at 12⁰⁰ on July 21st. — We passed about a week in this place and started on our return at 14⁰⁰ on July 27th. — The thermal waters at Bockfjorden were first visited and from there we proceeded directly for Velkomstpynten, Biskayerhuken and Sallyhamna where we arrived at 16²⁰ on July 28th.

Three days later "Minna" came to fetch us to Ny-Ålesund and from there to Kapp Martin in Bellsund. Here we stayed from August 5th to the 17th. — The last five days of this stay, we were, for the second time during this summer, completely shut in by pack-ice, and lived mainly on young Glaucous Gulls (*Larus hyperboreus*) because only small provisions were left. — When at last "Minna" could slip through the ice, we came back to Longyearbyen and from there to Norway.

In the summer of 1950 I was accompanied by a young Swedish taxidermist, Mr. Lennart Blomberg and a Norwegian student Mr. Håkon Lien. — We arrived at Longyearbyen on July the 1st, and stayed until the 9th. On five of these days we had the most beautiful weather with brilliant sunshine and up to 23° centigrades in the shade, something quite exceptional for Spitsbergen.

M/C "Minna" then took us down south to Stormbukta on the western side of Sørkapp Land where we arrived on July the 12th and stayed until August the 12th. We lived in a portable hut of my own construction. The floor was 2×6 metres and the height 2.25. This hut proved to be very comfortable and in spite of foul weather with rain and storm, we fared very well indeed.

From our headquarters here we visited the area from the island Sørkappøya in the south up to Dunøyane north of Hornsund in the north. We also visited both shores on the outer half of Hornsund.

In front of our hut at Stormbukta there were row upon row of reefs and as the bay was very shallow, we met difficulties in passing in and out with our small boat.

When "Minna" came to fetch us, there was a dense fog and we could not catch sight of her. As the mist got thinner the breakers had grown so heavy that we could get out only at highwater. It was impossible to get our hut on board and therefore it had to be left behind.

We arrived at Longyearbyen on August 14th and the following day we went to Sassenfjorden where we lodged in the house of the trapper Mr. Hilmar Nøis, from August the 15th to the 25th. From this station we visited both sides of the fjord. We also went up the valley along the river Sassenelva and had a couple of trips to the mountains on the north side of the valley.

"Minna" now gradually gathered together the members of all the different expeditions and left Longyearbyen on August 31st. We were at sea for eleven days until we reached Åndalsnes on the Norwegian coast.

In 1952 I was accompanied by my friend Mr. Sigurd Severinsen and a young Swedish student Mr. Arne Branzell. The first days of July we passed near Bohemanneset in Isfjorden and were then fetched by the M/C "Sysla" to Hyttevika north of Hornsund and due east of the islands Dunøyane. From this place we visited the area between Kapp Borthen in the north to the southern shore of Hornsund in the south. We spent several days on Dunøyane to study the Barnacle Goose which bred there. So far as I know, it is the first time this bird has been found breeding on level ground. — On September 1st, the M/C "Minna" fetched us for Norway.

In the special part, each species of birds will be mentioned in the following manner: General remarks, observations and measurements.

On the affixed map the places visited are marked with numbers, starting in the south, going up the west coast, the north coast and ending on the east side of Spitsbergen. — The corresponding numbers are found in brackets each time one of the places is mentioned in the special part. — When dealing with the birds, the same principle is followed. The southern localities are recorded first and those on the eastern coast last.

I am greatly indebted to Professor H. U. Sverdrup, the director of Norsk Polarinstitut, for being allowed to partake in the expeditions to Spitsbergen in the years 1948, 1949, 1950 and 1952, and to the associate director Dr. A. K. Orvin, whose knowledge of the Spitsbergen area has been of much help to me.

I must also thank my comrades at Norsk Polarinstitut, especially commander Kaare Lundquist, the chief leader of all the different expeditions, for their kindness and good fellowship. — For all help and assistance received from the mining company, Store Norske Spitsbergen Kullkompani A/S, I am very thankful.

Last and not least I am very much indebted to Miss Frances Pitt for going through the special part of my manuscript to correct my English.

Almost all the names mentioned in this paper can be found in the publication "The Place-Names of Svalbard", Skrifter om Svalbard og Ishavet. Nr. 80. Oslo 1942.

In the present paper there are no references to earlier publications, it contains mainly my own observations. — Since Professor Koenig's "Avifauna Spitzbergensis" in 1911, there is not published an extensive account of the bird-life in these islands. There are a few exceptions, but these are relatively short summaries. — I have therefore begun to write a synopsis of the birds in the Svalbard area from 1598 up to recent times. Here all the publications which have been available to me will be published.

Nesodden near Oslo, March 15, 1954.

H. L. Lovenskiold.

Special Part.

1. *Plectrophenax nivalia nivalis* (L.).

Norw. Snespurv. Engl. Snow-Bunting.

General Notes.

The Snow-Bunting breeds everywhere along the west coast of Spitsbergen from Sørkappøya (2) in the south to Amsterdamøya (38) in the north. It goes to the head of the fjords and far inland from the shores. On the north coast I have found it breeding as far as I have been, e. g. Liefdefjorden (45) and Bockfjorden (47). On the eastern side of Vestspitsbergen they have been observed during August and in the first days of September.

Most of the buntings will have almost fully fledged young ones in their nests by June the 23rd, but the first young birds to leave the nests, were observed on June the 22nd.

The nest is mainly constructed of dry grass and is as a rule lined with feathers. The white feathers of the Spitsbergen Ptarmigan seem to be preferred. It is generally placed in a fissure in a rock and it is usually very well hidden and protected. It is sometimes found in heaps of stones and in Longyearbyen (22) in the ruins of concrete buildings. More rarely it is found under a flattish stone on level ground, in a cairn or under an old tarpaulin canvas on the shore. Once a pair of Snow-Buntings were found breeding in a nesting-box on a trappers hut.

At the end of August they will begin to flock before they go south.

Observations.

On Sørkappøya (2) the southernmost point of Spitsbergen, we observed a number of these birds on July the 25th, 1950. We also found two nests of the year, from which the young birds had fled. One of them was placed under an old tarpaulin canvas on the beach, the other was built in a stone cairn on the out-look hill on the southernmost point of the island. — On the SW point of the mainland of Vestspitsbergen, Øyrlandet (4), we saw a number of Snow-Buntings on July the 16th, 1950. The birds were busy in bringing food to their nests among the rocks along the shore. Some days later on the 19th, we came to Tokrossøya (4) near the above point and here we saw adult birds feeding their fledglings who had just left their nests.

At our headquarters at Stormbukta (5) on Sørkapplandet, a subterranean river had its outlet. It came out of a cave in the rocks and in the roof of this cave there was a hole where a pair of Snow-Buntings had nested. From July the 12th and the following days we saw the birds feeding there. On the 29th the young birds had left the nest and for some days they were seen in the vicinity of our hut. The adult male bird was very often sitting on the roof of the hut and gave its warning note when a member of the two families of Arctic foxes, whose earths were situated not far away, came to visit us as they were wont to get some food. (These foxes gradually became so tame that at least one of them took the food offered it, from the hand.)

At Breinesflyane (6) north of the glacier Bungebreen, we saw a number of buntings on July the 14th. As they had food in their bills, they surely had young ones. — In an old hut at Hornsundneset (7), at the entrance to Hornsund, we found a family of these birds on August the 2nd 1950. The shelves in the hut were covered by the droppings of the birds who used it as a sleeping place, as they had done in an old hut at Sørkappøya.

When we came to the hut in Hyttevika (11) on July the 10th 1952, I found a dead young Snow-Bunting in the stove. From this day and until August the 20th there always was quite a number of buntings around the hut, also along the mountain north and south of this place. The birds who daily came to the hut, always gave a warning note when they sighted a fox.

On August the 18th a big flock was seen near our camp, so they must begun to flock before the migration south. On the 21st all the buntings had disappeared and we saw none until a single bird arrived on the 25th. In the next five days we saw one or two daily. — At Dunøyane we saw a few birds on July the 14th 1952, also each time we were there until our last visit on the 22nd. — On my trip to this place two years earlier, I saw quite a number of buntings around the place on August the 4th.

At Kapp Lyell on the southern coast of Bellsund (13) we saw quite a number of Snow-Buntings on August the 19th 1948. The day before we had gone to Reinholmen in Recherchefjorden (15) and had seen them there also. — At Kapp Martin (17) on the northern shore of Bellsund we saw a couple of families on August the 20th in the same year. — Around the radio-lighthouse here we found a great number of them on August the 5th 1949. Some of the birds slept in an old hut at the ponds Hustjørna, not far from the light-house, the shelves in the hut being covered with their droppings. — At Lågnesvarden (a cairn) a couple of Snow-Buntings were observed on the 9th and at the small islands Reiniusøyane, not far from Kapp Martin, a few were seen on August the 12th 1949.

In 1948 many Snow-Buntings were observed on Mariaholmen and Akseløya (18), two islands at the entrance to Van Mijenfjorden, on July the 29th and 30th. Adults and young birds were to be found everywhere on both islands. Some days later, on August the 7th, a great deal of them were seen at Sveagruva (20), a colliery, at the head of Van Mijenfjorden.

At Kapp Linné (21) at the entrance to Isfjorden, a great number was observed on July the 24th 1948, but when we returned there on August the 22nd, only a few were left.

At Longyearbyen (22) they were very common. Here they were nesting on the mountains and in the ruins of the concrete buildings destroyed during the last war. — One of the engineers of the colliery told me that he found a nest of the Snow-Buntings under a flattish stone on the ground. This I have not seen in Spitsbergen, but in Norway on Hardangervidda it seems to be quite ordinary, as I have observed particularly in the year 1934.

In the valley Adventdalen the young birds had left the nests on June the 22nd 1949 and the males were singing from the housetops in Longyearbyen. By the first days of September they had disappeared from here, but at the end of the valley Longyeardalen, close to the glacier, a great number of them was observed on the 7th. The next day, shortly before I left Spitsbergen, I saw a single bird at Hotellneset close to the colliery. In this place they were very abundant on June the 24th 1949. The males were singing everywhere, but they, and still more the females, were occupied in feeding the young birds, who by then had not left the nests. On the loading quay a nest was found in a hollow in a heap of an old, heavy and rusty chain-cable. It contained five almost fully fledged young birds.

In 1950 as in the two preceding years, Snow-Buntings were abundant at Longyearbyen. Along the road from this place to Hotellneset, a shore-road, at the foot of the cliffs, several pairs seemed to have their nests, and on the ness itself they also were abundant on July the 1st. A couple of days later a pair of buntings were seen to feed their young ones here among the boulders in the middle of the plain.

We came to Bohemanneset (28a) on the north side of Isfjorden on July the 4th 1952. Along the coast the ness is mostly mountainous and on the north side of the hills, big snowdrifts were still to be found. On the snow here several buntings sought food for their young ones. — At first I could not imagine what sort of food they were collecting. It seemed however to be mosquitos and other small flying insects who settled on the snow. These insects had difficulty in rising and they were easily picked up by the buntings. Four days later we saw the birds here again, still occupied in the same way. — On the 5th we saw some Snow-Buntings here and there at Erdmannodden.

At Gåsøyane (25) near Gipshuken in Isfjorden, a number of buntings were seen on July the 6th 1950. The greater part of them obviously had their nests in the steep walls of basalt (or diabase) on the east side of the islands. Here I found a nest with three eggs. It was built under a big stone and not at all so well hidden as usual, but as there were no foxes on the island, the birds were safe.

In the valley Sassendalen (24) we saw a few single birds here and there among the mountains in the last days of August 1950. Around the house of the trapper Hilmar Nøis, a family of buntings was seen during our stay there, from August the 15th to the 25th. On the east side of the house was a nesting-box placed high up on the wall. — When I asked Mr. Nøis what bird would breed in it, he answered the Snow-Bunting. He told me that a brood had hatched there every year.

In the summer 1948 I came to Ny-Ålesund (34) in Kongsfjorden (Kings Bay) on July the 26th. Here, on the island Prins Heinrichøya and on Brandalpynten, both places not far from the colliery, the Snow-Buntings were abundant. The young birds had already left their nests. When we came back on August the 1st the birds were still to be seen here.

In the first days of July 1949, a number of buntings were observed at Moseøya (37) in Sørgattet between the mainland and the island Danskøya. We stayed in a hut in Bjørnhamna not far from the above island and here too we daily saw the birds. Far up the mountain behind the hut, I found two nests on July the 1st. One of them contained young birds, the other, however, was empty. The buntings were very anxious and it may be supposed that they were going to have a second, or at least a belated clutch. Possibly their first nest had been destroyed. — At Smeerenburgodden (38) on the island Amsterdamøya, we saw a few birds on July the 2nd and on Albertøya, not far from this place, a few later in the day.

Around the hut of Mr. Kristoffersen on Biskayerhuken (42) the buntings were numerous from July the 6th to the 20th when we left. — From Biskayerhuken to Jermaktangen to the west of it, the ground is level along the shore. To the south, the bay between these two points is bordered by fairly high hills and on these the Snow-Buntings had their nests. All along the beach big floes of old ice were thrown ashore and on this ice the birds were seeking food for their nestlings. — On July the 9th we found a nest close to the hut. It was built in a fissure in a rock and was absolutely unapproachable. Here the birds fed regularly all the day. — Later in the day we saw young birds who had left their nest in Breibogen (43) to the south of Biskayerhuken.

On July the 19th I was photographing Little Auks in a colony on a mountain south of the hut. Sitting in my hide I became aware of all the birds leaving the hillside. They went out over the sea and flew around crying in alarm. All at once I heard a Snow-Bunting giving a warning

note close to my tent and saw an Arctic fox which disappeared behind a big boulder. As it vanished, the Snow-Bunting, a male, followed it giving the warning note all the time. I kept my eye on the bunting and by this I could follow the course of the fox until both of them went behind a cliff.

At the islands Lernerøyane (46) at the head of Liefdefjorden we saw a few of these birds on July the 22nd and the 24th 1949.

At Agardhbukta (48) in Storfjorden on the east side of Vestspitsbergen one of the topographers of Norsk Polarinstitut, Mr. Solheim with his two assistants, worked in August 1952. When he came aboard our ship in the first days of September (the 6th), he told me that there had been numbers of Snow-Buntings as long as he had been working there. One of his assistants had made drawings of the birds and this identification was certainly correct.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm	Weight grams
Jun. 29. 1949	Moseøya, Sørgattet	♂	113	65	10	22	-
Jul. 2. 1949	Alberøya, Smeerenburgfjorden	♂	111	63	12	20	-
Jul. 8. 1949	Biskayerhuken	♂	110	64	10.5	20	-
Jul. 8. 1949	Biskayerhuken	♂	106	64	11	20	-
Jul. 22. 1949	Lernerøyane, Liefdefjorden	♂	107	65	11	20	-
Jul. 22. 1949	Lernerøyane, Liefdefjorden	♂	112.5	65	11	22	-
Aug. 5. 1949	Kapp Martin, Bellsund	♀	102	65	9.5	21	-
Aug. 12. 1949	Kapp Martin, Bellsund	♀ juv.	101.5	58	9	21	-
Jul. 11. 1952	Hyttevika, N of Hornsund	♀ juv.	-	-	-	-	33
Jul. 11. 1952	Hyttevika, N of Hornsund	♂	106	65	12	23	34
Jul. 12. 1952	Hyttevika, N of Hornsund	♂	113	73	10	23	36

2. *Turdus musicus musicus* (L.).

Norw. Rødvinge. Engl. Redwing.

From Mr. Odd Lønø who wintered 1950—51 on the island Edgeøya, I got two skins of the Redwing.

He had found the birds frozen to death at his secondary station on Negerpynten (53) on October the 12th 1950. The birds were very meagre.

Negerpynten, where the station is situated, is the southern point of the island.

On October the 15th he saw another bird, but this time alive, in the same place. He supposed this also to be a Redwing.

Compared with skins in the Zoological Museum in Oslo, the skins from Mr. Lønø were found to be of the nominant form *Turdus m. musicus* L. The wings of both skins measured 117 mm.

3. *Delichon urbica urbica* (L.).

Norw. Taksvale. Engl. House-Martin.

At Hyttevika (11) north of Hornsund and due east of Dunøyane there is a fairly big and comfortable trappers hut. On the floor under the bed, we found a dead House-Martin on August the 4th 1950. The wings were pressed close to the body and the bird lay there just as it had crawled under the bed to die.

To judge from the condition of the bird when found, it was not quite dried up, it had possibly found its way into the hut some time in May or June. As it was impossible for it to get out again it must have died of hunger.

The species is new for Spitsbergen.

The steward at the radio-station at Kapp Linné (21) at the entrance to Isfjorden, told me in 1950 that a couple of martins had had their nest over the entrance to the messroom at Barentsburg colliery (21a) (then Dutch) in 1924. If this was correct, they must have been House-Martins as the nest was placed on the outside of the house. Barentsburg (now a Russian coal-mine) is situated in Grønfjorden (Green Harbour), the first southern branch of Isfjorden.

4. *Nyctea scandiaca* (L.).

Norw. Sneugle. Engl. Snowy Owl.

Although this owl is reported fairly often in Spitsbergen, I have not succeeded in finding it. The stories of its breeding on the islands I consider doubtful as there are no rodents here, except at the collieries and among their near surroundings, where rats and mice that have come ashore from ships may be found.

In August 1950 we discovered the remains of a Snowy Owl near the house of the trapper Mr. Nøis in Sassendalen (24). Some days after the find, I met the trapper and he told me that, a couple of years ago, he had shot such a bird near his house. It is therefore possible that it was the remains of this bird that we found.

5. *Anser fabalis brachyrhynchus* Baillon.

Norw. Spitsbergengås. Engl. Pink-footed Goose.

General Notes.

The Pink-footed Goose breeds fairly numerously from Sørkapp Land (6) in the south along the western coast of Vestspitsbergen, in all the bigger fjords and in a lot of valleys up to the island Amsterdamøya (38) in the north. On the north coast it was found only in a few

places until we came to Liefdefjorden (45) where it was very numerous. Farther east I did not come.

The hunting season for this goose as well as for all the other protected species of birds begins on August the 15th. In most years however, this is too early as the greater part of the young geese are still a long way from being fully fledged. Many of the adult birds are also unable to fly yet.

The result is that in a limited territory the whole population of this species and other geese can be exterminated. — It was told in Longyearbyen (22) in August 1950 that a man from this place had shot 90 geese on the islet Coraholmen (28) in Ekmanfjorden, a branch of Isfjorden. If the narrated story was true, this person had rooted out the whole population of the Pink-footed Goose on the islet.

There are two remedies. The one is to protect the birds until September the 1st, but then only a few of them will be left in Spitsbergen. The other is to forbid the shooting of birds incapable of flight. Even if this protection should not be fully respected, geese in this condition could not be offered for sale and it would positively prevent the extermination of the geese near the populated areas. — The two species of *Branta* would of course also have to be included in such a protection.

The nest of the Pink-footed Goose is as far as I have seen, sparingly lined with down. Nests can be found on ledges and shelves on the mountain-sides and on islands, but they are not always safe from the Arctic fox. I have found several nests on level ground. However a pair of these birds are fully capable of driving a fox away. A single bird who cannot fly, has, however, no chance against a fox.

The nesting season seems to be about mid June, but some clutches may of course be found earlier. — In the nests I have discovered, the first egg was laid on June the 8th and the last about June the 17th.

When the nest is placed on a shelf more than a hundred metres above level ground, it is difficult to understand how the goslings, newly hatched, can descend without suffering fatal injuries. They are however so small and nimble that they can jump several meters down without hurting themselves. — After a few days they are able to run very fast, so fast indeed that it is very difficult to overtake them on level ground.

Observations.

The Pink-footed Goose has been observed by me in the following places:

At Breinesflyane, a big plain on Sørkapp Land (6) a small flock was seen on July the 14th 1950. They were close to the shore and swam immediately for the beach. Then they ran with a great speed over the level ground towards the mountains. Over the plain several brooks are

running towards the sea. They join not far from the shore to form a longish little lake with small islands. On the above date we found 25 geese here. Some of the pairs had quite small goslings, but the majority of the birds had none. Not one of them took to the wings and all of them disappeared running. — We came back here on the 22nd and now there were seven adult birds. Of these only three could fly. — On a lake further in towards the mountains we saw ten geese. As soon as they sighted us they went ashore and as usual they disappeared running with a great speed. I think it almost impossible for a man to catch up with a goose in the long run. — When we came back to our boat another flock of ten geese was found on the beach, these birds immediately went out to sea.

At the mouth of Hornsund (10) on the north side, a valley Revdalen, goes northwards. The river Revelva that is running through the valley, comes from the lake Revvatnet. On this lake there was on August the 4th 1950, four families of geese, in all 25 individuals. Some of the goslings were quite small, but some of them were at least fourteen days old. Later in the day we met with 30 geese at Hyttevika (11) north of Hornsund.

In 1952 I visited this place again and as I stayed here from July the 10th until September the 1st, I had the opportunity to study the geese more closely than in any other place in Spitsbergen.

Around the trappers hut where we stayed there is a narrow strip of grass-covered land about 40 metres wide and a couple of 100 metres long. Here the geese like to feed and even on our first day we saw some of them here. The following day, on the 11th, we saw five pairs with their young ones here. Three pairs had five and the rest of them three goslings each. They ran down to the shore and swam out through the pack-ice that completely blocked the bay. — On the 12th we saw seven birds at the plain Kvartsittsletta north of the hut and of these only one bird could fly.

Five days later we observed four pairs with in all ten goslings in this place. Afterwards we came to a fairly big pond, which we named the Goose-pond, just under the spur of the mountain Gulliksenfjellet. Here there were 50 geese who could not fly. They kept to the middle of the pond and did not try to leave it. — Further on we met with five pairs with goslings. They had from two to five young ones each. From the coast we now went inland to the valley Bratteggdalen with the small lake Myrtjørna. Here a pair of geese came flying over us and on the lake there were two pairs, one with two and the other with four goslings. — One of my assistants went around the lake and just before he came back to the point here he started from, he raised a gander who flew but some metres away and then settled again. Quite nearby he found an old nest of the Pink-footed Goose, but I think it possible that the goose had

her nest not far from the old one and that he did not see it. When we came back to the hut a big flock was grazing there and immediately swam out the sea.

The next day we went to the Goose-pond to catch some birds for ringing, but owing to a bad equipment, we got only five out of 50. — When we came back to this place some days later, there were only five birds here. Of these three birds swam to the opposite shore and went on land where they disappeared. They probably went down to the sea. One goose swam along the shore with her head close down to the water. She disappeared while we were watching the fifth bird who ran for the hillside. It had almost reached some great boulders when it was attacked by an Arctic fox and they came to grips. One of my assistants ran after the goose and drove the fox away. This was indeed lucky as the bird was ringed. I am certain that if we had not interfered, the fox would have got the goose. A pair of them will drive a fox away, but it will take a single bird that cannot use the wings.

When we came down to the coast we saw about 40 geese (adults and young ones) swimming out the sea. — On August the 2nd we came to this place again and observed 39 adult birds with a great number of goslings.

The next day we went south of the hut and came to the plain between the mountain Torbjørnsenfjellet and the sea. Here there were two fairly big ponds. In the northernmost of them there were five geese incapable of flight. On the other pond there must have been a great number of geese who had gone down to the shore as soon as they sighted us, for close to the beach we saw 70 birds (adult and goslings) going out to sea, while a small flock of 6 birds came flying past us. — We now took our boat with an outboard motor and went after the big flock with a speed of six knots. When we came up to them a few birds arose and flew away. The rest of them, more than 60 birds swam in a compact formation close before the bow of the boat. When we came very close they used their feet and half-grown wings and thrashed the water to get away from us. We had a ring with a net on a long pole and tried to catch them, but then they dived and stayed for a long time under water, and we got none.

From here we went to Revdalen where I had been in August 1950. Here we saw 40 geese who were feeding on a grassy slope. As soon as they saw us they ran up the hillside with a great speed and disappeared among some great boulders, about a 100 metres above the place where they had been feeding. At the lake (Revvatnet) there was one pair that could fly and another pair with a single gosling.

On August the 4th six pairs of geese with goslings came to the hut and three birds came flying past us. — On the following day the birds came back at five o'clock a.m. The three birds which were able to fly

sat by the water's edge watching while three families were feeding. — When I came out of the hut the three birds flew away, the rest of them ran very fast down to the beach and swam out to sea. Now the flying birds came back and settled among the others. — When we came to Revvatnet later in the day we saw 60 geese at the furthest end of it.

On August the 8th we went to the mountain Sofiakammen i Hornsund where we saw nine birds close to the old hut and a big flock farther away. On the return trip we went up to Revvatnet and in the valley here there was a great number of geese. Coming back to the hut on the 9th many geese were on the grassy plain around it. On the four following days, smaller and greater flocks flew past us every day. — On the 10th, 29 birds flew past the hut and later in the day 35 geese fed on the grass around the hut. Of these only 15 were adults.

The following day there were 60 geese, adults and goslings just north of our camp. These birds stayed for several days on the grass-grown land in the vicinity of the hut. Mostly they were here in the night, but also in the day when we had been inside for some hours without going out. — On the 12th we saw 21 birds at Revvatnet. All of them could fly. By a little pond south of the hut there were more than one hundred birds in the evening. — From the valley Revdalen and up to Myrtjørna (the two places are about 15 km apart) there were in those days at least 300 geese.

On August the 14th we had four families with in all 20 geese just outside the window, and the next day there was a big flock some six km south of our hut.

When I came out of the hut at 7 hours a.m. on the 16th, there was a great number of geese there. They went down to the sea quite unperturbed. As we never disturbed them near Hyttevika, they showed little shyness. — Two hours later there were more than a hundred birds around our hut. Some of them were sleeping, others were feeding where the grass was growing, and a few came close to the walls of the hut. The juveniles were easily distinguished as their plumage was darker and their feet were dark-coloured, not pink. Some of these geese could fly.

By August the 15th many more geese were able to fly, but it was difficult to tell how many because adults that could use their wings were reluctant to leave the goslings that could not.

For this reason August the 15th is too early to begin shooting and hunting them, yet the season begins on this date.

If the birds are pursued with a motor-boat, or if the hunters are able to surround geese on a pond, they can easily kill every bird.

On August the 18th we saw between 150 and 200 geese near the hut. The next day we went to Kapp Borthen (12 b) and from there farther north to Vardepynten. Here we saw a family of five and later nine birds came flying past us. — From the 20th and until the 31st,

we saw between 20—60 geese almost every day. After the 18th we did not meet with a single bird who could not fly.

In a valley in the western part of Recherchefjorden (15) in Bellsund, a flock of twelve birds were sighted on August the 18th 1948. Six of them were adults. When we had approached them to a distance of about 2 km they took flight and disappeared out to sea.

On August the 13th 1950 we visited the geologist Mr. Winsnes who worked in the eastern parts of Recherchefjorden (15). He told me that a great number of these geese bred on the mountain Observatoriefjellet on the east side of it, from the glacier and out towards the uttermost point.

At Kapp Martin (17) in Bellsund we saw a family of two adults and five young birds on August the 20th 1948. They were found on a little pond and flew up when we were about 200 metres from them. Then they flew around us a couple of times and alighted on a small lake near by. — On another little lake here, we saw twelve birds on August the 5th, 1949, and the next day six birds in the same place. A few days later on the 9th, there were fifteen geese on the lake "Vesle Hustjørna" not far from the lighthouse and when I went from here to the cairn on the hill Lågnesvarden, a flock of twenty birds flew over me. Two days later I went past the lake Hustjørna and saw 39 geese here. — On August the 15th 1949 my assistant Mr. Myhrvold went to fetch water from a pond close to the camp at the lighthouse, and came upon 35 geese. He was not more than 15 metres away from them when they took wing.

In the river coming from the lake Linnévatnet (21) near Kapp Linné at the entrance to Isfjorden, we saw a goose with five goslings on August the 22nd 1948. None of them could fly.

On July the 4th, 1952, I saw a great flock of geese on the western shore of the peninsula Bohemanneset (28 a) on the north side of Isfjorden. On the southern part of the ness there are hills and on the northern slopes of these there are some small lakes and ponds. On one of these we counted more than a hundred geese. Of these some landed and ran away, some, perhaps 30 birds, could fly, and the rest, about 20, remained. When we came to the shore at the foot of the hills a pair of geese came flying around us crying. They possibly had a nest somewhere in the neighbourhood. The following day we saw another pair on a rocky point at Erdmannodden. The birds behaved in the same way as the pair mentioned above, but it was impossible to find a nest.

We had our camp on a peninsula between Bohemanneset and Erdmannodden. Here the ground consists of groundmoraine with a very sparse vegetation. Not far from the tents I found an old nest of the Pink-footed Goose on July the 3rd, and on the 7th I saw a pair with three or four goslings here. They went down to the shore and swam out to sea.

On July the 8th we went back to Bohemannodden and not far from the shore we saw an islet with a great number of geese. On the sea they separated in two flocks, one of more than a hundred birds and the other of about fifty. All these geese were incapable of flight and the islet was full of feathers shed by them. When we investigated the place we saw a pair of geese with five newly hatched goslings. They were close to the shore swimming away and immediately afterwards we found the nest where the down was still warm. On another islet close by we also found a nest. Here there was a newly hatched gosling, just dry, and two rotten eggs.

From here we went to Bohemannodden, to the place where we had seen the geese flying about some days earlier. We found the nest of this pair and two nests more. On the 9th I came here to photograph the birds. — The first nest was placed on a little plateau on the eastern side of the hill. The three eggs were covered with moss. The second nest was placed on turf close to the precipice of the cliff on the west side of the hill. The third nest was placed on a shelf in the cliff about a hundred yards from number two. It was situated close to the precipice with a perpendicular drop of about 15 metres down to the sea. Here we found five eggs. An Arctic fox was running all over the place between the nests, but the geese did not seem to take any notice of it. Seemingly a pair of these birds are able to defend themselves and their nest against it. Close to the cairn on the top of the hill we found a fourth nest where shells of eggs and membranes were to be seen among the down. Therefore the young birds had been hatched here and had left the nest.

When I came to photograph, no eggs were hatched in nest no. 1. In no. 2, two goslings were sitting and in no. 3, three young ones were hatched. By this nest I put up my hide and as soon as my assistants had disappeared the birds came back. The goose at once went to the nest, lay down and began to tend the goslings. The gander sat not far away from her and where the ground was covered with droppings, so this was obviously the place where he kept watch.

The goslings repeatedly came forth from under the wings of the goose. The goose herself behaved in a strange way, for she swallowed a great deal of the down from the nest.

It is a well known fact that some birds, for instance the grebe, will eat their own feathers, but I have never heard of such behaviour in geese before.

At Hotellneset near Longyearbyen (22) I observed six geese on July the 3rd 1950.

On July the 21st 1948 I took part in a trip to Coraholmen (28) in Ekmanfjorden, a branch of Isfjorden, and here we found 28 geese with a great number of goslings on a small but very deep pond. To begin with there were about fifteen persons around the pond and as the birds

could not fly, they kept to the middle of the pond. When the spectators disappeared, one half of the birds went ashore with their young ones. They ran with a great speed up a little hill and then disappeared in a labyrinth of small ponds in the peculiar barren landscape on the northern part of the island. The ground here is ground-moraine with a very scant vegetation.

At the head of Sassenfjorden (24) we lived in the hut of the trapper Mr. Hilmar Nøis from August the 15th to the 25th in 1950. Nearby we had the big valley Sassendalen which is very wide. Along the river here there are vast bogs with small lakes and ponds. On the biggest of these lakes we saw a flock of geese on August the 16th. They went ashore and disappeared in the bogs. The next day we went to the valley Gipsdalen (25) where nine birds came flying over us. On the return trip to our camp, we came along the beach underneath the mountain Tempelfjellet. Here we observed 40 geese, adults and fully fledged young birds, but only nine geese could fly. When my assistant Mr. Blomberg tried to run them down, one of the young birds covered and was caught by him. Later it was let loose again.

On the 19th we returned to the above mentioned lake in Sassendalen and saw 53 birds, adults and young ones there. At the same time we saw a great number of geese just outside the delta of the river. Four days later there were still 53 geese on the lake. We were lying on a hill, observing them when there came three flocks flying past us towards the fjord, in all more than a hundred geese.

We visited Diabasodden (23) at the entrance to Sassenfjorden on the 24th. Here we saw four geese who took to the wings as soon as we approached them. When we left, we saw them coming back just to the same place where we had seen them take wing. — In a little bay east of Diabasodden, nineteen geese were observed, sitting on the beach. The greater part of them was able to fly very well indeed, but some of the young birds were not able to take wing, as their primaries were not yet fully developed.

From the physician in Ny-Ålesund (34), Dr. Sager, I got the weight of three geese shot on August the 19th and 24th 1948. Two adult birds weighed 2900 and 3000, respectively and a young bird 2500 g. — Near Storholmen (35) in Kongsfjorden (Kings Bay) we saw a single bird flying around the island on June the 28th 1949. Later in the day we found two nests on the island Gerdøya (35) with respectively three and five eggs. Both of the nests were situated on the comparatively steep sides of two different hills. They were sparsely lined with down. The birds were not very shy.

Except for a point on the southern side, the island was surrounded by land-bound ice. Therefore not a single eider-duck was breeding here. They will not breed where the fox can get at them. As the geese had

begun to breed here, it seems to be true what the trappers have told me, namely that the fox does not dare to go near the nest of a Pink-footed Goose. It will then be violently attacked and driven away. — When we came back to the islands Lovénøyane (35) on August the 2nd, we saw twelve geese here.

On the eastern lagoon at Smeerenburgneset on the island Amsterdamøya (38) we saw fourteen geese on July the 2nd 1949. Two days later three birds flew past us at our camp in Bjørnhamna (37) in Sørgattet.

At the mouth of the lagoon by the lake Richardvatnet in Breibogen (43), south of Biskayerhuken (42), we saw a single goose on July the 8th 1949. The next day we saw a bird, possibly the same, a little farther to the south. It came flying from the north and alighted on the level ground beneath the mountain Rabotfjellet. In this place Professor Johansen and I saw a pair of geese with four newly hatched goslings on July the 12th. They ran over the snow which covered the ground, except a few small bare places. When we got near them, the parents flew away, and a pair of skuas attacked the goslings, so we had to take them with us. These goslings got very tame and followed us everywhere.

In the meantime my other assistant Mr. Myhrvold had observed a goose sitting on a shelf about a hundred metres up on the mountainside. By using my fieldglasses I could see that the goose sat on her nest and that the gander was standing beside her. When Professor Johansen and I climbed the mountain, the pair left the nest and flew far away. — The shelf was very difficult to get at, but when we arrived there we found the nest with three eggs, and they were just going to hatch. The piece of level ground was fairly big and I saw that it would be possible to put up a hide to photograph the birds. The next day however and the following days we had heavy weather with a snowstorm. Besides the drift-ice came in and blocked us up. When we returned to the nest five days later, on the 17th, the geese had left with their young ones.

At Worsleyneset in Liefdefjorden (45) we saw five geese flying past us on July the 21st 1949. A little further in we saw sixteen geese on the shore. As they could not fly, they ran along the beach so fast that the boat was just able to catch up with them. — When we got close to them, they turned and ran inland. Although we were quite near them, they had got about 300 metres from the shore when we jumped from the boat and now they ran away with a great speed and soon disappeared on the tundra. — A couple of hours later we found six adult birds and one pair with three small goslings on an island belonging to the group of Andøyane (45). When we came to the mountain Siktefjellet near the head of the fjord, we saw a pair with three small goslings on a patch of snow.

On July the 25th we were at the southernmost of Andøyane and here we saw twelve geese. Two of them sought the sea, but the rest of them

disappeared. The islands is not very big, but it was impossible to find the birds. They were therefore possibly covering as they sometimes will do when the danger is pressing. — On the 27th we found a great flock at Roosneset in Liefdefjorden. There were about twelve grown birds and a large number of young birds in different stages of development. When we came to the shore, they were as usual far inland. Even quite small goslings were able to put up a remarkable speed. — At Kapp Kjeldsen in Bockfjorden (47) we saw twelve geese later in the day. — When we came back to Roosfjellet in the evening there were two pairs with four young birds each, and besides a great number of adult birds at the lagoon south of the ness Roosneset. Close to the hut on the ness itself we saw ten geese more.

The winter 1950—51 Mr. Odd Lønø stayed at Edgeøya in a hut near the island Zieglerøya (53). Here he saw small flocks of geese in the first eight days of September 1950. On September the 8th he saw a flock of 50 birds.

On May the 29th 1951 he observed two small flocks of respectively four and six birds. In June he saw four geese on the 3rd and in the following days there constantly were geese in the vicinity of the hut. The last two birds were seen on July the 10th. One of them was a female with a well developed ovarium.

Measurements.

Date	Locality	Sex mm	Wing mm	Tail mm	Bill mm	Tarsus mm
Jul. 12. 1949	Rabotfjellet, Breibogen	♂	463	137	44	76

6. *Branta bernicla hrota* (Müller).

Norw. Vestlig ringgås. Gaul. Engl. Pale-breasted Brent Goose.

I visited the islands Dunøyane (12) north of Hornsund for the first time on August the 5th 1950. Here we saw a great flock of geese and it seemed to me that it consisted only of Pale-breasted Geese. When we came to the western shore of the island Store Dunøya, we observed a flock of 33 birds close to the beach. They swam out to sea and had many young birds among them. As far as I could see, there were twelve pairs of adult birds with goslings. We also saw some smaller flocks and among these there were also Barnacle Geese. — The adult birds with goslings could not fly, the rest however could fly more or less well. Their primaries were not fully grown in all cases. We counted about 50 adult birds there, possibly there were many more.

All the geese seen here are probably local birds. The majority of the goslings was quite small ones and they must therefore have been hatched on the islands. The distance from the shore of the mainland is about 5 km. Dunøyane have long been known as a very good breeding-place for geese.

On July the 14th 1952, I came back to the islands again. We had been hindered for four days by the pack-ice. — On the ponds and small lakes there were numbers of geese, the majority Brent Geese. Quite a number of empty nests were found, where the eggs were hatched and the goslings had left and gone to sea with their parents.

The nests could easily be distinguished from those of the Barnacle Goose (see there). When we came back two days later, we saw a very big flock of Brent Geese.

The breeding season in 1952 must have begun at the normal time of the year, for in 1950 I found newly hatched young birds on August the 5th. In that year there must therefore have been a plundering of the nests, but in 1952 the ice had hindered the ships in coming to the islands. What I saw in 1950 must have been goslings second clutches, laid later in the season after the first clutches were taken.

On July the 20th a couple of this goose was observed on the islands and six days later a flock of 30 birds. Of these none could fly. On the 29th we saw this flock in the same place and now two birds took wing.

On August the 1st we saw a big flock here again and now all the birds could fly. — The number of Brent Geese seen on the different occasions we came to the islands, did vary very much indeed. So we observed 30 geese on August the 19th, but three days later there were only four of them there.

On August the 27th 1950 we saw four geese at Russekeila (21) near Kapp Linné at the entrance to Isfjorden.

At Forlandsletta (30) on Prins Karls Forland there were about 60 birds on August the 26th 1948.

At the island Storholmen (35) in Kongsfjorden (Kings Bay), we saw a couple of these birds on June the 28th 1949. When we returned here on August the 2nd, Professor Johansen and I observed four geese on the innermost low island, near the glacier. A little later in the day we saw a flock of fifteen geese on the topmost point of Storholmen. After they had taken flight, another flock of 30 geese came flying past the island.

On June the 21st 1951, Mr. Odd Lønø, who had wintered on the island Edgeøya, saw two Brent Geese near Zieglerøya (53) in Tjuvfjorden and on June the 24th a flock of fifteen birds.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm
Aug. 2. 1949	Storholmen, Lovénøyane, Kongsfjorden	♂ juv.	297	95	35	62
Aug. 5. 1950	Dunøyane, Hornsund	♂	(moult)	98	31	67

7. *Branta leucopsis* (Bechstein).

Norw. Hvitkinnet gås. Engl. Barnacle Goose.

At Dunøyane (12) north of Hornsund we saw a great number of Barnacle Geese on August the 5th 1950. — First we saw four families with quite small goslings who seemed to have been newly hatched. In all we found twelve pairs with young birds. The number of these varied from three to five in each family. — All these birds swam out to sea when they became aware of us.

Just as in the Brent Geese, the pairs with goslings were unable to fly, but the non-breeding birds could all use their wings, more or less well.

The Barnacle Geese kept mostly to themselves and mostly in small flocks, but some of them were also observed in bigger flocks with Brent Geese. — We saw at least 50 birds, but there had possibly been many more as they were spread over the shallow sea between the islands and also between these and the mainland.

Some of the goslings were newly hatched, they could not be more than one or two days old. Therefore they must have been hatched on the islands, as it is unthinkable that they could have crossed the 5 km broad stretch of sea from the mainland to the place where we saw them.

I came back to Dunøyane on July the 14th 1952 to look for nests of the Barnacle Goose. We landed on the biggest island and on one of the small lakes there, we found numbers of geese. These were mostly Brent Geese, but there were a number of Barnacle Geese among them. We also observed two pairs of the later sitting on dry land. — After a while we found a nest with six eggs of this species. It was placed on a low moss-covered hill and around it there was quite a wall of droppings. This wall was some five inches broad and about three inches high. This was the only nest containing eggs that we found on these islands.

Not far from this, we found another nest with a ring of droppings around it and here the goslings had been hatched. — I put up a hide near the nest with the eggs, and while we were working on the hide, the goose and the gander went to and fro on the level ground near by. — Even when my assistants had gone away, the goose continued her patrol. She would not come to the nest, possibly because the hide was placed too close to it. She was eating grass all the time and the gander

kept watch close to her. — An Eider Duck who had her nest close to that of the Barnacle, was left alone, but when a Glaucous Gull came into the vicinity of the nest, the goose came running and hissing. As the goose would not return to her eggs, we moved the hide farther away and left the island.

For two days we were blocked up by pack-ice, but on the 16th we were able to go to the island again. When I got to the nest, the goose was sitting and she remained on the nest until I was close to her. The gander went only a little way off. Now the hide was placed about seven yards from the nest and as soon as the others had left, the goose came and settled on the nest while the gander took his position close to her. When I had taken my pictures I came out of the tent and the birds were not at all shy. They kept mostly to a little pond about twenty metres away. — In the nest there were five goslings and the sixth egg was about to hatch.

When we had taken down the hide and retreated a little distance from the nest, both the parents came back. — On the other side of the island we saw two pairs of these birds, each of them with two goslings.

Just as with the Brent Geese, the hatching of the eggs of the Barnacle must have taken place much earlier than in 1950 when both species had newly hatched goslings on August the 5th. This year (1952) the hatching apparently had taken place at the normal time. Two years earlier the islands must certainly have been plundered in the month of June, and what I found then, must without doubt have been the second brood.

All authorities agree that the Barnacle Goose will breed on ledges on almost perpendicular mountain-sides, mostly up to 600 metres (1800 feet) above sea-level, also on the top of pillars standing out from the mountain-sides. In such places they are secure from the Arctic fox, their only enemy, as the Glaucous Gull will not dare to attack a pair of Barnacle Geese.

When the goose places her nest on the top of a stone-pillar, and in Spitsbergen this is the usual thing, she has very little space on which to move. This results in the droppings forming a circle around the nest, such as was found by us and described above. — To this habit the bird adheres, even when it is breeding on level ground as in the case at Dunøyane. — Neither of the two other species of geese in Spitsbergen, the Pink-footed Goose and the Brent Goose, do this, as both of them are accustomed to breed on more or less level ground. One may find more droppings near the nest than in other places, and especially on the spot where the gander keeps watch, but never in an unbroken ring around the nest.

During the time we stayed at Hyttevika, we paid several visits to the islands to look for nests of the Barnacle Goose. We found five empty nests where the eggs had been hatched, all of them with the characteristic ring of droppings.

We also found some empty nests of the Brent Goose.

On July the 30th 1952 we were on a trip to Dunøyane again. The weather was misty and two Barnacle Geese came flying past and alighted on a little lake close beside me. — Two days later we saw a big flock flying between the islands. There also were some single birds flying about. Later in the day we came to the island Store Isøya (12a) and here three Barnacles were swimming close to the shore. They took wing and flew to the southernmost part of the island. When we arrived there, we saw 29 geese, all of them adult birds. Three pair had goslings with them.

At Kapp Borthen north of Dunøyane, not far from the hut there, I saw twelve Barnacle Geese on August the 19th. Later in the day we went to Nebbodden north of Kapp Borthen (12b) and on a lake there we saw 35 Barnacle Geese. When we came back to Isøya we met a flock of nine birds flying northwards.

We went to Dunøyane again on August the 22nd and when we came to the biggest lake on Store Dunøya there were 46 Barnacle Geese there. Of these birds only eight could fly. 30 of them were young birds of the year. Some of them were fully fledged and resembled the adults to a great degree, but down was visible on quite a number.

Mr. Odd Lønø who had wintered on the Island Edgeøya 1950—51 told me that he saw a Barnacle Goose flying around his hut on Zieglerøya (53) on June the 7th 1951.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm	Weight grams
Aug. 5 1950	Dunøyane, Hornsund	♂	(moult)	135	30	67	-
Aug 22. 1952	Dunøyane, Hornsund	♂	(moult)	146	35	74	2500
Aug 22. 1952	Dunøyane, Hornsund	♀	(moult)	134	32	67	1600
Aug 22. 1952	Dunøyane, Hornsund	♀	(moult)	121	35	70	1900
Aug 22 1952	Dunøyane, Hornsund	juv.	-	-	-	-	1100
Aug 22. 1952	Dunøyane, Hornsund	juv.	-	-	-	-	1150
Aug 22. 1952	Dunøyane, Hornsund	juv.	-	-	-	-	1400
Aug 22. 1952	Dunøyane, Hornsund	juv.	-	-	-	-	1450

8. *Clangula hyemalis* (L.).

Norw. Isand. Havelle. Engl. Long-tailed Duck.

General Notes.

The Long-tailed Duck can be found along all the western coast of Spitsbergen from Sørkapp Land (6) in the south to Amsterdamøya (38) in the north. It will also go in to the heads of the fjords. On the north coast I have seen it as far east as I have been, i. e. Liefdefjorden (46).

From my observations the eggs seems to be laid over a period of about three weeks. I have seen the first eggs on June the 27th and I think that the normal time is from the last days of June and the first days of July. But I have also found ducks on their nests on August the 5th. These eggs hatched on the 12th. They must therefore have been laid between July the 13th and the 19th.

Observations.

Nowhere I have found the birds more numerous than at Stormbukta (5) on Sørkapp Land where several hundreds of them were observed from July the 12th to August the 12th 1952. — Here the drakes were in majority, but a great number of ducks were also seen. The drakes were possibly summer-visitors. The ducks may have been non-breeding birds who kept company with the males. — The conditions here were very good, as the birds could find any amount of food in the swallow sea among all the reefs in the bay.

The southernmost point where the birds were seen was at Olsokneset in Stormbukta (5) on July the 16th 1950. Here the southernmost part of the glacier Olsokbreen flows out into the sea and outside the glacier there are numerous reefs. A great number of ducks were observed here.

To begin with the birds came in small flocks to the bay. On July the 12th we saw one of about 40 birds. They were in full summer-plumage, the drakes were very dark and as far as could be determined the majority of them still had their very long tail-feathers. — The moulting period probably sets in at this time of the year. On July the 17th we counted 200 ducks in a little bay just outside our hut. Also these birds were in summer-plumage. When we, however, came past Olsokneset on July the 22nd some of the drakes there had got white heads.

Farther north at Breineset (6) we saw a number of Long-tailed Ducks on July the 14th. They were found some distance from the shore where there were some reefs. At the ness Suffolkpynten (7) on the southern side of the entrance to Hornsund, we saw a small flock on August the 2nd 1950.

At Dunøyane (12) north of Hornsund, there is a number of ponds and small lakes. On August the 5th we saw ducks on almost every one of them. A number of the drakes had long tails, but none of them seemed to be capable of flight.

On the sea at the western coast of the islands the ducks were very numerous. In one flock we counted more than a hundred birds. There were several flocks and many ducks had their ducklings by them.

I came back to Dunøyane on July the 14th 1952. We landed on the island Store Dunøya and on a lake here we counted about 200 birds. Two days later we came to the next biggest island, Fjørholmen, and on a pond

here a great number of birds were also seen. On the 20th and 26th the ducks were still very numerous on both of these islands and also in the sound between them.

In August some ducks were still to be seen here on the 18th, but on the 22nd only a few were left.

Just behind our hut in Hyttevika was the mountain Gulliksenfjellet. On the northern slopes of this mountain there is a fairly big pond and on this we saw a single Long-tailed Duck, a drake, on July the 18th 1952. On the 27th this bird had disappeared, but now there was a duck there with four small ducklings, probably about eight days old. In spite of a pair of Glaucous Gulls, the little family thrived and stayed until August the 25th. When we came back on the 27th they had left. — On August the 19th we observed a flock of more than 200 birds at Nebboden (12b) north of Dunøyane.

At Kapp Martin (17) on the northern side of Bellsund there is a little lake, Hustjørna, not far from the lighthouse. In the NW corner of this lake there is a little moss-covered islet and on this there is a colony of the Arctic Tern. In 1950 about 50 pairs were breeding here. On August the 5th I found two nests of the Long-tailed Duck on this islet. In one of them there were two eggs, the other had six. — In both the nests the eggs were warm and completely covered with down. This down is very dark with a light centre. On the 9th the nest with two eggs was deserted, but the other duck sat on her six eggs. Two days later, two ducklings were hatched here and on the 12th all the young ones were out.

When I came up to the nest the duck flew away, but a little later it came swimming close to the islet calling for the ducklings. Up till then they had been absolutely immovable, but now they all left the nest and went out to the duck who collected them and swam away. — Only the duck was seen in the vicinity of the nest, the drake was not observed at all.

On Kapp Linné (21) at the entrance to Isfjorden we saw a few of these birds on July the 24th 1948. — On July the 10th, 1950, we rode at anchor in the bay here and saw a number of small flocks of the Long-tailed Duck flying past us in the mist. — Close to the lighthouse there is a big colony of the Arctic Tern where we went later in the day. In the midst of this colony a duck covered on her nest.

With a single exception, all the breeding ducks I have found, had placed their nests in the colonies of terns. Here they are protected against their worst enemy, the Glaucous Gull, as the terns will drive this bird off. The Long-tailed Duck generally breeds on islands and there the fox can not get at them.

On a peninsula between Bohemanneset (28a) and Erdmannodden on the north side of Isfjorden we observed a number of ducks on July the 7th 1952. The following day we saw three pairs of these birds at Tvilling-

holmane near Bohemanneset and later in the day we found three pairs on a little lake on the ness itself.

On July the 22nd 1948 I saw a big flock at Coraholmen (28) in Ekmanfjorden (a branch of Isfjorden).

At the colliery Ny-Ålesund (34) in Kongsfjorden (Kings Bay) there is a big pond close to the quay. Here I saw a pair (♂ & ♀) on July the 26th, 1948, also a duck with 16 small ducklings. But these must originally have belonged to two different broods. The ducklings were quite small, probably not more than a couple of days old, but they were very clever at diving.

Later in the day we saw a number of Long-tailed Ducks at Brandalpynten west of Ny-Ålesund. — On the above mentioned pond we saw two pairs of these ducks on June the 27th 1949, and at the house of the director, Mr. Grønli, a single egg which one of his children had found. The following day we went to Brandalpynten where there were several ducks. We saw 16 in all and the greater part of them kept in pairs.

When we came back to Ny-Ålesund on August the 1st there still was a pair of ducks on the pond. They had had six ducklings, but now only one was left. The rest had probably been devoured by the Glaucous Gulls.

On July the 2nd 1949 we saw two pairs at Smeerenburgodden (38) at Amsterdamøya. — In the lagoon in Vesle Raudfjorden (43) in Breibogen south of Biskayerhuken, there was a couple of ducks on July the 17th 1949. — At the islands Lernerøyane (46) in Liefdefjorden we saw four of them on the 22nd and 24th. These birds were moulting and could not fly. In the bay by the mountain Siktefjellet (46) close to the hut where we stayed, there were 24 of them on the 25th and later in the day we saw six on a little pond on one of the islands Andøyane (45). — In the lagoon at Kapp Kjeldsen (47) in Bockfjorden there were twelve of them on the 27th and a few were also seen at Velkomstpynten (41) at the entrance to Liefdefjorden on July the 28th 1949.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm
Jul. 25. 1949	Lernerøyane, Liefdefjorden	♂	(moult)	-	-	-
Aug. 9. 1949	Kapp Martin, Bellsund	♀	209	61	26	35

9. *Aythya marila marila* (L.).

Norw. Bergand. Engl. Scaup Duck.

At Calypsobyen (14) in Bellsund I saw a female Scaup Duck with four ducklings on August the 19th 1948. The broad white band around the base of the bill was unmistakable. — When the birds were recognised, they were close inshore, but they disappeared out at sea and could not be found again. Further evidence is therefore lacking. As this is especially important with birds that are more or less difficult to identify in the field, I will put the observation down under the heading of doubtful.

10. *Somateria mollissima borealis* Brehm.

Norw. Spitsbergen-ærfugl. Engl. Spitsbergen Eider.

General Notes.

The Spitsbergen Eider breeds almost everywhere along the western coast of Spitsbergen. I have observed it from the island Sørkappøya (2) in the south to Amsterdamøya (38) in the north, also far into the fjords. To the east I have found it all the way along the northern coast to Velkomstpynten (41) at the entrance to Liefdefjorden, also in this fjord and in Bockfjorden (47).

In Storfjorden on the eastern side and up to the islands Bastianøyane (51) at 79° N. lat. it was also found. From Velkomstpynten past Verlegenhukken and down Hinlopenstretet to the island Wilhelmøya, it certainly breeds, but this part I have not been able to visit.

The Spitsbergen Eider always runs the greatest risk of having its nest plundered. The eggs are taken by man, fox, the Arctic Skua and the Glaucous Gull.

The eiders are nominally protected from June the 10th to August the 15th and during this time it is forbidden to shoot the birds and to take eggs and down from the nests, but because there is no inspection, the birds in reality are more or less unprotected. Time and again a colony will be plundered, all the eggs being taken, both those newly laid and the incubated ones. This course of action is most destructive to the eiders.

The birds are shot by the trappers for bait in the traps for the Arctic foxes and the men also shoot ptarmigan for this purpose. But the most serious thing is the constant robbing of the nests.

As for the fox, it is absolutely devastating when it gets in a colony of breeding birds. — The steward at the radio station at Kapp Linné (21) told me in the summer 1950 that there was a colony of about one hundred nests on an island in the big lagoon near the station. There came, however, a period with very low water and a strip of dry land formed to the island. — As soon as this happened, a fox plundered all the nests.

Islands earlier known for their enormous numbers of breeding eiders are now deserted by the birds because foxes have got there. This I have seen at other places, on Sørkappøya (2), and Akseløya (18) at the entrance to Van Mijenfjorden. — On the island Gerdøya (35) in Kongsfjorden (Kings Bay) I found two nests of the Pink-footed Goose on June the 29th 1949, but not a single nest of the eider. As the island was surrounded by land-bound ice, none of the eiders would breed here until the ice had disappeared. Trappers have told me the same thing and the fact is that the eider will not breed on an island where a fox can possibly get at them.

One of the worst enemies of the eiders is the Glaucous Gull. On the long coast-line of Spitsbergen there are places where luckily man does not go and islands the fox can not reach. — In such places the greatest danger for the eiders comes from the two species of big gulls, the Glaucous Gull who is very abundant and the Great Black-backed Gull who has come here more recently. During the eiders' breeding season they live mainly on eggs and ducklings. Therefore we often find the nests of the eiders in the colonies of the terns as the latter drive the big gulls away from their breeding places. — This is however only helpful for the eiders as long as there are eggs in the nests. As soon as the ducklings are hatched they go to sea and here they are taken by the gulls who will swallow them down one after another. Brood after brood is taken and the female eiders are almost helpless against the big rovers. The great number of female eiders without progeny, even at places where man has not plundered beforehand, will show the situation really is bad.

If the stock of eiders is to be saved so that it can again be a factor of economic consequence in Spitsbergen, the protection of the birds must be respected. The big gulls must also, to a certain degree, be exterminated, at least near the large eider-colonies. The shooting and trapping of foxes should be allowed during the summertime on islands where there formerly existed big colonies of eiders.

One can see that these islands had a great quantity of breeding birds. — The nest is often used year after year. It is made by the female who lies down on the ground and turns round and round. In this way a hollow is made. These circular hollows can be fairly deep, often as much as half of their diameter. In several places, including the island Akseløya the old hollows are still to be seen. So dense are they that in many places one cannot step between them, which shows that the old reports are not exaggerated.

Observations.

We visited the island Sørkappøya (2) on July the 25th and 26th 1950. Small flocks of female birds and very big ones of drakes were seen around the island. Not a single occupied nest could be found, but a very

great number of old nesting-hollows were seen everywhere. The eiders must therefore have bred here in great numbers. We saw however a couple of foxes and perhaps it was because of them that the eiders deserted their old nesting-place.

From Sørkappøya we went to a small island Stjernøya (3) a little north of the above place. Here we saw an enormous flock of eiders. How many hundreds there were is impossible to say. On the island itself, however, no nest of the eider was found. But there were a great number of Glaucous Gulls breeding here and among them several Great Black-backed Gulls.

On the island Tokrossøya (4) just south of the SW point of the mainland, called Øyrlandet, hundreds of birds, drakes and ducks, were seen on July the 19th 1950. There were about 200 breeding pairs and in the nests there we found two, three and four eggs, in a few of them five.

The great number of the Glaucous Gulls and some Great Black-backed Gulls which bred here, pursued the eiders in a most determined manner. Empty egg-shells were to be seen, and all over the place we noted repeatedly how the gulls took eggs from the nests. We also observed an eiderduck with three ducklings at sea. A moment later a Glaucous Gull and a Black-backed had taken a duckling each. The gulls snatched the ducklings from the water and swallowed them as they flew away. We shot a Great Black-backed Gull and found a duckling in its ventricle.

A great number of terns were breeding on the island and it was interesting to see a fair number of the eiders had placed their nests among the terns. In the eiders nests here, there were more eggs than in the other nests on the island. Nowhere did we find any traces of nests being disturbed by man.

At Stormbukta (5) where we stayed for a month from July the 12th 1950, there were big flocks of eiders. They kept to the shallow water around the reefs in the bay. About 200 birds, mainly drakes were daily seen here. — On the 16th we observed big flocks of males and females at Olsokneset at the southern point of the bay, also some small flocks at the SW point of the mainland.

As we did not shoot the eiders it was difficult to tell what food they were living on. In other places in Spitsbergen it was easy to determine that they lived mainly on small crabs. Here they did not take many. — On the 17th, however, we visited a small skerry where a number of eiders were usually resting. And we found that their food here consisted mainly of sea-slugs (holoturians). There must be an enormous amount of these animals in the shallow water along the coast here as not only the eiders, but also the King-eiders, the Long-tailed Ducks and the Glaucous Gulls lived to a very great extent on them.

By the middle of July it was obvious that the birds were beginning to moult. From now on we saw more and more birds who could not use their wings. Instead of taking to the wings when we came up to them with our boat, they dived.

On July the 14th we saw small and big flocks at Breineset (6) north of the glacier Bungebreen, and on the 29th a single duck with one duckling on a little lake NW of our hut. As she took the duckling with her and went to sea, we were sure that it could not have been a female King-eider, which would have stayed on the lake.

At Hornsundneset (7) on the south side of the entrance to Hornsund we were ashore on Palffyodden. Here the eiders were numerous and a great many of them had ducklings. Very few drakes were seen here. On this point and also a little farther south, at Suffolkpynten, there were quite a number of low islets. They were mostly rocky, but there were some stretches of sand. From the south they were all of them easily accessible from the sea. These islets could be fine breeding-places for eiders. The currents between them and the mainland are so strong that the ice is swept away early in the year and foxes can not get across during the breeding season. Yet in fact the eiders have small chance here, as the islets have great numbers of Glaucous Gulls nesting on them, as we discovered when we visited them on August the 2nd 1950.

The following day we came to Gåshamna (8) in Hornsund and saw a number of eiders here. — On the northern side of the fjord not far from the entrance is the estuary of a river coming from the lake Revevatnet. Here, also on the lagoon just inside the river-mouth we saw a great number of females with ducklings. — Some hours later (August the 4th) we came to Hyttevika (11) east of the islands Dunøyane. Here there also were a great number of eiders, some of which had ducklings.

On the 5th we went to Dunøyane (12) and on the sea around the islands there were big flocks of females, but only a few drakes were seen. — It was remarkable that only a small number of the ducks had got their ducklings to sea. — On the biggest island, Store Dunøya, there was an enormous number of old nesting-hollows. We also found a number of nests with eggs, mainly with two, three and four eggs. In some of the nests the ducklings were about to hatch. It is almost certain that the first brood had been plundered.

On the other island, Fjørholmen, we found a nest with a single just hatched duckling. The duck sat on the nest until we almost touched her. When we went away a big gull tried to take the duckling and the mother protected it. We now went back to help her and the gull flew away. She then took the young bird and led it down a very steep hill to the shore. Here the duckling tumbled down head over heels but, when it came to rest by a little pond at the foot of the hill, it was none the worse. The duck swam across the pond and the young bird kept close under her tail.

On the far side they scrambled over a wall of gravel and arrived at the sea. Here they met a little flock of female ducks without ducklings. These surrounded the mother duck and helped her to protect the ducklings against the gulls.

Dunøyane could be ideal for a great number of eiders. But as long as the nests are plundered after June the 10th and such a number of the Glaucous Gulls are breeding here, the eiders are too handicapped. Already the ducklings on the islands are so few that the species cannot possibly survive here.

In 1952 we went to Hyttevika on July the 10th, but on our arrival only a few eiders were to be seen. We must, however, have arrived at hatching-time, because two days later ducks with their ducklings became fairly numerous in the bay outside the hut, also along the shores of a big plain, Kvartsittsletta, north of our camp.

On the 19th I wrote in my diary: "The eiders are spending all the day at the place where we have our boat. It is quite interesting to see them swimming with their heads under water to see if there is something to eat on the bottom." — Until the 22nd they were left alone by the gulls who had their nests on the big stones and cliffs in the bay, but from this date on they began to take the ducklings. On the 25th I shot a Glaucous Gull who had a duckling in the ventricle.

Just outside the hut, along the shore stretching north and south from this place, eiders were abundant, but when a big seal was shot near our harbour, more than a hundred Glaucous Gulls came to feed on the meat and the eiders disappeared from the vicinity. On August the 28th when most of the gulls had left the place, the eiders came back. A couple of days earlier the gulls had tried to take a duckling which was about half-grown, but they were driven away by two mother-ducks.

On July the 14th we came to Store Dunøya. Here the eiders were very numerous both along the shore and also on the lakes and ponds of the island. A great number of ducks had already hatched, but just as many were still sitting on their nests. When we came back two days later the situation here and on the island Fjørholmen was the same. In both places we found however a great quantity of empty eggshells. They had been eaten by the Glaucous Gulls.

On the 20th the eiders were still very numerous and in the sounds between the three islands there were a great many ducks with ducklings. We also observed some drakes in summer-plumage. — In 1950 very few ducklings were to be seen. It is therefore obvious that the nests had been plundered. This year (1952) the ice had prevented anybody coming to Dunøyane and so the situation was different from that of 1950.

On July the 26th a few eiders were still sitting on their nests and on the 30th I again found two breeding. One of them had a single egg and the other had three. — On August the 22nd only a few eiders were to be seen at this place.

The island Store Isøya (12a) to the NW of Dunøyane was visited on August the 1st. Here proportionally few ducks were found. Some of them were breeding and had from one to three eggs. The conditions should be excellent for them, but the great number of big gulls breeding here is a menace to the eiders. On the sea around the island only a few ducks with ducklings were seen. Without doubt the gulls had taken a big toll of eggs and young birds, as the ice had hindered any robbing by man this year.

At Kapp Borthen (12b) to the north of Dunøyane we saw a flock of more than a hundred birds on August the 19th, while at Nebbodden and Vardepynten farther north still, there were also great numbers of them.

In 1948 we stayed from August the 18th for some days at Calypsobyen (14) in Bellsund. Along the shore from this place to Recherche-fjorden (15) a great number of eiders with ducklings were seen, especially at Reinholmen in the western part of the fjord. On the 19th we saw large numbers of them at Kapp Lyell (13) to the west of Calypsobyen. In the last mentioned place there lived a trapper Mr. Blomli. He told me he took the eggs of the eiders at two small islets near Kapp Lyell. The average annual collection was about 500 eggs. In summer 1948 he got only 350, but then he only collected once.

At Kapp Martin (17) on the north side of Bellsund we observed on August the 20th 1948 about 250 birds in the bay between the lighthouse and Lågneset. In one of the flocks there were 98 eiders, mainly drakes. They could not fly, but they thrashed the water with their wings in their effort to get away from us. The rest of the birds in the bay were ducks with their ducklings.

In 1949 we stayed here from August the 5th to the 17th. We saw a number of eiders, but by no means as many as the preceding year. On the 12th we went to the islands Reiniusøyane to the east of and not far from Kapp Martin. On the biggest island there is a house, built by Englishmen who had a zinc-mine here. On a little grasspatch near the house some eiders had their nests, but as there were so many big gulls breeding on all the islands, I did not think they would keep their ducklings. In a room in the house we found a duck sitting on her nest in a corner behind some old boxes.

In the last days of July 1948 we went to Måseneset (18) at the southern entrance to Van Mijenfjorden. On the other side of the sound is the islet Mariaholmen which we visited on July 29th. All over the island we found old nestingplaces, but so far as I could determine only fifteen pairs of eiders had bred there this summer. — Between this island and the much larger Akseløya (18) there are three small but very steep islets. On these we found in all five nests with four, three, three, one and one egg. In the first nest the eggs were incubated, but the others were

almost all of them newly laid. Among the eiders there were nests of Glaucous Gulls and these had fairly big chicks. From this place we saw some eiders at the southern point of Akxeløya. — To this island we went on July the 31st. We did not find a single nest of eiders and there was no sign that those birds had nested here. Old nesting-hollows were to be seen everywhere in almost unbelievable numbers. This island was known for its enormous flocks of breeding eiders. Now however the fox had found its way to the place, for during the night we saw two small cubs. There were also some pairs of Arctic Skua on the island, but none of them were breeding. Even the Glaucous Gulls did not nest there. — The presence of foxes on such an island is fatal to almost all the breeding birds. The only species we found in any abundance were the Snow-Bunting and the Black Guillemot.

On the uttermost point of the mountain Midterhuken (18) near the above islands, we observed a number of female eiders with in all 28 ducklings on August the 5th, and later in the day at our camp at Måseneset there were two ducks with five ducklings each. — Farther in the fjord at Frysjaodden near the mountain Wahlenbergfjellet we saw twelve birds on the 6th. Among these there were some half-grown ducklings.

On July the 24th and 25th 1948 we were at Kapp Linné (21) at the entrance to Isfjorden. On both days we saw an almost unbroken stream of eiders flying past the ness. In the forenoon they mostly went out to sea and the flocks were big. In the afternoon they flew in the opposite direction. — The birds passed in flocks up to 30 individuals, mostly drakes and only a few ducks were observed. Once we saw 28 males flying in a perfect V-formation. — It was evident that the greater part of the drakes went west, out to sea. It is possible that they were going out to some place along the coast now before the moulting period began. — In the big lagoon near the lighthouse we saw 80 birds and of these 35 were drakes. — In the great colony of Arctic Terns close to radio station we found two eiders sitting on their nests.

I came back to his place on July the 10th 1950, and as on my earlier visit I found two ducks nesting in the colony of terns, the one with five, the other with two eggs. The reason why there are so few of them breeding among the terns is because of great greenland dog at the radio-station. This dog plundered all the nests it could find and killed all the young birds it could get at. All over the place we found dead chicks of terns and phalaropes both in 1948 and 1950.

In 1948 we stayed for a couple of days at Russekeila not far from Kapp Linné from August the 22nd to the 26th. Along the coast here we saw big flocks of eiders, mainly consisting of ducks and young birds in all stages of development, mostly however from half-grown to almost fully fledged. When I came back to this place on August the 27th 1950, very few eiders were to be seen.

On July the 8th 1952 we went to Tvillingholmane near Boheman-neset (28a) on the north side of Isfjorden. On the biggest islet we found 30 eiders nests. The number of eggs varied from three to five. — On some small islets nearer to the ness itself there were also numbers of ducks, but they did not breed here because the ice had broken up here just a couple of days before. Therefore the foxes could come to the islets and the birds would not breed there.

On a dry spot in the river-bed in Longyeardalen (22) a nest with five eggs was found on July the 22nd 1948. The eggs was just about to be hatched and the duck sat very hard. In this valley there is a great number of Glaucous Gulls who live on the offal from the mining town. How the eider could have kept her eggs for such a long time is remarkable. In almost the same spot I found a nest with five eggs on July the 1st 1950. — At Hotellneset not far from Longyearbyen, we found a duck with five eggs on June the 24th 1949. The next year there were three nests in the same place. One with five eggs was found on July the 1st, one with six and another with seven eggs on the 3rd.

On Coraholmen (28) an islet in Ekmanfjorden (Isfjorden) I saw a nest with three eggs on July the 21st 1948. Only six ducks were seen in this place.

On August the 10th 1948 we went to Gåsøyane (25) some small islands near Gipshuken in Isfjorden. On the sea around the islands there was a great number of eiders, but not a single duck had ducklings. Many nests that had been used this summer were seen, but there were no ducklings. The eggs had been taken, not only those of the first brood, but also of the following ones. — In 1950 we came back here on July the 6th. A number of eiders had nests and many had got their ducklings to sea. We saw a Glaucous Gull capture and swallow a duckling.

From August the 15th to the 25th 1950 we stayed in the house of the trapper Mr. Hilmar Nøis at the mouth of the valley Sassendalen (24). A number of eiders were daily seen near the house and still more at the estuary of the big river Sassenelva. All these birds were in moult.

Along the southern shore of Sassenfjorden there were big flocks of these birds on August the 24th. We found them to be especially numerous at Vindodden and at Elveneset. Very few of the grown birds could fly. The young birds were almost grown, but none of them were fully fledged.

At Sarstangen in Forlandsundet (32) a flock of about 100 drakes was seen on July the 27th 1948. — They day before we had been in Ny-Ålesund (34) in Kongsfjorden (Kings Bay). To the east of the settlement there is a great expanse of level ground with a big colony of terns. Among them the eiders were breeding in a considerable number. We investigated ten nests and in eight of them there were three eggs, in the others only two. — On the island Prins Heinrichøya near Ny-

Ålesund we counted 30 ducks on their nests. The number of eggs in the nests here was one, two and three. It is therefore possible that the birds in both places were sitting on their second brood. Here was a large amount of down in all the nests.

At Brandalpynten to the W of Ny-Ålesund we saw a fairly big number of eiders with ducklings later in the day.

In 1949 there were many nests in the Tern colony of Ny-Ålesund. About June the 26th, at the time when the birds are protected, almost all the eggs were taken by the crew of three destroyers that were visiting the place. — When I found no eggs in the eiders nests, I asked the people in the colliery why this was and they told me about the plundering.

At the head of the fjord there is a group of islands called Lovénøyane (35) and to the biggest of these, Storholmen, we went on June the 28th 1949. A great number of nests were found, but also here the eggs had been taken. There were now only two to three eggs in the nests, but in the majority of them there were none. On this island I saw, for the first time, a Glaucous Gull swallow an eiders egg. It flew away with it, settled some distance off, gulped the egg up again and ate it.

On a little islet, Eskjeret north of Storholmen, we found over a hundred nests. Here nobody had been, for almost all the nests held five eggs. From here we went to Gerdøya a fairly big island a little farther north. As the island was almost completely surrounded by landbound ice, there was not found a single nest. The eiders could not breed here as long as the foxes were able to come across the ice from the mainland.

On a little skerry to the south of the island we found an eider-duck sitting on a nest with one egg. Close beside her there was a nest of the Glaucous Gull in which the chicks just were getting out of the shells.

At Sørgattet (37) between the mainland and Danskøya we saw a great number of small flocks on August the 28th 1948. The greater part of the ducks had three, four and five ducklings. The day before we had seen just the same thing in Danskegattet between the islands Danskøya and Amsterdamøya.

In 1949 we stayed in a hut at Bjørnhamna in Sørgattet for about a week. We visited Moseøya (37) on June the 29th. Moseøya is a big island at the entrance to the sound. Professor Johansen and I tried to count the eiders and found there were about 1000 birds here. The nests had been plundered not long ago and only very few were occupied by the ducks. In these nests there were only a few eggs. In one nest we saw a duckling still wet from the hatching. — Later in the day there came a smack marked T. 58 G. who put six men ashore. They took all the eggs they could find, in all 150. The eggs were confiscated by me and were sent to the governor, Sysselmann Balstad in Longyearbyen, with a report on the matter.

On the shallow sea near Danskeneset (37) on Danskøya we saw large numbers of eiders (ducks and drakes) on July the 1st 1949, and the next day we also found them to be very abundant at Smeerenburg-odden (38) on Amsterdamøya. Later in the day we visited the island Albertøya to the east of Danskøya and not far from the shore of this island. Here nobody had disturbed the birds and we found between 150 and 200 nests. Some of them held only one to two eggs, but the majority had three to five. — On the sea around the island there were enormous flocks of eiders.

On July the 6th we came to the hut of Mr. Kræmer in Sallyhamna in the bay Birgerbukta (40) just South of the islands Norskøyane. Here we saw a duck with four ducklings and there were a number of eiders in the bay. An islet Steggholmen just outside the ness where the hut was built, was covered with eiders. There also was a great number of these birds on the sea around the islet.

Late in the evening we came to Biskayerhuken (42) and close to the hut of Mr. Kristoffersen we found a duck sitting on her nest. Later on we found many nests in the vicinity of the hut. We had met Mr. Kristoffersen some days previously in Bjørnhamna when he travelled south. He then told me that because of the dogs, the foxes did not dare to pass the narrow strip of land connecting the peninsula of Biskayerhuken with the mainland. Neither did we see a fox here the fortnight we stayed in this place.

We also saw numbers of eiders along the shore to Jermaktangen and also south of Biskayerhuken in the big bay of Breibogen (43). Here they were especially abundant in the lagoon by the lake Richardvatnet where we saw a small flock of three females with six ducklings on July the 9th. Some way to the south of this place, on and around the lagoon at Vesle Raudfjorden, we observed hundreds of birds on July the 17th.

At the islands Andøyane in Liefdefjorden (45) there were numbers of them on July the 21st. Later in the day we saw several birds along the shore near the hut we found on the nethermost slopes of the mountain Siktefjellet. At the head of the above fjord at the islands Lernerøyane (46) eiders were numerous, and here a nest with four eggs was found on July the 22nd. — Three days later we went to the biggest of the islands in the group of Andøyane. Here some ducks and ducklings were attacked by a Glaucous Gull which was shot. — In Bockfjorden (47) visited by us on July the 27th, we saw several eiders and on the return journey we also found them at Velkomstpynten (44) on July the 28th 1949.

On the eastern coast of Spitsbergen we came to Agardhbukta (48) in Storfjorden on August the 14th 1948. Here only a few eiders were seen. In Dunérbukta a little farther north, the situation was just similar. — We came to the islands Bastianøyane (51) at the entrance to Hin-

lopenstretet on August the 15th and went to one of the islands, Sivertøya. Here there were hundreds of old nesting-hollows and on the sea we saw big flocks of ducks with ducklings and halfgrown birds.

It was remarkable what a small number of eiders were to be found on the eastern coast compared with the abundance of them on the western coast of Spitsbergen.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm
Jul. 15. 1949	Biskayerhuken	♂	298	92	53	51

11. *Somateria spectabilis* (L.).

Norw. Praktærfugl. Engl. King Eider.

General Notes.

In Spitsbergen the King Eider is not nearly so numerous as the common eider. In 1948 I did not see any at all and in 1949 I saw only a single pair. In 1950 I had more luck because I then visited places where they were more abundant.

So far as I could determine the drakes and the non-breeding ducks passed the summer of 1950 along the coast of Sørkapp Land (6) and also south of this place. They were found by us from the island Sørkappøya (2) to Hornsund (7) during our stay here between July the 12th and August the 12th.

The greatest numbers we saw around Sørkappøya and also at Stormbukta (5) where we had our headquarters. Otherwise we saw mostly small flocks along the coastline mentioned above. In the two main places there were almost always flocks of 50 to 100 birds. I am inclined to believe that there were more than a 1000 birds here, probably many more, but it is of course impossible to give exact numbers.

This part of the coast is probably the gathering-place for many of the drakes from the western coast of Spitsbergen and because of this the bird is found relatively rarely in other places in summer-time. — As mentioned, the flocks nearly always consist of drakes, the ducks were so far as I could determine, only two to four per cent of the total number.

Why do the birds come here in such big numbers? The moult begins in the last half of July and the birds loose their beautiful summer-plumage. At the same time the primaries are dropped so the birds are unable to fly. In this period they of course are in need of food in generous measure, and this, I think, they find on the coast here. A couple of birds we shot were crammed full of Sea-slugs (holoturians). — These animals are very

abundant in the shallow water around the reefs in Stormbukta and also around Sørkappøya. We found that the common eider, the Glaucous Gull, and probably also the Long-tailed Duck, fed on Sea-slugs.

Finding the King Eider in such numbers made me hope to discover their nests. As known it breeds near freshwater-lakes and therefore every spot that seemed likely as a breeding-place was investigated, without any result. We went over almost all the islands and small islets in the lakes of the district, but we did not find a single female King Eider nor a nest of this bird. This fact confirms my opinion that the male birds use this part of the coast as a summer-residence.

This year (1950) I had the luck to find the nesting-place of this bird. In the last half of August there were several ducks with their young ducklings in Sassendalen and in Gipsdalen (25) at the entrance to Sassenfjorden.

These females we always saw on freshwater-lakes, never on the sea along the shore where the common eider was to be found.

Observations.

On July the 25th and 26th, 1950, we visited the island Sørkappøya (2) the southernmost point of Spitsbergen. On the sea, especially on the eastern side of the island, we saw great flocks of the King Eider. On different occasions we also saw them sitting on the beach. As elsewhere in this district, they were mostly male birds in the flocks there, being only a very few females. Here all the males were in full summer-plumage and as all of them flew exceedingly well, it did not seem that the summer-moulting had begun.

On and around Stjernøya (3) a little island, midway between Sørkappøya and the mainland, where we went on July the 26th 1950, we saw an enormous amount of eiders, the greatest number I have seen in such a small space. A great many of them were King Eiders. Here there were few females to be seen. It seemed to me that the King Eiders kept to themselves even when near the common species. — On the sea it is of course very difficult to distinguish between the females of the two species, but I do not think that the female King Eiders mix with the others.

At the SW point of Sørkapp Land (4) we saw a number of King Eiders on July the 16th 1950. Here there is quite a number of small lakes, but no nest was found. — On the return trip to our headquarters in Stormbukta (5) we shot a very beautiful male bird. It had taken a great quantity of sea-slugs and we also found one fairly big prawn-like crustacea. On the 19th we went to Tokrossøya (4). Among the big flocks of the common eiders we saw numerous flocks of King Eiders on all sides of the island.

When we came to Stormbukta (5) on July the 12th 1950, we very soon discovered that there were big flocks of King Eiders close to the place where we had our boat and this was near the hut. — Not far from the beach I counted 15 drakes and that was only a small part of the birds there. On the 14th we saw 39 male birds in full summer-plumage and some young birds in their 1st and 2nd year. — In a bay NW of the hut we counted 54 drakes on the 17th.

On the 19th I wrote in my diary: "The biggest flocks are to be found just outside the boat-place and besides they are to be seen anywhere where the sea is shallow, especially around the reefs all over the bay. Near Olsokneset, the southernmost point where the glacier Olsokbreen comes down into the sea, there are reefs and skerries and here they are very abundant. — Although we have sought everywhere we have not until now found a single nest. — In the flocks there is a great majority of full-grown drakes, some young male birds and very few females. — It is possible that the birds from vast areas are gathering here because of the food."

Near a little islet at Røysneset north of Stormbukta (5), we saw a couple of drakes on July the 14th and here a male bird was shot on the 23rd. We first thought that it was a young bird in its 2nd year, but it proved to be a full-grown drake in moult. — From now on we saw more and more birds in different stages of moulting.

At Suffolkpynten (7) on the southern side of the entrance to Hornsund, we saw a flock of these birds, mainly drakes, who were flying past us on August the 2nd 1950.

On the northern side of Hornsund, just where the coast curves to the north, there is a mountain named Rotjesfjellet. On the level ground on the western side of the mountain there are some ponds and in one of them we found a duck with six ducklings on August the 3rd, 1952. When we came back ten days later, we found the family further southwards on another pond. — When we visited the island Fjørholmen (Dunøyane) on July the 16th the same year, there was a drake on a pond here and also a duck with three young ones, but when we came back to the place on the 20th, they had disappeared.

On August the 5th I saw a duck with five ducklings on a pond near Kapp Martin (17) on the north side of Bellsund in 1949.

In 1948 I did not see a single King Eider, but the men at the radio station at Kapp Linné (21) at the entrance to Isfjorden, showed me three dried heads of a "curious duck" they had shot in the first days of June that year. I told them that they were the heads of male King Eiders.

The southern part of the big peninsula Bohemanneset (28a) in Isfjorden is mountainous and on the plateau here there are several lakes and ponds. On one of these I saw a small number of King Eiders on

July the 4th 1952. There were three pairs and besides three single drakes. Some of the ducks were certainly sitting on their nests, but we had not the luck to find them. At the foot of the hills, on the northern side there were more small lakes and here also we saw some of the birds. In the same place where we saw the nine birds, there was the same number on the 8th, but now there were one pair and seven single ducks here. — On a lake on Erdmannodden we saw one pair on July the 5th 1952.

From August the 15th to the 25th in 1952 we stayed in the house of the trapper Mr. Hilmar Nøis at the mouth of the valley Sassendalen (24). On the big bogs along the river Sassnelva there are a number of smaller and bigger lakes. On the 15th we saw five female eiders on the biggest of these lakes and these birds did not seem to belong to the common species. They had from one to five ducklings each. — We found they were indeed King Eiders. On a little pond farther east, there were two ducks with small ducklings, one with two, the other with five young ones. We got the mother of the two ducklings and these immediately attached themselves to the other duck. The bird we had got proved to be a female King Eider.

On a little lake on the northern side of the valley Gipsdalen (25) close to the river-mouth, we saw on August the 17th 1950, five ducks with in all fifteen ducklings. On the bay just outside we observed several flocks of the common eider. Among these birds we saw a flock of King Eider-drakes. As they did not have a single trace of the summer-plumage left, it was very difficult to identify them. You had to get so close up to them that the bill could be seen.

During the whole time we stayed in Sassendalen the King Eiders (♀ & juv.) were to be seen on the lakes in the valley. On July the 19th we came to a little pond behind a moraine-ridge. Earlier we had not seen any birds here, but now we found a single female. She had no ducklings with her.

We had thus found a breeding-place of the King Eiders in Sassendalen. Here the birds are fairly well protected. There are not many Glaucous Gulls for they keep mainly to the shore. And as the ducks certainly will breed somewhere in the bogs, the fox cannot easily get at them. It is to be supposed that the nests are placed on tufts of grass or moss in the foulest of the quagmires.

The physician in Ny-Ålesund (34) Dr. Sager, told me that on June the 20th 1949, he found a nest of the King Eider on an island in the Lovén-group (35). — At Danskeneset (37) in Sørgattet, between Danskøya and the mainland, we saw a pair (♂ & ♀) of King Eiders on July the 2nd 1949.

In the spring of 1951, Mr. Odd Lønø who had wintered on the island Edgeøya saw three or four male birds at Zieglerøya (53) in Tjuvfjorden.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm
Jul. 16. 1950	Stormbukta, Sørkapp Land	♂	275	82	33	48
Aug. 16. 1950	Sassendalen, Isfjorden	♀	262	83	34	44

12. *Fulmarus glacialis glacialis* (L.).

Norw. Havhest. Engl. Fulmar Petrel.

General Notes.

The Fulmar Petrel is to be found all along the western coast of Spitsbergen from Sørkappøya (2) in the south to Amsterdamøya (38) in the north. On the north coast I have seen it as far as I have been, viz. Liefdefjorden (45). Along the eastern shore of Vestspitsbergen it also is abundant. I should think that this bird is to be found everywhere on the group of islands called Svalbard.

You meet with the bird far out to sea, along the shores and also far into the fjords. — In some places it makes very long overland flights, as in the valley Sassendalen (24). It is said to breed in Fulmardalen, about midway between Sassenfjorden and Agardhbukta (48) on the eastern coast. The airline from one of these places to the other will be about 60 km.

The breeding-places are situated on the steepest and most inaccessible mountains. A typical example is the mountain Tempelfjellet in Sassenfjorden (24) where the bird breeds on the perpendicular mountain-sides. You can see them sitting on the ledges, row upon row, one over another.

As the breeding period is very long (about 57 days) and as the young bird stays for a period of equal length in the nest, it is from two and a half to three months before it leaves its mountain breeding-place. This bird and the puffin are the latest of Spitsbergen-birds to get their young ones to the sea. On September the 9th 1949 neither of those species had got their chicks to leave the nests.

It is well known that the Fulmar Petrel is met with in two colour-phases of which one is light and the other dark. The first is common in southern waters while the other occurs mainly in the north. — In the extreme light phase the colour of the fulmar is very like that of the common gull (*Larus canus*), but such individuals are very rarely seen at Spitsbergen. The majority of the birds there have the head, the neck and the underside more or less light grey-coloured, with a darker grey on tail, wings and the upperside. — Once I saw a completely white individual, but could not come near enough to determine if the eyes were red or dark.

Until the autumn of 1952 I had found the birds on the east side of Spitsbergen to be throughout much darker than those on the western shores. Here you can see birds with dark slate-blue upperside, wings and tail.

Until August 1952 I had not seen the light phase on the east coast, but now I met with some petrels here of very light colour.

Observations.

Near Sørkappøya (2) the southernmost point of Spitsbergen, we saw numbers of the Fulmar Petrel on July the 25th 1950. When we stayed at Stormbukta (5) from July the 12th to August the 12th in the same year, we daily saw numbers of them flying between the sea and the mountain Hilmarfjellet. Also there almost always was a great number of them sitting on the sea, especially just outside the glacier Vitkovskibreen. I therefore did suspect that they might be breeding somewhere in the vicinity and at last found a big colony with nests on the steep northern side of Hilmarfjellet. We found the colony on July the 30th, when we noted a great number of the Glaucous Gulls breeding there.

On August the 4th, 1950, we went across Hornsund from Gåshamna (8) to the northern shore and saw an enormous quantity of fulmars. On the far side of the fjord we came to a fantastic bird-rock, Sofiakammen (9) which is situated just west of the glacier Paierlbreen in Burgerbukta. Here thousands and thousands of fulmars were breeding. — On August the 8th, 1952, I came back to this place and found just the same enormous quantity of fulmars as two years earlier.

In 1952 we stayed at Hyttevika due east of Dunøyane (12) from July the 10th until August the 30th. Almost every day the petrels were flying past the hut. When the wind came from the north, they went north. Most of them went along the shore, some along the mountain-side behind it, but also quite a number over the sound between the islands and the hut. On August the 5th the wind came from the south and the birds were going against it. The hut was about 30 m away from the beach and over that space about 300 birds would pass pr. hour. On days with no wind we did not see them, but this did not happen very often.

These petrels belong, I suppose, to a colony near Kapp Borthen. On a mountain there is a place called "Havhestflåget" i. e. the Petrels' rock wall.

When I visited the trapper Mr. Blomli at Calypsobyen (14) in Bellsund on August the 17th, 1948, he told me that there was a colony of petrels on a steep mountain Rubypynten at the uttermost point of the mountain Observatoriefjellet in Recherchefjorden (15). — In 1950 we went there on M/C "Minna" and visited the geologist Mr. Winsnes on

August the 13th. He told us that the petrels were breeding in great numbers on the NE side of Observatoriefjellet.

On the north side of Bellsund, at Kapp Martin (17) where we stayed for some days in the 1st half of August 1949, the petrels came sailing along the steep bluff by the shore. They were numerous here day and night. — We saw a similar thing at Kapp Linné (21) at the entrance to Isfjorden on July the 22nd 1948. They came gliding on immovable extended wings along the precipice bordering the shore on the north side of the ness. They here glided on the wind coming from the sea. In the same year we went to the islands Gåsøyane (25) at Gipshuken in Isfjorden on August the 10th. On the north side of the islands there is a strong tidal current and just here a big flock of petrels was always to be found. Among these birds we once saw a snow-white petrel. It might have been an albino, but we were not near enough to it to tell if the eyes were dark or red.

On September the 4th 1948 we went to Skansbukta (27) in Isfjorden. The mountains here are, as in the most places around Isfjorden built up of sedimentary rocks and the strata are more or less horizontal. As the different bands of rock vary in hardness, disintegration of the softer layers has formed long horizontal shelves and ledges on the mountain-sides. Here the petrels had their nests from about 300 m above sea-level, one row of them above the other was to be seen almost to the top of the mountain at about 600 metres. — The young birds had not left their nests. — I came back on July the 10th, 1950, and found the petrels still breeding here.

In the valley Sassendalen (24) we lived in the house of the trapper Mr. Hilmar Nøis from August the 15th to the 25th, 1950. On Sassenfjorden there were always big flocks of petrels. They bred on the mountain Tempelfjellet and on other steep mountain tops around the fjord. At the entrance of Tempelfjorden and NE of the house where we lived, there is a mountain 330 metres high. On the perpendicular walls against the fjord a great number of petrels nested. — On August the 20th we went to the top of the mountain. Here we stood on the edge of the precipice and saw the birds sitting on their nests on the horizontal ledges. In some of the nests where there were no adult birds, the great blue-grey young ones were, with some difficulty discerned as their colour corresponded almost exactly with the colour of the rock on which they were resting.

During the whole of our stay here we saw a continuous stream of petrels in the air, going out of the valley and coming back again. There was not an hour, day or night that we did not see them. Smaller and bigger flocks went inland as far as we could follow them with our glasses and others were flying out towards the fjord. Possibly they were going to the valley Fulmardalen, midway between Sassenfjorden and the bay Agardhbukta on the eastern coast. — This valley is named after the ful-

mars, but I have got no exact information about the breeding of the birds there. — The geologist Mr. Winsnes who had worked in Sassendalen, thinks that they are flying to and from the two fjords and that they are not breeding in Fulmardalen. The airline between the two places is about 60 km. This should be no hindrance, for the birds are used to flying far. — Personally I don't think that they are going farther than Fulmardalen. If the birds from Agardhbukta flew across to Sassenfjorden, we should have seen some dark individuals there, but this was not the case. In Agardhbukta I saw the darkest petrels I have ever seen.

Every time I have been at Ny-Ålesund (34) in Kongsfjorden (Kings Bay) there have been numbers of petrels close to the quay. Here they come close to the ship's side to get scraps that are thrown overboard, though in hard competition with the Glaucous Gulls. — This is one of the few places (except the breeding-places) where I have seen them sitting on the water so close to the land.

In the summer of 1949, during the first days of July, we saw the birds in Sørgattet (37) between the island Danskøya and the mainland. We also observed them at Amsterdamøya (38), in Raudfjorden and at Biskayerhuken (42). On the mountain Mt. Blanc at Jermaktangen, not far from Biskayerhuken, we found a big colony of breeding birds on July the 10th 1949. As we arrived in a dense fog, Professor Johansen and I could not tell what bird was calling on the mountain-side. The cry reminded us of that of the guillemot, but it was not exactly the same. All at once the mist lifted for a moment, and we saw that the Fulmar Petrels were breeding here. They seemed to be distributed over big areas on the sides of the mountain, but how big the colony was, we could not tell because the fog hid them.

A fortnight later, on the 24th we were at the head of Liefdefjorden close to the glacier Monacobreen (46). Just under the glacier we saw great numbers of petrels.

On the eastern coast of Spitsbergen we visited Agardhbukta (48) on August the 14th 1948. Here I saw a large number of these birds. The majority of them seemed to be much more dark than the petrels on the west coast. One bird or perhaps more, was strikingly dark with dark slate-blue head, wings, tail and rump, also the underside was much darker than in other petrels seen by us. — Along the eastern coast of the island Barentsøya (49) and also in Freemansundet (52) where we passed on August the 16th, almost the only birds seen, were Fulmar Petrels.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm	Weight grams
Aug. 8. 1949.	Kapp Martin, Bellsund	♂	331	123.5	37	53	
Jul. 17. 1952.	Hyttevika, N of Hornsund	♂	295	132	40	54	800

13. *Colymbus stellatus* Pontoppidan.

Norw. Smålom. Engl. Red-throated Diver.

General Notes.

When the conditions are favourable, this bird can be found everywhere along the western coast of Spitsbergen, from Sørkappøya (2) in the south to Amsterdamøya (38) in the north. It also breeds in the fjords, but I do not know how far it goes into the valleys. Along the northern shores it is likewise common. I have found it breeding in Liefdefjorden (45) and Bockfjorden (47). — On the east side of Spitsbergen I have only seen a single individual on the island Barentsøya (49).

Between the mountains and the seashore there are in many places wide stretches of more or less level ground. Similar open stretches are to be met with on both sides of the fjords. On these plains there are smaller and bigger ponds and lakes, some without any influx or outflux and others with streams and rivers flowing through. — On the greater part of the low and level islands along the coast there are likewise ponds and small lakes.

The Red-throated Diver breeds in this type of country, often making its nest on the beach. — There usually are no fish where the divers nest, but this does not matter as they get their food from the sea.

If the nest is placed on an island it is often only a small depression in the turf and so close to the waters edge that the bird can dive from the nest. — When however, it is placed near the beach, in shallow water, it is generally built up of clumps of turf and peat or of mud taken from the bottom of the lake. The nest then becomes a cut off cone and is often of a considerable height.

According to my observations these divers tend to begin breeding rather late. I have found newly laid or only slightly incubated eggs in the last third of July and once as late as August the 10th. A young bird only a few days old was seen on August the 11th, but they breed earlier for I have seen almost fully fledged young birds on August the 5th, but that was only in a single instance.

In some places they can be fairly numerous and on a single lake there may be from two up to six pairs. It is however strange that even if one can find several divers and quite a number of newly constructed nests, the eggs are rarely found. This may be because they are eagerly sought for by Arctic foxes, the Arctic Skuas and the Glaucous Gulls.

If a person is approaching a breeding bird that has not been disturbed in this way before, it will in most cases crouch on the nest, going down as flat as possible and stretching out its head and neck. When it knows it has been seen, it dives from the nest. When the nest is visited on later occasions the bird almost always dives at once.

Observations.

On July the 25th 1950 we visited the island Sørkappøya (2) and here we saw about 20 pairs of divers. We also found a great number of nests, but only one of them was inhabited. When we came up to the nest the bird crouched on her single egg. Close by there was another pair of divers who swam away. When we reached the place where we had first observed them, there were three newly built nests which seemed all to belong to this pair. None contained eggs, but tracks of foxes went up to all of them. — Without doubt the fox had taken most, not to say almost all the eggs of the divers on the island, but as there were several skuas here, they also must be taken into account, as they take the divers' eggs whenever they have an opportunity.

On July the 19th we went to the island Tokrossøya (4) near the point Øyrlandet, the SW point of the mainland of Spitsbergen. On the island there were two small ponds and in one of them a single diver, but no nest was found. — We came to Øyrlandet itself for the first time on the 16th. Between this point and the glacier Olsokbreen there is a big plain full of small lakes and ponds. In the southernmost part of it we counted 24 divers, but we could not find a single nest with eggs.

It is of course possible that the birds had not begun to lay yet, but as the island close by was full of Glaucous Gulls, these may have taken the eggs. There is also a third possibility, namely that the divers were non-breeding birds.

Near our hut at Stormbukta (5) there are plains called Bjørnbeinflyane and here also there are several ponds. On July the 30th we found a single diver on one and a pair on another, but no nest was found. — Farther north there are very big plains, Breinesflyane, reaching from the glacier Bungebreen up to the mountain Lidfjellet a little south of Hornsund. Here there are numbers of lakes and ponds. On July the 14th we found a pair of divers on almost every pond and on all the lakes. At Breineset (6) a small river falls out and a couple of hundred metres from the river-mouth there is a lake. This is fairly long with several little islands in it. Here we found six divers and shot one of them. The bird was a female and the eggs in the ovarium were small. The biggest measured 14 mm across. — This place was revisited on the 23rd when we went over all the islands. In all we found seven nests, but none with eggs. It is, of course, possible that the divers had not begun to lay, but as there were several skuas on the plains and a great number of Glaucous Gulls at the river-mouth, these birds may have taken the eggs.

Far out on the plain we found a small pond about 20 metres long and not quite as broad. Here a pair of divers had their nest at the water's edge, but no eggs. We came so suddenly upon them that they had not time to take off without coming close to us, for the wind blew from us

towards them. Therefore they dived in the deep water and came up at the far end. One of them flew up and passed us very close, but we met the other each time it tried to fly by and it had to alight on the pond. This was quite a performance as it had to dive from the air. This trick the bird repeated several times until it took courage and passed us so close that we almost caught it.

Later in the day we saw divers on every lake on the plains. — At Hornsundneset (7) at the entrance to Hornsund we saw two pairs of divers on August the 2nd 1950.

We visited the islands Dunøyane (12) north of Hornsund on August the 5th. On the biggest island, Store Dunøya, there are several ponds. Here we found in all twelve divers and saw at least six young birds. They differed much in size. The biggest was almost as large as the grown birds and the smallest about half-grown. All of them were more or less downy, except the big one, which as far as I could see, was almost fully fledged.

I came back to this place on July the 14th, 1952. On the biggest lake on Store Dunøya there were two pairs of divers with two chicks each. Two days later we found a pair with two small newly hatched young ones. On all the lakes and ponds on this island there were divers. From here we went to Fjørholmen, the easternmost of the three big islands. In a little lagoon on its southern shore there was a pair of divers, but without a nest or young ones. On the single big pond there was, however, another pair with a nest with one egg in it. When we came back here on the 20th, the nest was empty and the rotten egg was floating beside it. — On the third island Nordre Dunøya we found a nest with two eggs. — On the 30th one egg here was hatched and the other was left in the nest. — Each time we came to the islands we saw numbers of divers. On August the 19th we saw ten birds in the air when we passed between the islands on our way to Kapp Borthen farther north. On the 20th there were at least twelve divers in a lake on Store Dunøya. At Kapp Borthen (12b) we found a pair on a lake not far from the hut. At Vårdepynten still farther north there were several lakes and ponds. On one of them I saw two divers. One of them was sitting on the water crying and the other sat on the nest on a piece of turf not more than 10 metres from the shore of the lake. It did not cover with the neck stretched low, but held it in an upright position. It looked at us, now and then uttering a complaining note. I waded out in the lake and when I was five metres from the bird, it left the nest and swam away with a newly hatched chick. When we came away it immediately returned to the nest. This shows quite clearly what I have often observed in Spitsbergen, that there is a great difference in breeding time among the divers.

We came to Kapp Lyell (13) in Bellsund on August the 19th, 1948. Here there were two pairs of divers. Several nests were found but no

eggs. A single young bird was seen. — The next day we arrived at Kapp Martin on the north side of the fjord. Here we found eleven divers on a lake "Store Hustjørna" not far from the lighthouse. One bird was sitting on her nest and I waded out to see if she had one or two eggs. I was very astonished to find that the "egg" the bird had been sitting on, was a big round stone. I should think that a trapper had taken the eggs and put a stone in their place. — The next year I came back to Kapp Martin on August the 5th. Now there were several divers on the lake. We saw six birds and all of them took wing. A moment later there were eleven divers in the air above us. — On August the 6th I sat in a hide on a little islet in the above lake. Between this islet and the shore there is a narrow sound. Now five divers came swimming towards this sound. A pair of them gave an interesting display with half of the body at an angle of 45° out of the water. Afterwards all of them came through the narrow passage close beside me. — Just outside the islet there is shallow water where some big pieces of peat have gone aground. Here there were two or three nests but no eggs. Now a pair of divers came swimming up to one of the nests. With the point of its bill the first bird touched the nest just where it came out of the water. The diver lay crying in this position for a long time. The second diver now came to it, when the crying bird took some nesting material in its bill and reached with it towards the other. No copulation took place.

On a little lake farther east, at Sletteneset, I found a pair of divers with a small young bird on August the 11th. It did not seem to be more than a couple of days old. As the water was quite shallow I waded out after it. It dived very well indeed, but when we came to a little creek it tried to swim past me under the water and it shone like silver because of the air on the dry downy plumage. I caught it and although it was quite small, it attacked me vigorously, when put on the water it dived immediately and came up again some way off. After a while it began to cry and the adult birds came to it. — On August the 14th I saw a pair of divers on Lågnesputtane, north of the lighthouse at Kapp Martin.

On the island Mariaholmen (18) at the entrance to Van Mijenfjorden we saw two divers in a little bay on July the 29th, 1948. The much bigger island Akseløya, north of Mariaholmen was visited two days later. On the eastern side of the island there are some ponds not far from the seashore, and here we found three pairs of divers. One pair had a nest and from far away we could see one bird on the pond and the other sitting on the nest. When we came nearer, the bird on the nest dived and the other took wing. Immediately there came a pair of Arctic Skuas and alighted on the nest. One of them took the single egg and both of them flew away. They settled on a bog about 200 metres away and ate the egg together. In the meantime one of the divers flew around in the air above the pond and when the skuas came to the nest for a second

time, it made a dash for them with closed wings and at tremendous speed, when the skuas beat a hurried retreat. — In the shallow water along the shoreline of another pond, we found quite a number of nests, old ones and new, but none with eggs. Some of these nests were much higher than those at other places in Spitsbergen.

At Kapp Linné (21) at the entrance to Isfjorden, divers can be seen flying about at any time of the day, also at the big lake Linnévatnet near by, but here there are fish. When we stayed here for a couple of days about July the 27th, 1950, we often saw them in the air, but we never saw a bird on the lake. — At Hotellneset near Longyearbyen (22) we saw two divers on July the 1st, 1950.

On the north side of Isfjorden there is a big peninsula, Bohemanneset (28a). The southern part of it is mountainous with a big plateau. On the northern side of this and at the foot of the hills there are several ponds. On July the 4th, 1952, the snow still covered the hillsides in many places on the northern slopes, and in some places underneath it the snow and the ice went far out into the ponds. — In one of these ponds there were several small islets and on one of these a diver was sitting on her nest. It sat very hard and did not dive until we threw a snow-ball at it. When it came up from its dive it flew away, but after a while it came back and now it had its mate with it. The pair alighted on the pond, but neither of them would go to the nest as long as we were there. — On a lake on the plateau itself we observed another pair of divers.

We had our camp on a peninsula between Bohemanneset and Erdmannodden. The peninsula was a fairly big ground-moraine with hills of clay and with numerous small and big ponds between the hills. On one of these ponds we found a pair of divers on the 7th, but no nest was seen.

In 1948 we visited Coraholmen (28) in Ekmanfjorden on July the 21st. On a little pond a diver was cowering on its nest. There were two eggs that had been incubated for a long time. On the north side of the island where there is a big ground-moraine there are a great number of ponds. On some of these we saw divers. — On the islands Gåsøyane (25) near Gipshuken in Isfjorden we found a nest with two eggs on August the 10th 1948. The eggs were but slightly incubated.

In the summer of 1950 we stayed in the valley Sassendalen from August the 15th to the 25th. Along the river here there are very big bogs with numerous small lakes and ponds. On one of these we saw seven divers on the 16th. Probably some of them were young birds, but the distance from us to them was so great that it was impossible to see. — The next day we found a pair of divers on a big pond near the river-mouth in Gipsdalen (25).

At Ny-Ålesund (34) in Kongsfjorden we saw a pair of divers on a pond close to the quai on July the 26th 1948. In 1949 I saw a pair on the same pond on August the 1st.

On Smeerenburgodden (38) on the island Amsterdamøya we saw three pairs on July the 2nd. 1949. — On the lagoon on Jermaktangen, W of Biskayerhuken (42), there was a pair on the 10th, but no nest was found. — In the lagoons in Breibogen south of Biskayerhuken, we had seen divers on July the 8th and the 9th, but only single birds. On the 10th I found the nest on a little skerry in a pond, but there were no eggs. Both the birds were now in the pond.

On July the 21st a nest with two eggs was found at Worsleyneset in Liefdefjorden (45). These eggs were of a dark olive-green colour and were very long. Later in the day we came to the islands Andøyane. On one of these islands there was a nest with two eggs. On another island in this group we found a nest with two slightly incubated eggs on the 25th. In each case both birds were present.

At Kapp Kjeldsen (47) between Bockfjorden and Woodfjorden there is a big lagoon and here we found a nest with two eggs on July the 27th. Here the water's edge was covered with a carpet of emerald-green moss and the nest was built of this material. Both birds were seen here.

The next day we came back to Worsleyneset but now the divers had disappeared and the nest was empty. Egg-shells were found near by so the nest had been plundered.

On Arneliusneset (40) at Svenskegattet (the sound between Norskøyane (44) and the mainland) I saw two divers on a pond on July the 28th. No nest was found.

On the eastern coast of Spitsbergen I saw a single diver flying over a plain on the northern part of Barentsøya (49) on August the 14th 1948. That was the only diver observed here.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm	Weight grams
Aug. 10. 1949	Kapp Martin, Bellsund	♂	295	51	52	70	-
Aug. 10. 1949	Kapp Martin, Bellsund	♀	281	50	54	69	-
Jul. 14. 1950	Stormbukta, Sørkapp Land	♀	288	49	53	71	-
Jul. 16. 1950	Øylandet, Sørkapp Land	♀	297	53	48	68	-
Aug. 1. 1952	Dunøyane, Hornsund	♀	269	48	51	68	1400

14. *Numenius phaeopus phaeopus* (L.).

Norw. Småspove. Engl. Whimbrel.

At Kapp Martin (17) in Bellsund Professor Johansen saw a Whimbrel on August the 15th 1949. Because he thought it to be a new species for Spitsbergen, he tried to get it, but he was not successful. The bird has, however, been found on different occasions on the islands.

15. *Phalaropus fulicarius* (L.).

Norw. Polarsvømmesneppe. Engl. Grey Phalarope.

I have found no difference in birds from North-America and Greenland and those from Spitsbergen.

The Grey Phalarope can be found in several places along the western coast of Spitsbergen. It also goes far into the fjords. — Along the northern coast I found it as far east as I went i. e. Liefdefjorden (45).

Sometimes single pairs will breed in suitable places, but when several pairs breed together it is usually in an Arctic tern colony. I have found up to 50 birds in the small space of a tern colony. — The places where I have found it breeding are the following: Kapp Linné (21) and Hotellneset (22) in Isfjorden. On Brandalpynten near Ny-Ålesund (35) in Kongsfjorden (Kings Bay). In these three places there are big colonies. — Beyond that I have found them breeding on Sørkapp Land (6) on the islet Mariaholmen (18) at the entrance to Van Mijenfjorden and at Sallyhamna in Birgerbukta (40) just south of Norskøyane. In other places where I have observed it, both single and in pairs, I have found no nests nor young birds.

The young birds are hatched from about July the 1st and in about 16 to 20 days they can use their wings. A few belated clutches, and then with strongly incubated eggs, may be found until the last days of July. This is the time when most of the phalaropes will disappear from Spitsbergen. After August the 1st only single and far distributed individuals are to be seen.

The nests are usually found near small fresh-water ponds, sometimes in the border of grass close to the water's edge, but just as often on dry grassy ground at a distance of 20 to 40 metres from the water. — As a rule one finds them in places where the grass from last year has grown most thickly. — The nest itself is very often only a depression in the growth of vegetation and without any trace of nesting material. Most of the nests are, however, lined with grass and lie very deep and well hidden in the sparse growth of old dry grass. Twice I have found them lined with small flattish stones about as big as the nail of a thumb.

The young birds can swim as soon as they are dry after the hatching and the male takes great care of them. In the summer of 1950 I saw what I at first thought to be a display before copulation, but it turned out to be something quite different. Sometimes a female bird would fly up to a male. He then ran or half flew towards her and beat her with his wings until she retreated. On each occasion the male bird had very small chicks. When I became aware of this fact, I could see quite clearly that the male would not suffer the female to come near the young ones.

It is well known that the female is the aggressive one in all matters regarding the connection of the sexes. She therefore is very keen on

driving away other females coming near her chosen male. I have seen the male help her drive such intruders away.

As these beautiful small birds are not at all shy one can get very close to them and observe them without difficulty.

Observations.

We visited the island Sørkappøya (2) on July the 25th and 26th 1950 and here we observed a male phalarope on a long and narrow lake near the hut. No nest was found and no young birds were seen and the bird was the only one of this species we saw on the island.

Near the SW point of Sørkapp Land (4), Øyrlandet, we saw a few individuals on July the 6th on the great number of lakes here. On a little pond at the southernmost point of Øyrlandet we found four female birds. One of them was shot and this bird had a fully developed egg in the oviduct. From this place and up to our boat, an hours walk, we saw only three or four phalaropes. — It was strange how few of this species we found on all Sørkapp Land and up to Hornsund. There must be a relation between this and the fact that there are no big colonies of the Arctic Tern along the coast here. — That the birds did not breed on Sørkappøya (2), was not remarkable because the foxes had found their way to this island.

Close to our hut in Stormbukta (5) we saw a phalarope on a little pond on July the 15th and on the 14th we shot a male at Breineset (6) north of the glacier Bungebreen. This bird had large incubation-patches.

When I came for the first time to the islands Dunøyane (12) in the first days of August 1950, there was of course not a single phalarope to be seen. It was already too late in the summer and the birds had gone on their migration southwards. — In 1952 however I arrived on July the 14th hoping to study the birds there as the islands are known as a very good breeding-place of the Grey Phalarope.

On the above date I saw about 20 phalaropes, the greatest part of them females. Not a single male with eggs or young ones was to be found. All these birds were seen on the ponds on Store Dunøya. Two days later no birds were found here, but along the shores of the island there was quite a number of them, mostly females. — From this date and up to the 20th, we found single birds here and there on all three islands. On this date, however, there were many of them and now mostly males. As the migration starts about this time, I suppose that these males were "new" birds coming from the north and were bound southwards.

On July the 29th 1948 we came to the island Mariaholmen (18) at the southern entrance to Van Mijenfjorden. Here I found the nest of a phalarope with four strongly incubated eggs. It was placed near the dry

bed of a small brook which led to a likewise dry pool. The nest was placed in a patch of grass that was so high that it almost hid the bird.

The next day we saw seven phalaropes at the southern point of Akseløya (18), the big island that goes across almost the entire mouth of Van Mijenfjorden. Of these birds four were in the normal summer plumage, but three of them were of a very light colour. — On August the 20th such a bird in the intermediate plumage between summer and winter was seen at Kapp Martin (17) in Bellsund. — I came back here in 1949 and I saw two birds in the same intermediate plumage, one on August the 5th and the other on the 8th. Two young birds were seen on August the 16th.

On July the 24th, 1948, we saw 24 adult birds on a great pond close to the lighthouse at Kapp Linné at the entrance to Isfjorden. We also found several big downy chicks. — The birds here are breeding in a big colony of Arctic Terns.

Quite a number of empty nests were found close to the water's edge at some small ponds near by. The greater part of them were placed deep down in the grass. Some of them had no nesting material at all, but some were lined with dry grass. A rotten egg was found in one of them. — We also found a great number of dead young birds. They had been killed by a big Greenland dog belonging to the radio-station. This dog would kill all the young birds it found and it also destroyed the eggs in the nests. It did, however, neither eat the young birds nor the eggs. — The next day there were only four or five phalaropes to be seen. These birds probably had chicks and the rest had presumably disappeared during the night on the migration southwards.

In 1950 I came back here on July the 10th. On the pond by the lighthouse and around it I counted at least 50 phalaropes, both males and females. We also found a number of chicks, the oldest of them about five days old. By the small ponds to the west of the lighthouse we also saw a number of the birds. They were continuously flying to and fro between the large pond and this place.

The ground around these small ponds seemed to be a favourite breeding place for the phalaropes, and here I found eight nests with eggs. In one of them there were three eggs and in the rest four. Besides these there were several empty nests. Some birds had probably left after the eggs had been hatched and some seemed to be newly constructed, but still without eggs. — A few nests were only a slight depression in the vegetation, but the major part of them were very deep and well hidden in the grass. A part of them were finely lined with dry grass. In one nest with four eggs and in one empty one, the lining consisted of small, flat, grey stones of a size not bigger than the nail of a thumb. Only a few nests were found at the water's edge, the rest at a distance of up to 20

metres from the ponds. All of them were built in the tallest grass of the place.

On Hotellneset near Longyearbyen (22) we saw about fourteen to fifteen pairs of phalaropes on June the 24th, 1949. The next day we also saw numbers of them there. — In 1950 I came back to the place on July the 1st. There were now fifteen pairs here. The following day we found one male with a single chick that was newly hatched and a little later another male with two of the same age. On July the 2nd we shot a female with a fully developed egg in her oviduct.

On a bog here we observed two phalaropes, one male and a female. We saw no chicks but the male bird certainly had them hidden somewhere near by, because when the female came up to him she was driven away. — On several occasions earlier we had seen how males with small chicks had driven the females away from them.

At Bohemanneset (28a) on the north side of Isfjorden we saw ten phalaropes on July the 4th 1952. They were mostly females and they were flying to and fro over a small lake. Possibly some males were breeding here, as both chicks and eggs were found at Hotellneset some days earlier. On the big bogs here we saw between 15 and 20 birds, mostly females, but also in pairs. Old and new nests were abundant, but we found none with eggs in them.

We also saw some of the females courting the males, and in one instance copulation took place, on dry land, not on the water. — There were also two pairs of phalaropes along the seashore and these birds were so tame that we could go close up to them. — Four days later we found another pair on a little pond. It seems that the birds here had begun to breed much later than those near Longyearbyen. But the reason may be that the snow had melted much later on the northern slopes of the mountainous part of Bohemanneset. In some places the snow covered parts of the bog at the foot of the hills.

On July the 21st, 1948, we visited the islet Coraholmen (28) in Ekmanfjorden. Here we saw several phalaropes. Mr. Per Høst who came to the island on July the 4th, 1950, also saw a number of them.

At the islands Gåsøyane (25) near Gipshuken in Isfjorden we saw a pair (♂ & ♀) on July the 6th, 1950, and later in the year when we stayed at the head of Sassenfjorden (24) we found a young bird in a lagoon between Gipshuken and the mouth of the river, in the valley Gipsdalen on August the 17th.

At Ny-Ålesund (34) in Kongsfjorden (Kings Bay) we saw several phalaropes on July the 26th, 1948. They were found by a great pond close to the quay. One of the male birds had one small chick. — Later in the day we came to Brandalpynten not far from the mining town. Here there was a big colony of Arctic Terns and among them we found

a great number of phalaropes, but only one nest with four strongly incubated eggs was discovered. It was hidden very deep down in a tussock and was abundantly lined with dry grass. Near this nest there was a male bird with four newly hatched chicks. — In 1949 we saw only two birds at the pond in Ny-Ålesund on July the 26th, and later in the day twelve birds at Brandalpynten. — When we came back to the last mentioned place on August the 3rd, we saw only one bird here in the intermediate plumage between summer and winter.

On July the 2nd, 1949, we came to the island Albertøya near Amsterdamøya (38). When we landed and were about to leave our boat, a pair of phalaropes (♂ & ♀) came towards us and alighted on the water close to the boat. Immediately afterwards another female came up to them and began to make advances to the male bird. It was repeatedly attacked by the first female and driven away, but it always came back. Time and again the male helped his female to drive it away though not with her energy. After a while a third female arrived, but now the original pair took wing and the two other females flew after them.

At the hut of Mr. Kræmer at Sallyhamna in Birgerbukta (40) just south of Norskøyane, we found at least six pairs of phalaropes on July the 6th, 1949. A nest with four slightly incubated eggs was found. This nest was built in a somewhat macabre place as it almost touched the board of an old uncovered coffin where the bones of the person buried were to be seen.

On July the 8th, 1949, we came to the lagoon outside the lake Richardvatnet in Breibogen (43), south of Biskayerhukken (42). Here we saw three phalaropes on the sea close to the shore. The following day I observed a pair (♂ & ♀) here. As almost all the ground was covered with snow, it was difficult for the waders to find nesting-places.

On one of the islands in the group of Andøyane in Liefdefjorden (45) I saw a phalarope on July the 21st. Neither a nest nor traces of earlier breeding was to be found. On the 25th there were three birds here and now the island was thoroughly searched, however with no success, no nest being found.

The islands Lernerøyane (46) at the head of the fjord were visited on July the 22nd. Here there was pair of these birds on a little pond, but again no nest was found and no young birds were seen. — Two days later two females and one male bird were seen here, but on none of the islands was there any sign of breeding. As the snow melted very late in the year along the north coast in 1949, it is possible that the birds could not find nesting-places at the normal breeding time and therefore had to give up breeding for the season.

When we came back to Sallyhamna and Albertøya (see above) in the last days of July 1949, no phalaropes were to be seen.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm
Jun. 25. 1949	Hotellneset, Adventfjorden	♀	133	69	22	22
Jun. 25. 1949	Hotellneset, Adventfjorden	♀	134.5	66	24	23
Jun. 25. 1949	Hotellneset, Adventfjorden	♀	134	68	23	22
Jun. 25. 1949	Hotellneset, Adventfjorden	♀	134	70	23	22
Jun. 25. 1949	Hotellneset, Adventfjorden	♀	136	68.5	24	22
Jun. 25. 1949	Hotellneset, Adventfjorden	♀	140	70	23	21.5
Jun. 27. 1949	Brandalpynten, Kongsfjorden	♂	131	64.5	23	22.5
Jun. 27. 1949	Brandalpynten, Kongsfjorden	♀	138	70	22	23
Jun. 28. 1949	Brandalpynten, Kongsfjorden	♀	135	62	23	22
Jun. 28. 1949	Brandalpynten, Kongsfjorden	♀	135	64	22.5	22
Jun. 28. 1949	Brandalpynten, Kongsfjorden	♂	128	61.5	22	23
Jun. 28. 1949	Brandalpynten, Kongsfjorden	♂	129	60	22.5	23
Jun. 28. 1949	Brandalpynten, Kongsfjorden	♂	129	63	23	22.5
Jul. 6. 1949	Birgerbukta, S of Norskøyane	♀	134	68	21	21
Jul. 6. 1949	Birgerbukta, S of Norskøyane	♂	135	66	24	21
Aug. 3. 1949	Brandalpynten, Kongsfjorden	♂	129	62	21	21
Aug. 5. 1949	Kapp Martin, Bellsund	♂	126	63	23.5	22.5
Aug. 16. 1949	Kapp Martin, Bellsund	juv	131	64	19.5	22
Aug. 16. 1949	Kapp Martin, Bellsund	♂ juv	132	61	21.5	20.5
Jul. 3. 1950	Hotellneset, Adventfjorden	♀	130	64	23	22
Jul. 3. 1950	Hotellneset, Adventfjorden	♀	139	69	23	23
Jul. 14. 1950	Stormbukta, Sørkapp Land	♂	123	60	21	22
Jul. 16. 1950	Øyrlandet, Sørkapp Land	♀	135	63	22	24

16. *Phalaropus lobatus* (L.).

Norw. Svømmesneppe. Engl. Red-necked Phalarope.

On a small pond at Hotellneset near Longyearbyen (22) Professor Johansen and I saw two pairs (♂ & ♀) of this bird on June the 24th, 1949. We came back the next day but no phalaropes were seen. — A couple of hundred metres away, at the boat-house of the Norsk Polar-institutt, we saw two pairs on the sea close to the shore. One pair was shot, but a moment later there were again two pairs. So there must have been at least three pairs at Hotellneset in the summer of 1949. On the evening of the 25th we again saw a pair at the ponds where we first discovered them.

In the two birds shot, we found well developed testes in the male and a fully developed egg in the oviduct of the female, so we have the proof of the breeding of the Red-necked Phalarope in Spitsbergen.

In the summer of 1950 none of these birds were seen at Hotellneset. At Kapp Linné (21), however, I found a female on July the 10th. It was seen at the small ponds where the Grey Phalaropes nested. — In the eight clutches I found of the last-mentioned species, the eggs varied very much in colour. Those in one nest were of a much lighter colour than the rest. — It is therefore not impossible that one of the nests might have belonged to the red-necked bird.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm
Jun. 25. 1949	Hotellneset, Adventfjorden	♂	107	44	23	20
Jun. 25. 1949	Hotellneset, Adventfjorden	♀	111.5	47	21	20

17. *Arenaria interpres interpres* (L.).

Norw. Stenvender. Engl. Turnstone.

At Sørkappøya (2), the southernmost point of Spitsbergen, we saw two small flocks of Turnstones on July the 25th and 26th, 1950. There were twelve to fifteen birds in each of them. We saw only adult birds that perhaps had gathered there before the migration southwards.

At Nebbodden (12b), some way north of Hornsund, two birds were seen on August the 19th 1952.

When we stayed for some days at Kapp Martin (17) in Bellsund in August, 1949, we saw four turnstones on the 15th, and the next day we observed five. All of them were grown birds.

At Hotellneset near Longyearbyen (22) we saw a pair of them on July the 1st 1950. It was quite obvious that they had chicks and the following day we found one. — When I took it in my hand and placed my hand on the ground, the male bird came up to my fingers in order to get it away. Without doubt it was the male who was the most keen with regard to taking care of the young birds. We thought that another pair on the big plain here had chicks, but we were unable to prove it.

On July the 3rd we found a nest of the Turnstone with four eggs. The birds were very shy and did not seem inclined to settle on the nest to breed because of the hide I had put up for photography. — When they got accustomed to the tent, they at last came and sat down on the nest, but they were both very nervous.

This nest was placed on dry ground between some stones in a strip of moss and grass.

At Brandalpynten near Ny-Ålesund (34) in Kongsfjorden (Kings Bay) we saw a single bird on July the 26th 1948. At the same place we saw another Turnstone on June the 28th the next year.

Close to Danskeneset (37), the SE point of the island Danskøya, two birds were seen on July the 1st, 1949. The next day we saw three of them at Smeerenburgodden (38) on Amsterdamøya.

On September the 2nd 1950, on the journey back to Norway and a little south of Bjørnøya, a young Turnstone came on board. It tried repeatedly to leave our ship "Minna", but was immediately attacked by a flock of Kittiwakes that was following the ship. It therefore had to

return as soon as possible. — As we were several days before reaching the Norwegian coast, it died of hunger and exhaustion. The bird had been on board for four days without suitable food and was reduced to skin and bones. — It was incomprehensible to me why the gulls should attack it. Usually the Kittiwakes seem to me very peaceable birds.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm	Weight grams
Jul. 2. 1949	Smeerenburgodden, Amsterdamøya	♂	146.5	61	21	24	
Aug. 15. 1949	Kapp Martin, Bellsund	♀	149.5	59	21	25	
Aug. 15. 1949	Kapp Martin, Bellsund	♂	151.5	61.5	21	23.5	120
Aug. 19. 1952	Nebbodden, N of Kapp Borthen		152	62	22	26	123

18. *Calidris canutus canutus* (L.).

Norw. Islandsneppe. Engl. Knot.

On the beach near the football-ground in Longyearbyen (22), four Knots and a number of other small waders were seen on August the 14th 1950.

In the summer of 1949 I saw a Knot on Arneliusneset (40) at Svenskegattet (between Norskøyane and the mainland). It was seen on July the 29th and the 30th. — I had hoped to find the breeding place of the Knot on Reinsdyrflya (41) (the Reindeer peninsula) but during the time we would have had the best chance of finding it, we were shut up at Biskayerhukken (42) by pack-ice. During this period, about fourteen days in the middle of July, we had drift-snow almost every day.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm
Jul. 30. 1949	Arneliusneset, Svenskegattet	♂	168.5	62	34	30

19. *Calidris alpina alpina* (L.).

Norw. Myrsnippe. Engl. Northern Dunlin.

In August 1950 we stayed in the house of the trapper Mr. Hilmar Nøis in the valley Sassendalen at the head of Sassenfjorden (24). — On the 16th we saw a Dunlin in summer-plumage with a great black patch on the underside, on the vast bogs along the river in the valley. —

To judge from the behaviour of the bird it might have had chicks, but none were found.

On the following days we found in different places around the fjord, a number of young waders that we at first took to be young Sanderlings as they seemed to resemble these.

Soon, however, we found that they were young Dunlins. On August the 17th two were seen near the mouth of the river in the valley Gipsdalen (25). But it was especially on the plain to the south of the house of Mr. Nøis and in the delta between this place and the river Sassanelva, that we found them to be numerous. Here we saw them daily from August the 15th to the 25th, when we left. They were found here in flocks of from seven to 20 birds. — With the exception of the grown bird mentioned above, we saw only young birds. All of them had some down left at the neck and some of them also under the tail.

The large bogs along the river in Sassendalen should be a very fine breeding-ground for the Dunlin. The landscape reminds one very much of the big grass-bogs around the lake Normannslågen at Hardangervidda in Norway, where I found the Dunlin breeding in 1934. — The young birds seen close to the fjord might have come from here. As they had still some of the downy plumage left, they must have been bred somewhere near. I therefore think that one may reckon the Dunlin as a breeding bird in Spitsbergen.

As mentioned above young Dunlins resemble the chicks of the Sanderling. But the young birds of the latter species have a pure white underside, while young Dunlins have some flecks underneath, especially on the flanks and on the sides of the belly.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm
Aug. 18. 1950	Sassendalen, Isfjorden	♀ juv	114	48	32	22
Aug. 20. 1950	Sassendalen, Isfjorden	juv.	119	49	33	22.5

20. *Calidris maritima maritima* (Brünn.).

Norw. Fjæreplytt. Engl. Purple Sandpiper.

General Notes.

This bird can be found in most places along the western and northern coasts of Vestspitsbergen, both on the seashore and also in the fjords. The majority of the Spitsbergen birds are more or less bound to distinct fixed localities, but the Purple Sandpiper requires only a piece

of beach, especially where the bottom is muddy. Therefore one may find the bird almost anywhere, except where there are sheer cliffs or glaciers.

As the bird is not at all shy, it is not difficult to approach it, but the nest is difficult to find. — As a rule it is placed on the plains or on the lower hills inland, more or less far away from the shore.

On a single occasion a pairing-display where numerous birds took part, was observed.

The egg-laying season is said to begin about the middle of June, sometimes earlier and sometimes later, according to whether the snow is covering the ground or not. — The nest itself consists of a circular, fairly deep scrape in the turf. It is mostly lined with dry leaves, very often of dryas. This plant is usually found in the places where the sandpiper prefers to breed. Old nest scrapes are frequently found, but fresh ones, in particular those containing eggs are more rare. I have found eggs in the last third of June and in the first days of July. — Newly hatched chicks I have seen mostly in the last third of July.

If one happens to find a nest, the bird will sit very hard, until almost trodden upon. — Scared from the nest, the bird creeps away on low legs with puffy feathers and tripping rapidly, resembling a small rat running away. It generally gives a certain note, which also is heard when the bird has chicks. — Even if one should neither find eggs nor chicks, one should be able to tell if a bird is breeding or not. — Curiously enough it may behave in this way when the young birds have been fully fledged for some time.

The moult begins in the last days of July and goes on during most of August. At the begin of September, the birds have a totally different appearance.

I have met the Purple Sandpiper all along the western coast, also in the fjords. On the northern coast I have seen it as far east as I went i. e. Liefdefjorden (45).

The only place at the eastern coast where I have seen the bird, was at Bastianøyane (51), a group of islands at the entrance to Hinlopenstretet.

Observations.

On the journey to Spitsbergen in the summer of 1949, a Purple Sandpiper came on board our ship at 24⁰⁰ o'clock on June the 21st. We were then some nautical miles to the south of Bjørnøya. The bird seemed to be almost spent, but after having rested for some time it flew away.

On our trip to Sørkappøya (2), on July the 25th, 1950, we saw numbers of sandpipers there. The majority of them were seen on the western shore of the island, especially along the beach of the big lagoon. In one instance we saw a bird who did the "rodent run" and therefore seemed to have eggs or chicks. — At the SW point of Sørkapp Land (4),

Øyrlandet, we saw some sandpipers on July the 16th, 1950. They mostly were found along the beach. On the plains inland there were only a few of them, but here they seemed to be breeding. — At our headquarters in Stormbukta (5), there were proportionally few of them when we came there on July the 12th. But as the days went, more and more of them appeared. On the 17th I saw fourteen sandpipers on the beach not far from the hut. — In this place there was a brood of four half-grown young birds on July the 30th.

We were daily visited by two families of Arctic foxes that came to our hut to get some food. — As a rule the male Snow-Bunting that had its nest close by, gave a warning note when the foxes arrived, but sometimes the sandpiper gave the warning signal. It was probably one of the birds that had chicks that did this.

On the big plains Breinesflyane (6) north of the glacier Bungebreen we saw a few of these birds on July the 14th. A couple of pairs behaved as if they had eggs. On July the 23rd we came back to a place by a little lake where we had seen a pair of them before and they were still present. On August the 2nd this pair had hatched. — Later in the day we came to Suffolkpynten (7) near Hornsund and observed 30 birds on the shore. At this time of year the sandpipers usually gather in flocks and are wandering about. — The next day on the 3rd, we saw some of them in Gåshamna (8) in Hornsund.

I came back to this place on July the 28th, 1952. A small number of sandpipers were seen and among them a bird with four fairly big chicks. The wings were almost fully grown and in a few days they would be able to use them. — Now, even if they could not fly, they ran very fast, but we captured one of them for inspection. It was still very downy at the nape and also at the base of the tail. — The grown bird of course demonstrated the “rodent run” perfectly.

In Hyttevika north of Hornsund and east of the islands Dunøyane (12) there was a great number of Purple Sandpipers on August the 4th 1950. — I came back here on July the 10th 1952. Around the hut and on both sides of it, to the north and to the south on the plains between the sea and the mountains there were small numbers of the bird until the first week in August, when they began to arrive in greater numbers. We also found them up to 250 metres (about 750 feet) on the mountains on August the 15th. — On the 7th there were about a hundred close to the hut, and on the 19th more than 200 were counted. The same number was observed also on the 25th. — Two days later we saw big flocks coming southwards at a considerable height. When they were over us they dropped down to the shore and the grass-land around the hut.

We came for the first time to the islands Dunøyane on August the 5th, 1950. Here they were fairly numerous. On the island Fjørholmen I counted 30 individuals sitting close to the water's edge. In another place

there was a single bird in company with a Ringed Plover. It was quite characteristic of these species that the plover flew away at once, but the sandpiper did not mind us at all.

During the last half of July and all of August during the summer 1952, the birds were fairly common at Dunøyane. At the islands Isøya farther north, 50 sandpipers were seen on August the 1st. — On the 19th we were at Kapp Borthen (12b) and at Nebbodden still farther north and here we also found them to be abundant, especially at Kapp Borthen where we saw more than 200 birds.

In the third week of August 1948 we came to Calypsobyen (14) in Bellsund. — From this place and to the western part of Recherchefjorden (15) they were very abundant along the shore. This was on the 18th. The following day we saw numbers of them at Kapp Lyell (13) west of Calypsobyen. — At Kapp Martin (17) on the northern side of Bellsund they were numerous all over the place on August the 20th 1948. When I came back here on August the 5th, 1949, I saw 32 Purple Sandpipers close to the lighthouse. Two days later there was a flock of about 100 birds in the same place and in the following days we constantly met with smaller and bigger flocks. On the 16th I counted at least 50 birds in a very small space to the north of the lighthouse. They now had a more or less well developed winter-plumage.

East of Kapp Martin and not far from Vårsolbukta there is a group of small islands called Reiniusøyane. We came here on August the 12th, 1949 and found numbers of sandpipers. The islands are rocky with almost no beaches at all, therefore the ground did not seem suitable for them.

In the summer of 1948 we stayed at Måseneset (18) at the southern entrance to Van Mijenfjorden from July the 29th to August the 6th. During this time we found them fairly numerous along the southern side of the fjord. — On the 7th we came to Sveagruva (20) at the head of Van Mijenfjorden. Here we found several sandpipers. Some of them did the "rodent run" and therefore possibly had chicks. — When we came back on August the 31st there were numerous small flocks from Sveagruva to the glacier Paulabreen (19).

At Kapp Linné (21) at the entrance to Isfjorden, they were very numerous on July the 24th, 1948, and the biggest flock observed there contained more than 100 birds. About a month later, on August the 22nd, we came to Russekeila a little to the east of Kapp Linné, and here there were a few along the shore. Nearly the same number was seen here at almost exactly the same time two years later.

At Longyearbyen (22) the sandpipers can always be seen on the shore close to the quay. A pair of them seemed to have a nest or perhaps chicks near the football-ground on July the 22nd, 1948. — Along the beach from the quay to Hotellneset there are always numbers of them

and we found them also on the ness itself. At the boat-house of Norsk Polarinstitut here, there was a big flock of them on July the 24th, 1949. — When we came to Longyearbyen on July the 1st, 1950, they as usual were abundant along the beach. At Hotellneset we found a nest on the hill behind the house on July the 4th. — The bird sat very hard and did not go away until almost trodden on. The nest was just such a scrape in the turf as we had seen many times before, but until now never with eggs.

The last time we went up to the nest, on the 7th, there was no sign of the eggs hatching. The bird had got accustomed to us and was not shy. When I was careful it let me touch it as it sat on its eggs. — We saw several sandpipers distributed over the vast area here and most of them behaved as if they had chicks.

Coming back to Longyearbyen on August the 14th, there were swarms of them everywhere along the seashore. In the little bay alongside the quay I counted 60 individuals.

Commonly the waders leave Spitsbergen at an early date. The Purple Sandpiper however seems to be an exception from this rule, as they, or at least a part of them, stay there all the month of August and longer. When I left Spitsbergen on September the 9th, 1949, there were still numbers of them to be seen there.

We saw a few sandpipers on the great bogs on the western part of Bohemanneset (28a) on the north side of Isfjorden on July the 4th 1952. Along the shore there were also some, but in both places there were strikingly few of them. All over the big area there were only a few old nesting-sites to be found, elsewhere they are usually very abundant. — On the 5th we went to Erdmannodden. Here there were only likewise a small number of the birds. — When we went back to our boat on the eastern shore, we put up a Purple Sandpiper that gave a fine demonstration of the "rodent run" and soon afterwards we found the nest with four eggs. The nest was placed on the turf between some small pieces of driftwood. The situation of the nest reminded me of the nesting of the Common Sandpiper (*Actitis hypoleucos*) in Norway, where I have on several occasions found the nest placed among small pieces of wood. On the broad plain along the shore where the nest was found, there were a great number of old nesting-sites.

On a peninsula between Bohemanneset and Erdmannodden we saw a small flock of these birds, about ten birds on July the 7th.

Around Isfjorden the Purple Sandpiper has been observed in the following places: At the islet Coraholmen (28) in Ekmanfjorden on July the 21st, 1948, and on Gåsøyane (25) by Gipshuken on August the 10th, 1948. All around Sassenfjorden (24) we saw several sandpipers from August the 15th to the 25th 1950. They were found in great numbers at Gipshuken (25) and at Vindodden on the southern shore. Curiously enough we did not see a single sandpiper on the beach beneath the moun-

tain Tempelfjellet. On a couple of occasions we went to the mountains Coloradofjellene and found them on the lowest hills on August the 22nd. But on the big plateau on the top of the mountains none were seen.

On August the 23rd we met a family by the brook where we fetched water not far from the house. There were three young, fully fledged birds, and an adult. The only point in which the young birds differed from the parent, was that they still had a little down on the nape. Although they were grown and could fend for themselves, the adult bird had to demonstrate the "rodent run" to get us away from them. It seemed to me to be an unnecessary action, at least so late in the year.

When we visited the Russians at Pyramiden in Billefjord (26) on September the 3rd 1948 we saw numbers of sandpipers there.

At Sarstangen (32) in Forlandsundet and at Poolepynten (31) also in this sound, we saw them respectively on July the 27th and on August the 26th 1948. On this last date a young bird was caught on the western shore of Prins Karls Forland. This bird could not fly because the primaries were not fully grown, the secondaries however were very long and reached to the tip of the rectrices.

At Ny-Ålesund (34) in Kongsfjorden (Kings Bay) we found the birds all over the place on July the 26th, 1948, and later in the day at Brandalpynten we saw several downy chicks. The following year we also met with a great number of them in both of these places on June the 27th. Two days before this date, the physician of the mining town, Dr. Sager, had found a nest with four eggs. When we returned here on August the 1st 1949, I saw an adult bird with four newly hatched chicks.

In 1948 I came to Virgohamna (38) on the island Danskøya on August the 27th and later in the day we came to Smeerenburgodden across the sound on Amsterdamøya. There also were great numbers of them at Biskayerhuken (42) and in Bjørnhamna (37) in Sørgattet the next day. By then the first snow had come and in some places it was 30 cm deep. Therefore the birds kept mainly to the narrow strip of bare ground along the beach. The snow, however, was full of their footprints.

In 1949 we stayed in this part of Spitsbergen in the first days of July. — On the southern side of the island Danskøya, near Danskeneset (37) there were several sandpipers. The greater part of the ground was covered with snow and there were not many bare areas. The sandpipers however demonstrated (at least a part of them) the "rodent run", but no nest was found. — At Smeerenburgodden on Amsterdamøya there were numbers of them on July the 2nd.

On the plain between Biskayerhuken (42) and Jermaktangen there were always sandpipers along the beach. On July the 8th 1949 I saw one feeding here. It kept to the old icefloes on the beach and bored its bill up to the feathers in the rotten ice. What it obtained I could not find out. In the same place the Snow-Buntings found food for their nestlings.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm	Weight grams
Jul. 1. 1949	Danskeneset, Danskøya	♂	128.5	58	30	21	
Jul. 2. 1949	Smeerenburgodden, Amsterdamøya	♂	125.5	55	28	20	
Jul. 5. 1949	Danskeneset, Danskøya	♂	123.5	54	25	20	
Jul. 5. 1949	Danskeneset, Danskøya	♂	128.5	58	-	20	64
Jul. 5. 1949	Danskeneset, Danskøya	♀	127.5	52	31	21	93
Jul. 10. 1949	Jermaktangen, Biskayerhuken	♀	122	61	32	22.5	-
Jul. 17. 1949	Breibogen, S of Biskayerhuken	♀	128	52	34	20	77
Jul. 17. 1949	Breibogen, S of Biskayerhuken	♀	129	58	34	20	74
Jul. 17. 1949	Breibogen, S of Biskayerhuken	♀	128	59	33	20	73
Jul. 17. 1949	Breibogen, S of Biskayerhuken	♀	131	57.5	34	21	75
Jul. 17. 1949	Breibogen, S of Biskayerhuken	♀	123	58	29	20	79
Jul. 17. 1949	Breibogen, S of Biskayerhuken	♀	127	61	34	23	75
Jul. 17. 1949	Breibogen, S of Biskayerhuken	♀	127	59	33	23	79
Jul. 17. 1949	Breibogen, S of Biskayerhuken	♂	122	55	27.5	20	65
Jul. 17. 1949	Breibogen, S of Biskayerhuken	♂	125	56	27	20	66
Jul. 17. 1949	Breibogen, S of Biskayerhuken	♂	123	60.5	29	21	65
Jul. 22. 1949	Siktefjellet, Liefdefjorden	♀	127.5	57	32	22	70
Jul. 24. 1949	Siktefjellet, Liefdefjorden	♂	125	59	29	20	70
Aug. 11. 1949	Kapp Martin, Bellsund	♀	130	55	31	22	-
Jul. 5. 1950	Longyearbyen, Adventfjorden	♂	131	57	33	21	-
Jul. 14. 1950	Stormbukta, Sørkapp Land	♀	129	57	33	23	-
Jul. 14. 1950	Stormbukta, Sørkapp Land	♀	126	56	30	21	-
Jul. 16. 1950	Øyrlandet, Sørkapp Land	♂	123	57	27	21	-
Jul. 19. 1950	Stormbukta, Sørkapp Land	♂	124	56	29	21	-
Jul. 19. 1950	Stormbukta, Sørkapp Land	♀	131	60	31	22	-
Jul. 19. 1950	Stormbukta, Sørkapp Land	♀	128	57	31	22	-
Jul. 19. 1950	Stormbukta, Sørkapp Land	♂	128	55	27	21	-
Jul. 22. 1950	Stormbukta, Sørkapp Land	♀	128	55	32	22	78
Jul. 22. 1950	Stormbukta, Sørkapp Land	♂	123	55	26	20	62
Jul. 22. 1950	Stormbukta, Sørkapp Land	♂	126	53.5	29	23	77
Jul. 22. 1950	Stormbukta, Sørkapp Land	♂	124	52	26	20	62
Jul. 22. 1950	Stormbukta, Sørkapp Land	♂	131	59	32	21	73
Jul. 22. 1950	Stormbukta, Sørkapp Land	♀	127	54	32	20	65
Jul. 28. 1950	Stormbukta, Sørkapp Land	♀	129	51	32	21	76
Jul. 28. 1950	Stormbukta, Sørkapp Land	♀	129	56	32	22.5	75
Jul. 28. 1950	Stormbukta, Sørkapp Land	♀	132	58	32	22	83
Jul. 28. 1950	Stormbukta, Sørkapp Land	♀	130	57	33	22	86
Jul. 28. 1950	Stormbukta, Sørkapp Land	♂	128	58	27	21	65
Jul. 28. 1950	Stormbukta, Sørkapp Land	♀	126	56.5	30	21	70
Aug. 2. 1952	Hyttevika, N of Hornsund	♀	131	60	32	24	72
Aug. 5. 1952	Hyttevika, N of Hornsund	♂	123	58	27	23	67
Aug. 7. 1952	Hyttevika, N of Hornsund	♀	127	62	33	23	76
Aug. 7. 1952	Hyttevika, N of Hornsund	♂	122	62	28	23	67
Aug. 11. 1952	Hyttevika, N of Hornsund	♂	126	62	28	23	72
Aug. 11. 1952	Hyttevika, N of Hornsund	♂	128	64	29	24	67

Along the shores on both sides of the mouth of the big lagoon in Breibogen (43) just outside the lake Richardvatnet and south of Biskayerhuken, the sandpipers were numerous while we stayed here, from July the 6th to the 20th. At the lagoon in Vesle Raudfjorden in the south corner of Breibogen, they culminated in numbers. How many there were I cannot say, but I have never seen so many in one place before. — Perhaps the reason they collected here was that almost all the contry was covered with snow and they had no place to breed.

On the westernmost of the islands Andøyane in Liefdefjorden we saw a few on July the 21st. Later in the day we came to a hut nearer the head of the fjord, where we stayed for some days. Here three or four birds were stationary on the beach. — Not far from the hut there were some small islands where we found a sandpiper with four newly hatched chicks late in the evening the same day.

On Lernerøyane (46), some small islands not far from the glacier Monacobreen at the head of the fjord, we saw a few on the 24th. — Here they were not breeding, but the next day we found a brood of four small chicks on the largest island in the group of Andøyane. These chicks were perhaps three or four days old.

At Kapp Kjeldsen (48) in Bockfjorden we saw numbers of them on July the 27th, and the following day a few at Velkomstpynten (44) at the entrance to Liefdefjorden. — On the southern side of the sound Svenskegattet (40) south of Norskøyane, we found big flocks of them on July the 29th 1949.

On the eastern shore of Spitsbergen I saw only a single Purple Sandpiper. This bird was on one of the islands, Kiepertøya (51), in the group of Bastianøyane at the entrance to Hinlopenstretet.

21. *Crocethia alba* (Pallas).

Norw. Polarløper. Engl. Sanderling.

General Notes.

The Sanderling is a relatively rare bird in Spitsbergen and normally is seen mostly on migration. It has been found breeding but not very often.

In 1949 I had hoped to find the breeding-place of the bird on Reinsdyrflya (44) (the Reindeer Peninsula), but in July, in the breeding-season, we were shut in by pack-ice at Biskayerhuken (42). We almost daily had snowdrifts, and as the ground for the major part was covered with snow it did not better the situation at all. — When we at last got away from Biskayerhuken, the birds had disappeared from the breeding-grounds. I do not think that the Sanderling bred there at all in 1949.

Curiously enough the Sanderling was very numerous at the head of Sassenfjorden (24) in the last days of August, 1950. But these were young birds of the year and not a single adult bird was seen.

Observations.

The southernmost point where this bird was observed was on the island Sørkappøya (2). Here we saw a small flock of ten to twelve individuals on July the 25th, 1950. — At Kapp Martin (17) in Bellsund two birds were observed on August the 16th, 1949. — At the beach at Longyearbyen (22) four of them were seen on August the 14th, 1950, and

on the 16th we saw three birds at the house of Mr. Hilmar Nøis near the head of Sassenfjorden (24). At this place we stayed from August the 15th to the 25th, 1950, and during this time we constantly saw smaller and bigger flocks of the Sanderling. — Partly along the beach where the mud-banks were almost dry at low tide and partly on the plains south of the house, where the river from Storgjelet branches off in a wide delta.

All the birds seen here were young birds of the year, and all of them had some down at the nape, some of them also had some down on the underside of the tail. — They used to keep company with flocks of young dunlins whom they resembled to a certain degree. — On August the 24th we went to Vindodden on the south side of Sassenfjorden. Here they were numerous, but no other waders were seen. All of these birds had down on the underside of the tail and on the nape.

It looks as if the adult Sanderlings and Dunlins leave the young birds at an early date, whereas the Ringed Plover and the Purple Sandpiper stay with their juveniles. This fact we were able to confirm at Sassendalen. The young birds of the two first mentioned species, which still had some downy plumage left, could hardly have come from far away. It is possible that the young dunlins were hatched on the great bogs along the river in Sassendalen. — The Sanderlings would find almost ideal breeding-places on the great plains south of the house of Mr. Nøis. The large number of young birds that we saw every day, may have been hatched here.

On the south side of the island Danskøya (37) near Danskeneset we found a single Sanderling on July the 1st, 1949. The following day we saw another at Smeerenburgodden on the island Amsterdamøya and on July the 8th, 1949, a single bird was observed at the lagoon by the lake Richardvatnet in Breibogen (43) south of Biskayerhuken.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm
Jul. 1. 1949	Danskeneset, Danskøya	♂	121	50	26	22
Jul. 2. 1949	Smeerenburgodden. Amsterdamøya	♀	128	51	27	25
Aug. 16. 1949	Kapp Martin, Bellsund	juv	128	49	21	24
Aug. 16. 1949	Kapp Martin, Bellsund	juv	120.5	48	21	24
Aug. 19. 1950	Sassendalen, Isfjorden	♂ juv	127	48	25	24
Aug. 19. 1950	Sassendalen, Isfjorden	♀ juv	118	47	22	22
Aug. 21. 1950	Sassendalen, Isfjorden	♂ juv	113	47	24	22
Aug. 21. 1950	Sassendalen, Isfjorden	♂ juv	124	49	23	23

22. *Tringa totanus* subsp?

Norw. Rødstilk. Engl. Redshank.

On August the 14th, 1950, four Redshanks were seen on the beach near the football-ground at Longyearbyen (22). As we did not get any of them, it was impossible to determine to which race they belonged, especially as the bird so far as I can tell, is new for Spitsbergen.

23. *Charadrius hiaticula* subsp?

Norw. Sandlo. Prestekrave. Engl. Ringed Plover.

General Notes.

The Ringed Plover breeds here and there at Spitsbergen, but only a few pairs in one place. It is nowhere common.

I have found it along the sea-shore and also in the fjords a few places from Sørkappøya (2) in the south to Amsterdamøya (38) in the north. East of this island along the northern shores I did not find it. — I found it breeding at Sassendalen (24) in Isfjorden, and it also possibly breeds at Ny-Ålesund in Kongsfjorden (34) (Kings Bay).

Observations.

On the journey to Spitsbergen in the summer of 1949, a Ringed Plover came onboard the S/S "Ingeren" on June the 20th. We were then about midway between Norway and Bjørnøya. — When we came to the island Sørkappøya (2) on July the 25th, 1950, we found two flocks of about twelve to fifteen birds at the big lagoon. These birds had possibly begun the autumn migration. At the islands Dunøyane north of Hornsund, we saw a single bird on August the 5th, 1950.

From August the 15th to the 25th in the same year we stayed in the house of Mr. Hilmar Nøis at the mouth of the valley Sassendalen (24). Just outside the house there was a family of Ringed Plovers, an adult and three young birds. We saw them daily. Besides these, there were several distributed over the great plain between the house and the river in Sassendalen. — On August the 17th we saw two plovers at Gipshuken (25) where Sassenfjorden branches off from Isfjorden.

On August the 26th 1948 a young bird was shot on the coast of Prins Karls Forland.

At Ny-Ålesund (34) in Kongsfjorden (Kings Bay) the Ringed Plover was seen regularly at a big pond close to the quay. Here I saw a single bird on July the 26th, 1948, and later in the day several of them at Brandalpynten, not far from the mining town. — On June the 26th I saw three plovers at the above pond, and when I returned on August

the 4th, there still were three birds to be seen here. On this occasion two of the birds behaved as if they had chicks.

At Smeerenburgodden (38) on the island Amsterdamøya, two Ringed Plovers were seen on July the 2nd, 1949.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm	Weight grams
Jul. 2. 1949	Smeerenburgodden, Amsterdamøya	♂	131	60	13	25	-
Jul. 26. 1950	Sørkappøya	♀	126	58	13	25	62
Jul. 26. 1950	Sørkappøya	♀	131	62	13	25	68
Jul. 26. 1950	Sørkappøya	♂	130	57	13	26	66
Aug. 16. 1950	Sassendalen, Isfjorden	♂	129	56	13	25	-
Aug. 15. 1950	Sassendalen, Isfjorden	♂	132	57	13	26	-

24. *Pluvialis apricarius altifrons* (Brehm.)

Norw. Heilo. Engl. Northern Golden Plover.

At Breinesflyane (6) north of the glacier Bungebreen on Sørkapp Land, I saw two Golden Plovers on July the 23rd 1950. — I watched them for a long time, but could not get any of them. — I first became aware of them when I heard the calling note. — Just after they had flown away, my assistant Mr. Blomberg came up to me and told me that he had heard some Golden Plovers, but he thought it impossible that they could be found in Spitsbergen.

There is no earlier record of them from these islands.

25. *Sterna macrura* (Naumann).

Norw. Rødnebbterne. Engl. Arctic Tern.

General Notes.

The Arctic Tern occurs in very great numbers in many places on the seashore and also in the fjords along the western coast of Spitsbergen. On the northern coast it is also abundant but by no means in such numbers as on the western shores. On the east side of the island I have only seen a few of them.

Ordinarily terns breed in smaller or bigger colonies often of large size. These are frequently found on islands, also in favourable places on the mainland, such as sandy plains or moss-covered areas near the sea. These colonies are mainly found where the birds can get sufficient food, such as small fish and macroplankton. It seemed to me that the terns, at least at certain times were very keen on taking "kruttåte" a black pteropod, which occurs in enormous quantities in summer in the Spitsbergen seas.

The nest is a shallow scrape on the ground, often without any trace of nesting material. Sometimes there are small stones in the nests and these I have now found so often, that I do not think they are due to accidental circumstances. On the contrary I am inclined to believe that they are placed there on purpose by the birds. — Once I found a nest with a great deal of nesting material. The nest was placed on the beach on a heap of gravel and was built of quills of the big gulls and dry grass-stalks.

As to the eggs the first clutches seem to be laid in the last half of June, but new laid eggs may be found until the last days of July and even the first ones of August. — The number of the eggs in the nests is ordinarily two. Sometimes there may be only one egg and more rarely as many as three.

In places where the terns are often visited by people or dogs, they may be very hot-tempered and attack everybody who comes within their territory. It pays then to use an old felt-hat that they cannot perforate with their bills. With only an ordinary cap, you soon bleed from several wounds, and have to drive them off with a stick. — However angry the terns may be while they have eggs, they are far more so when the young ones come into the world. They are usually hatched in the last half of July.

At this time in big colonies, one can find eggs in all stages of incubation as well as young birds in all stages of development.

The enemies of the terns are the foxes, the Glaucous Gulls and the Arctic Skuas. — The fox will, as the terns often breed on the mainland, take a great many eggs and young birds. So far as I could determine, although I may be wrong, the fox kept to the outskirts of the big colonies where the terns swarmed over like a cloud of mosquitos. It dare not go far into these settlements. — Small colonies are rarely found on the mainland but in these the fox of course can do a great deal of damage.

A curious thing may be mentioned, a colony of terns breeding on the mainland near the hut of Mr. Kræmer in Sallyhamna. Here most of the terns had their nests inside the empty fox-farms, where no fox could get at them.

The Glaucous Gulls and the skuas are mercilessly driven away by the terns. The gulls and skuas when attacked hurry away from the territory of the terns. The terns however attack not only these birds but also several others such as Kittiwakes and Fulmars. — The first mentioned do not, I suppose, go near the colonies with hostile intentions.

It is quite striking to see how other birds, tolerated by the terns, seek the colonies to get protection against their common enemies. This refers especially to the eiders, the Long-tailed Ducks and the phalaropes.

The eiders can breed in peace and are protected as long as there are eggs in the nests. — All the nests of the Long-tailed Duck I have

found, have been in tern-colonies.— I have also found the phalaropes breeding numerously among the terns, and in the few instances we have heard about the rare *Xema sabini* breeding in Spitsbergen, it has always been in colonies of the Arctic Tern. — All these birds live on the best possible terms with their hosts.

Observations.

At Sørkappøya (2), the southernmost point in Spitsbergen, we found only a few terns on July the 25th, 1950. No nest was discovered, but as we saw foxes, the terns naturally did not breed. On July the 19th we went to the island Tokrossøya (4) close to the SW point of the mainland, Øyrlandet. There were here two colonies of terns with about 50 breeding pairs in each of them. A great number of the nests were examined and all of them held two eggs. — The eiders were numerous here and a great part of them had found protection among the terns. This was indeed necessary as hundreds of the Glaucous Gulls nested on the island. — On the mainland close by we had seen a number of terns on the 16th, but these probably had their nests on the island.

At our headquarters in Stormbukta (5) we also had a few terns, but as we had two families of foxes not far from the hut, we could find no terns breeding. — Some distance south of the hut, a river came from the big glacier Olsokbreen. This river was very difficult to cross. On the plain between the river and the glacier which no fox could reach, several pairs of terns were breeding. We saw them here from July the 12th to August the 12th, 1950.

In a pond west of our hut on Bjørnbeinflyane, we found a tern's nest on a small islet. It contained two eggs on July the 29th. — At Breinesflyane farther north, we found a few nests on July the 14th.

On the islands by Suffolkpynten (7) at Hornsundneset the terns were numerous on August the 2nd, 1950. The next day we came to Gåshamna (8) in Hornsund. Here the terns were breeding numerously around the lagoon, also on the big plain around this place. — I found them breeding here again in 1952 when we visited the place on July the 28th. Several birds were sitting on their nests. I went up to five, all of which had two eggs.

When we came to the outlet of the river from the lake Revvatnet on the north side of Hornsund, we found some terns fishing there on August the 3rd. — Possibly they took small char (*Salmo alpinus*) which were fairly abundant.

On the 4th we saw several at Hyttevika (11) north of Hornsund. — The following day we went to the islands Dunøyane (12) where terns were very abundant. On the largest island, Store Dunøya, we found the greatest number. The major part had their nests on the long and narrow peninsula "the Horn" on the NE side.

In 1952 we came here on July the 14th. On Store Dunøya there were numerous nests all with two eggs. On the uttermost point of the Horn, there were four nests on the 20th, one with a single egg, the rest with two. Six days later, on July the 26th, no eggs were hatched. The last time we came here was on August the 28th and the number of terns had not decreased. — On the island Isøya (12a), farther north, we found them to be very numerous on August the 1st. Neither eggs nor young birds were found, but an enormous number of Glaucous Gulls were breeding here. — At Kapp Borthen (12b), still farther north, we saw a flock of more than 200 birds on August the 19th. There were several young birds among them. — Between Nebboden and Vardepynten, north of Kapp Borthen, we also saw numbers of them.

In the summer of 1948 we stayed for some days at Calypsobyen (14) in Bellsund. Here there was a vast colony of terns on the plain behind the houses. On August the 18th, young birds in all stages of development were to be seen.

In the last days of July 1948 we were at Måseneset (18) at the southern entrance to Van Mijenfjorden. Here very few terns were seen. On Akseløya, an island not far from our camp, the terns did not breed because of the foxes that had come there. — At the glacier Paulabreen (19) at the head of the SE branch of Van Mijenfjorden, there were several terns on August the 31st, 1948. — At the islands Reiniusøyane not far from Vårsolbukta in Bellsund a few were seen on August the 12th, 1949. We stayed at Kapp Martin from the 5th to the 17th of this month. Here at Kapp Martin (17) they were numerous. We found two colonies with about 50 breeding pairs in each. Both were situated on islands in small fresh-water lakes, one in Hustjørna and the other in Fjørungen, neither of them far from the lighthouse. The colony nearest to our camp could not be reached without a boat. The other was not so difficult as one could wade over to the island. On the 5th I found a great number of nests with eggs here, besides several young birds in all stages of development.

On August the 6th, I put up a hide to photograph a Long-tailed Duck who was sitting on her nest close to some breeding terns. By the side of the tent was a young half-grown tern. It was fed by both parents with small fish and other things that I was unable to identify. This young bird often tried its wings. — A tern sitting on a nest close before me was dozing, and the lower eyelid went up and down as a semicircular white disc in the black hood.

The wind was blowing hard and a small young tern had got out on the water, and could not get back to the island against the wind. Now an adult tern, possibly one of the parents, came by and dived towards the young bird. The old bird took hold of the chick by one wing and flew towards the island with it. The young bird was however too heavy and

the tern had to drop it. The parent bird tried again and again to get it to the island, but this treatment was too much for the chick and the last I saw of it, it was lying immovable on the water drifting out with the wind.

At Kapp Linné (21) near the entrance to Isfjorden, there is a very big colony of terns close to the lighthouse. I came here for the first time on July the 24th 1948. Countless terns swarmed around us, crying and attacking us with vigour. — The nests with one or two eggs in them covered the ground everywhere. Innumerable young terns were also to be found, from quite small, newly hatched ones, to big ones who were just learning to fly. — The terns here were more angry than I have seen them in any other place in Spitsbergen. — The reason for this was a Greenland-dog belonging to the radio-station at Kapp Linné. This dog killed all the young birds it could, it also took all the eggs it could find. — When I came back on July the 10th 1950, the terns were just as numerous as before and if possible even more aggressive. We found dead young birds everywhere, so it was certain the dog had been at it again. During our visit it was however chained up. — This time there were again not more than two eggs in the nests.

At Russekeila a little to the east of Kapp Linné, we found several fully fledged young terns on August the 22nd, 1948. We saw them in the same stage of development here on August the 27th, 1950, but this time there were many more terns without progeny.

Just below the football-ground in Longyearbyen (22) there is a sandbank in the fjord where we found a great number of young newly hatched terns on July the 23rd, 1948. — At Hotellneset, not far from the mining town, there is a big colony of terns. When we came here on June the 24th, 1949, only a small part of the terns had eggs. — We found nineteen nests with two eggs and a few with one. Besides we saw a great number of nests without eggs. It is possible that some of these empty nests were old ones, from last year. But the greater part of them were without doubt of the year. — When I came back here on July the 1st 1950, there were if possible, even more terns than the year before. A great number of nests was found. The majority had two eggs, in a few there was only one and in three nests I found three eggs. — The first hatched chick was seen on July the 3rd.

In July 1952 we had our camp on a peninsula between Bohemanneset (28a) and Erdmannodden on the north side of Isfjorden. Here I found a nest with two eggs on the 7th and the next day five more nests with the same number of eggs.

We found numerous nests of terns on the islet Coraholmen (28) in Ekmanfjorden (Isfjorden) when we arrived there on July the 21st, 1948. Most of the nests had two eggs in all stages of incubation and besides a number of newly hatched young birds were found. These chicks had not shed their eggtooth. They had a spotted upperside, but the underside

was almost pure white without spots. The feet were pink with black claws and the bill also pink with a black tip.

At the islands Gåsøyane (25) by Gipshuken (Isfjorden) we found a very big colony on August the 10th, 1948. — When I came back here on July the 6th 1950 the terns were still breeding here numerously.

In the summer 1950 we stayed in the house of Mr. Hilmar Nøis at Sassenfjorden (24) from August the 15th to the 25th. Close to the house there were several terns with chicks. Some of these were still so small that they could not fly, but others were fully fledged. The small chicks always went to sea when we approached them. — A great many of the terns had no progeny and as we daily saw a fox crossing the ground where the terns were breeding it possibly had taken both eggs and young birds. — We could observe how the terns tried to drive the fox away, but as there were only about 30 birds, the animal did not mind them.

At Forlandsundet (32) the terns can be found in many places. At Sarstangen we found them numerous on July the 28th, 1948. Later in the year on August the 26th, we saw several hundreds of them at Poolepynten (31). Here they sat close together within a small space and had possibly gathered before going south on migration. But still as late as September the 8th, not a few terns were seen at Longyearbyen (22):

Both in Ny-Ålesund (34) in Kongsfjorden (Kings Bay) and at Brandalpynten not far from the mining town, there are big colonies of the Arctic Tern. On July the 27th, 1948, we found numerous nests with two eggs in both of these places, but not a single nest with three eggs. — The following year I came back here on June the 27th and found the terns to be just as numerous as in 1948. On the 28th we went to the Islands Lovénøyane at the head of the fjord. Here we visited Storholmen where the terns were breeding numerously. At another island Gerdøya where a great colony was said to be found, there was only a single nest with one egg, but this island was icebound so the fox could come over from the mainland. This was the reason why neither eiders nor terns were breeding here. — On the 28th we went to Brandalpynten and found a number of nests on the gravel-bank between the lagoon and the sea. Three nests had one egg, nine of them two and a single nest three eggs. — When we came back here later, on August the 2nd, the terns were still very numerous. We also went to Lovénøyane. On the innermost of the islands, the one nearest to the glacier, I found the greatest colony of the Arctic Tern I have seen in Spitsbergen. The ground of this island consists mainly of ground-moraine and is relatively level. The vegetation is sparse, but the terns seem to thrive here. Nests with eggs were very numerous and young birds in all stages of development were to be seen everywhere. Accustomed as I was to the inhabitants of the colonies at Kapp Linné and at Ny-Ålesund, these terns did not seem to be at all aggressive.

In 1948 we came to the island Amsterdamøya (38) on August the 27th. The ground was covered with snow, in some places more than a foot deep, yet there were still a great number of terns here. Two days later we found them to be numerous also at Ny-Ålesund, but here the snow disappeared very soon.

On June the 29th, 1949, we came to the island Moseøya in Sør-gattet (37), the sound between Danskøya and the mainland. Here the terns were very numerous. — Just behind the hut where we stayed in Bjørnhamna (Sør-gattet) I found a nest with two eggs later in the day. — At the hut of Mr. Kræmer at Sallyhamna in Birgerbukta (40) we found a great number of nests on July the 6th, 1949. We found several close to the hut but most were within the empty enclosures of the fox-farm where no fox could get at them. Besides these, several nests were found distributed over the ground around this place. There were two eggs in all the nests.

At Biskayerhuken (42) and also farther south, along the beach of Breibogen (43) as far as Vesle Raudfjorden, we saw many terns from July the 6th to the 20th 1949. Nests with eggs were however found only at the mouth of the lagoon outside the lake Richardvatnet on the 8th. Here the ground was bare, elsewhere it was covered with snow. It was therefore difficult for the terns and other birds to find suitable nesting-places.

In Liefdefjorden (45) we saw great numbers of terns from July the 21st to the 27th 1949. On some small islands near the hut where we stayed at the mountain Siktefjellet, we found several nests with two eggs on July the 21st. One of these nests was built on a bank of gravel near the beach and was loosely constructed of dry grass-stalks and quills of feathers from big gulls. One rarely finds any nesting material in the nests of terns in Spitsbergen. As a rule the nest is only a shallow scrape in the ground.

On the 22nd we went to the islands Lernerøyane (46) at the head of the fjord. Here the terns were abundant and we found numerous nests. The majority of them held one egg, only a few had two. Two days later we found the same number of eggs in the nests. It therefore appeared that the birds with one egg would not lay any more. The southern part of the biggest island where we found the terns breeding, was mostly ground-moraïne and here the eggs were found on the clay without any resemblance of a nest at all. But the ground was so hard that it would have been impossible for the birds to make even the slightest scrape.

We also found terns at Velkomstpynten (44) at the mouth of the fjord on the 28th and at Arneliusneset (40) in Svenskegattet, south of Norskøyane, two days later. — At the hut of Kræmer, near this point, all the terns now had hatched. On the eastern shore of Spitsbergen I saw only a few terns at Dunérbukta (48) north of the mountain Agardhfjellet on August the 14th 1948.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm
Jul. 8. 1949	Breibogen, S of Biskayerhuken	♂	275	184	33	15
Jul. 8. 1949	Breibogen, S of Biskayerhuken	♀	262.5	159	31	14.5

26. *Xema sabini* Sabine.

Norw. Sabinemåke. Engl. Sabine's Gull.

On September the 5th 1952 I saw a Sabine's Gull at Kvalhovden (54) in Storfjorden on the east side of Spitsbergen.

27. *Rhodostethia rosea* (McGill).

Norw. Rosenmåke. Engl. Ross' Gull.

In the big colony of terns at Hotellneset near Longyearbyen (22) we saw on July the 1st, 1950, a Ross' Gull flying past pursued by terns. The narrow dark ring around the neck and the wedge-shaped tail (not forked as by *Xema*) could not be mistaken. This bird has not been recorded from Spitsbergen before.

28. *Larus argentatus omissus* Pleske.

Norw. Sæing. Engl. Scandinavian Herring Gull.

On July the 25th 1950 we came to Tokrossøya (4), an island just south of Øyrlandet, the SW point of the mainland. Here we saw at least two pairs of this gull among the numerous Glaucous Gulls which were breeding here. — A male bird was shot. This bird had great breeding-patches and these had begun to get covered with feathers.

Both pairs behaved as if they had chicks. But among the many juvenile Glaucous Gulls that were running everywhere it was impossible to find the young Herring Gulls. — The next day we saw a pair of these gulls at the island Stjernøya (3) midway between the above island and Sørkappøya. When we came to Dunøyane (12) north of Hornsund on August the 5th 1950 we saw a single Herring Gull. This bird also behaved as if it was breeding, but we saw only this one bird.

The bird shot, was without doubt a *L. a. omissus*. There is no previous record of the species from Spitsbergen but I think that it is breeding there, though there is no direct proof of this.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm
Jul. 25. 1950	Tokrossøya, S of Sørkapp Land	♂	417	177	51	60

29. *Larus fuscus intermedius* (Schjølér).

Norw. Sildmåke. Engl. The Scandinavian Lesser Black-backed Gull.

On the journey from Norway to Spitsbergen from June the 16th to the 23rd, 1949, a Lesser Black-backed Gull followed the steamer very far north. The last time I observed it, we were at 75° n. lat. This is as far as I know the northernmost record of the species.

30. *Larus marinus* L.

Norw. Svartbak. Engl. The Great Black-backed Gull.

This bird was found breeding by Mr. Kristoffersen at Sørkapp (2) in 1930. Later the species has expanded and is now found up to Bell-sund (18).

On July the 25th, 1950, we saw three Black-backed Gulls on the island Sørkappøya (2), but they did not seem to breed there. As there were foxes there this was only natural. — On Stjernøya (3) an island midway between the above island and the mainland of Spitsbergen, we saw 10 pairs of this species on July the 26th. They seemed to be breeding, but in the short time we had to our disposal here, it was impossible to find the young birds among the hundreds of young Glaucous Gulls that ran all over the little island. — On the island Tokrossøya (4) close to the mainland there were five pairs of the Great Black-backed Gull on July the 19th. Here we found a nest with one of the birds sitting on two eggs. At Dunøyane (12) we saw a single Black-backed Gull on August the 5th 1950. It behaved as if it was breeding, but we saw only this single bird.

We came to Hyttevika (11) due east of Dunøyane on July the 10th, 1952, and saw a gull of this species. On our first visit to the islands (Dunøyane) four days later two pairs were found. In this place there is a great number of the Glaucous Gull and as all the gulls had hatched it was very difficult to find the chicks of the black-backed species as the young birds of the big gulls are very much alike. — I had however observed a pair of the Great Black-backed Gull sitting on the ground and when we reached the place, we found two big chicks. We fetched a young Glaucous Gull of the same size for comparison and found that

the first two were certainly darker. — This was not, however, the main point, because both of the gulls I had been watching now grew absolutely furious and attacked us until we put the young birds down. It could therefore, so far I could see, be no doubt that the young birds belonged to this species.

On August the 1st, 1952, we saw one of these gulls at the island Isøya (12a) and another on the smaller island Isøykalven. On August the 10th one gull came to our hut in Hyttevika and stayed there for three to four days hunting for the young birds of the Little Auk. The last one we saw on the 28th in the same place.

When we stayed at Kapp Martin (17) in Bellsund in August, 1949, we saw a very big Black-backed Gull, possibly the largest I ever have seen. This was on the 5th and a couple of days later there were two birds on a little lake close to the lighthouse. Later we saw them repeatedly. We could not find where they lived, but when we went to the islands Reiniusøyane, farther east, on the 12th, we found such a gull there and it seemed to be breeding. Possibly the pair we had seen at Kapp Martin did breed among the great number of Glaucous Gulls on these islands.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm
Jul. 18. 1950	Tokrossøya, S of Sørkapp Land	♂	500	204	64	82
Jul. 18. 1950	Tokrossøya, S of Sørkapp Land	♂	490	204	61	84
Jul. 18. 1950	Tokrossøya, S of Sørkapp Land	♂	487	205	64	79
Jul. 18. 1950	Tokrossøya, S of Sørkapp Land	♀	465	186	59	74
Jul. 18. 1950	Tokrossøya, S of Sørkapp Land	♀	470	193	70	75

31. *Larus hyperboreus* Gunnerus.

Norw. Blåmåke. Engl. Glaucous Gull.

The Glaucous Gull occurs in great numbers along the coast of Vestspitsbergen both on the sea-shore and in the fjords. It likes low islands and seems to prefer places where the eiders are breeding. In such places it is often very numerous. Elsewhere it seems to prefer bird-rocks where I have found its numbers to vary according to the quantity of other birds breeding there. — Glaucous Gulls are always to be found breeding in colonies of Kittiwakes, Guillemots, Fulmars and Little Auks. It is impossible to find a bird-rock where there are not from five to six pairs of breeding Glaucous Gulls up to several hundreds.

I have found them breeding from the island Sørkappøya (2) in the south to Amsterdamøya (38) in the north. From here and eastwards I have seen them all the way to Liefdefjorden (45) and Woodfjorden. — On the east side of Spitsbergen I have only seen a few.

In Spitsbergen there are no birds of prey, but the Glaucous Gull makes up for that. The Gyrfalcon and the Snowy Owl sometimes pay a visit to the islands and of course take a certain amount of birds, but the damage these do is very small in relation to the destruction caused by the big gulls. They are quite a curse as they take both eggs and young ones, besides which they attack and kill any grown bird they can overcome.

To the eiders these gulls are a great danger as they to a great extent (at least in the breeding season) live on their eggs and ducklings. — The gulls will also plunder the nests of Kittiwakes and Guillemots, taking both eggs and young birds. They do the same in the Fulmar colonies. — Where the Little Auks breed there are always great numbers of these gulls and they take a heavy toll of the young birds when these leave the colonies for the sea.

Besides they live on fish, sea-slugs and other eatable matter they may find in the sea. They also take carrion and all kinds of eatable refuse and offal. In all the mining towns of Spitsbergen they are to be found in great numbers, living on refuse from the households. Here they are (at least in the Norwegian collieries) protected and because of this they are, as a rule, very tame. — As there are almost no putrefactive bacteria in Spitsbergen, the birds without doubt are useful as scavengers. They also take rats and I was told by reliable persons that they had seen the gulls swallowing these rodents whole. As I myself have seen them taking fairly big ducklings this way, I do not at all think it impossible.

Apart from man and the Arctic fox, these gulls have very few enemies. The Gyrfalcon or the Snowy Owl may sometimes take some, but as these birds are rare this will not happen very often. — The fox cannot be very dangerous to them as I have found them breeding on the ground in places where the foxes came and went daily.

When the Glaucous Gulls breed on bird-rocks they build high up on the part of the mountain above where the other birds are breeding. The ledges where they nest are always grass-covered. On such bird-rocks the gulls build in more or less inaccessible places. — On the mainland I have twice found nests (and then several of them) on the steep brinks of the terraces along the shore. Once the nest was built on the level roof of an old hut.

On the islands the nests are mostly placed on the level ground, sometimes also on the top of small hills. As a rule the nest is constructed of moss with a certain amount of grassroots. It is a very wide big nest and can be fairly high, then reminding one of a blunt cone. When the gulls are breeding in an eider-colony, there is usually a certain amount of eider-down among the nesting material.

The Glaucous Gull begins breeding in June, sometimes even earlier. The young birds are, as a rule, hatched in the last week of this month.

— The number of eggs is normally two or three, but very often a rotten egg will be found after the young birds have left. — Around the nest one sometimes can find quite a quantity of pellets. In places where there are many eiders, the pellets mostly contain remains of eiders eggs (membranes) and down of the ducklings.

About the middle of August the young Glaucous Gulls are fully fledged.

Observations.

On July the 25th we visited Sørkappøya (2) and saw a few Glaucous Gulls, but they did not breed here. There were foxes on the island and they had driven all the other birds away so that may have been the reason. — Elsewhere I have found these gulls breeding on level ground in places where there were foxes, therefore the fox should not be able, under normal conditions, to hinder the gulls in breeding. In this place the conditions were not normal. — The foxes had come over from the mainland during the winter and had not found the way back again until the ice broke. There were no birds here and so they got very little food. They were therefore probably so hungry that they had to prey on the Gulls. So the gulls by bad experience had learned to keep away from their haunt.

On July the 26th we came to Stjernøya (3), a small island midway between Sørkappøya and the mainland. The number of gulls here was enormous. Nests were to be found all over the island. In some of them there was one rotten egg and in a few even two. Young gulls were running about all over the place. Here we also found a great number, more than a hundred skulls and other bones of walruses, all of them more or less disintegrated. This animal has now almost disappeared from Vestspitsbergen.

On the island Tokrossøya (4) close to the SW point of the mainland, Øyrlandet, there was when we came there on July the 19th, 1950, an almost unbelievable number of big gulls. Nests were to be found all over the place. In some there was a rotten egg, and in some newly hatched chicks were sitting. All over the island young birds were running, from quite small ones to big ones about a fourthnight old.

A great number of eiders were breeding here and when we scared an eider from her nest the gulls took the eggs so soon as we were a little distance away. — We found that we had to cover the eggs with the nestdown before leaving. It was however not only the eggs that were taken by gulls. We were looking at an eider who had got her three ducklings on the sea. A moment later a Great Black-backed Gull and a Glaucous Gull had taken a duckling each and swallowed them whole as they flew away.

We had our headquarters at Stormbukta (5) on Sørkapp Land from July the 12th to August the 12th 1950. In the bay, not far from our camp,

there were row upon row of reefs and big blocks of rocks were distributed as small islands. On the biggest one, by us called "Måkesteinen" quite a number of gulls were breeding. We went there on the 16th and found that all the gulls had hatched. One rotten egg was left in most of the nests. For the main part the chicks were very small, not more than a few days old, the biggest may have been from two to three weeks old. Here I found the middle part of a very big common herring brought in by one of the gulls. — On one of the largest rock in the bay a gull was sitting on her nest when we arrived. It was still sitting on August the 8th and therefore the eggs may have been added. — The young birds of the year were first seen on the wing on August the 10th.

Behind our hut was the big mountain Hilmarfjellet, 825 metres high (about 2500 feet.) On the NW it drops very steeply to the glacier Vitkovskibreen, and here a great number of Fulmars were breeding. Among these birds, especially where they nested, the Glaucous Gulls had settled, and whenever they got an opportunity they took both eggs and chicks.

Not far from the hut we had a colony of Kittiwakes and on the grass-covered ledges above them three or four pairs of the big gulls were nesting.

On Breinesflyane (6), north of the glacier Bungebreen, we found a lot of Glaucous Gulls at the mouth of a small river on July the 25th. These birds were here each time we visited the place and may have been non-breeding birds.

We came to Hornsundneset (7) at the entrance to Hornsund, on August the 2nd, 1950. We landed between Suffolkpynten and Pallfyodden where there are numerous small islands. These are of rock with small sandy plains. We went to one and here, as on all the other islands, the Glaucous Gulls were breeding in great numbers. As usual a lot of young birds were running about. — The adult birds were of course very excited and one of them disgorged a seaslug that almost hit me on the head. As in other places where these gulls were breeding in numbers, there were rotten eggs left in the nests.

On August th 3rd, 1950, I photographed Little Auks on the slopes of the mountain Hohenlohefjellet. While I was in my hide, my two assistants sat some distance away and watched the birds. — A big gull came sailing along the mountain-side above the rock-strewn slopes where the Little Auks had their nests. As soon as the small birds sighted the gull, they left the slopes with their usual crying and lamenting, just as they do every time a Glaucous Gull comes to close to them. — All at once the gull turned sharply, dropped towards the ground and caught an auk coming out of its burrow. The gull flew away with the small bird in its bill, but suddenly was attacked by another gull and had to let its prey go. The auk was immediately caught in the air by the attacking gull

which was now set up by the first, when number two had to drop the victim. Both the gulls were now so close to the ground that they were unable to catch the bird in the air. The Little Auk, in spite of the rough treatment, had so much vitality left that it crawled into a hole and saved itself. We believed then that the gulls were trying to catch an old bird, but from what I saw two years later, I am sure that the auk was a young one. I have never seen the gulls succeed in taking adult Little Auks, neither on the ground nor in the air.

On the jutting ledges of rock above the slopes where the Little Auks were breeding, several big gulls were sitting along the mountainside. Without doubt they had their nests here.

At Gåshamna (8), in Hornsund, where we came later in the day, a lot of great stones were standing in the bay on its western side. On these several pairs of Glaucous Gulls had their nests. — The next day we went across the fjord to Sofiakammen (9), an enormous bird-rock on the north side of Hornsund. It is situated at the mouth of Burgerbukta and to the W of the glacier Paierlbreen. Here numbers of this big gull were breeding in the big colonies of Kittiwakes, Guillemots, Fulmars and small numbers of Puffins. On the beach under the almost perpendicular mountain, gigantic rocks were lying about and upon each of these there were two or three broods of young gulls.

I came back to this place on August the 8th 1952. Under the bird-rock the remains of birds killed by the Glaucous Gulls were plentiful. Most of them were Kittiwakes and Guillemots. It looked as if the skins were turned inside out. As there were no foxes in the place this year, it could only have been the gulls who had eaten the birds. The fox carries its prey away, which is why we saw so few remains of birds when I was there two years ago. Then there were foxes about and it seemed that they even carried off the skins of birds left by the gulls.

I did not see the gulls take a single young guillemot on the sea as I have witnessed them doing on earlier occasions, but in five different instances we saw them taking young birds from the ledges on the mountain. — The gull took the bird and flew down with it on the grassclad slope under the mountain and killed it there. It usually tried to swallow the bird whole, but had to give this up. Then it began to tear it up into pieces small enough to swallow. — In one instance we saw a gull take and kill a fullgrown Kittiwake.

On the northern side of Hornsund, close to the mouth of the fjord, a valley, Revdalen (10), stretches northwards. At the far end there is a lake Revvatnet. The mountains on both sides of the valley are clad with green moss, a sure sign that Little Auks are breeding here, and surely enough there were thousands upon thousands of them. On these mountains a great number of the big gulls also were breeding, when we came there on August the 4th 1950.

I came back here on almost the same date (the 3rd) two years later. There were just as many gulls as I had seen last time. The southernmost mountain on the west side of the valley is called Rotjesfjellet and here big colonies of gulls are found on all sides of the hill. On the west side of the mountain, along the seashore, they breed numerous on the big stones and cliffs. On the other side of the mountain, in the valley, they seemed to keep mostly to the outlet of the lake where they rested and bathed in the fresh-water. On August the 20th we saw a gull pursuing a Little Auk (a young bird) on the lake, but the auk saved itself by diving.

At Hyttevika (11) north of Hornsund, where we came on August the 9th 1950, the big gulls were breeding on large stones in the harbour. On the mountain Gulliksenfjellet behind the bay, enormous numbers of Little Auks were breeding. — On July the 10th, 1952, we found several big colonies of the Glaucous Gull on this mountain, and besides those on the big stones in the bay as seen two years previously. — We found that they nested in this way from Hornsund and up to the glacier Weren-skioldbreen.

They were also found inland on the 17th, one pair on a pond north of the above mountain, and a second pair at the lake Myrtjørna, in the valley Brattegdalen, on the other side of the mountain.

Until July the 22nd the gulls breeding in the bay had let the eiders alone, but now they began to take the ducklings and we had to exterminate them. — One gull, shot on the 23rd, had a duckling in the ventricle. — The next day we counted at least 30 nests in a colony on the mountain-side just behind the hut. A great number of young gulls could be seen. The big brown nests, of moss and grass, were easily discernible, even at a long distance. — In these colonies, the ledges are of a bright green colour from the grass growing on them. This colour is quite different from the yellow-green moss covering the hillsides where the Little Auk breed. — The gulls build mostly in the middle of the colonies of the smaller bird and are of course a menace to the inhabitants.

On the northern slopes of the mountain Torbjørnsenfjellet we saw a colony of at last 50 pairs of the big gull on July the 31st.

From August the 4th we noticed that the gulls were patrolling the slopes where the little auks bred, with more intensity than earlier. Without doubt they knew that the young birds would now be going to sea. — The following day we actually saw the gulls take four young birds on the water, and from now on they took an immense toll of them. — On the 6th we shot 10 gulls and six of these, had caught young auks. The next day we got 14 and of them, ten had young birds in the ventricle. In all we saw 20 of them taken. — The gulls took them on the ground, in the air, on the sea. — We never actually saw them catch a grown bird, but as the small auks make off as soon as they see a gull coming, it is highly probable they catch grown birds if an opportunity should arise.

— This murdering of the small defenceless birds went on until August the 20th. By this time almost all of them had left the hills and only a few were left. An enormous number must annually be taken on the coast from the glacier Hansbreen in Hornsund and up to Gulliksenfjellet.

The captured bird is almost instantly swallowed whole. — We saw the gulls take them in the air and immediately gulp them down. When the gulls take them on land or on the sea, they usually will kill them before swallowing them. — Sometimes two gulls will go for a bird simultaneously and in such instances we have seen the victim literally torn in two.

In a broad gully between the mountain Torbjørnsenfjellet and Rotjesfjellet we found on August the 15th several colonies of gulls at 250—300 metres above sea-level. Of course many of the small auks nested here. Later in the day we saw the first young Glaucous Gull on the wing.

Two days later we saw a number of gulls on a pond to the north of the hut. Almost all of them flew away when we arrived but a female bird with her two young ones stayed. She swam over to the other side, sitting very low on the water and calling to the young birds to follow her. They were feasting on the carcass of a big seal, shot a couple of days previously.

On the 21st there was still an unthinkable crowd of gulls here. The young birds were sitting on the beach and on the sea crying for food. Some of them were still fed by the parents while others tried to fend for themselves. — Sometimes we got young gulls in snares close to the hut. We then had to free them immediately, lest they should be killed and eaten by their own kin. We also observed how the parents had quite a job in protecting their young ones against other gulls.

On August the 27th these still begged for food, but were now driven away by the grown birds: — We used to feed the gulls outside the hut, even if they kept the other birds away. On the 31st they (the young ones) had become very tame and almost took food from our hands.

On August the 5th, 1950, I came to the islands Dunøyane (12) for the first time. On the W side of Store Dunøya the big gulls were very abundant and chicks ran about everywhere.

Among the great number of female eiders on the island only a few had ducklings. Even if the nests of the eiders had been plundered by man earlier in the year, they should have had a second brood. Therefore the gulls must have taken most of the eggs and ducklings, as we had seen them do in so many other places. We found a few eiders with eggs and a single duck with one duckling. A Glaucous Gull who tried to take it was shot. — Around the gulls' nests a great number of pellets were lying about. The greater part of them were quite soft and therefore must have

been relatively recently disgorged. The content of the pellets was almost exclusively membranes of eiders eggs and down of ducklings.

I came back to the islands on July the 14th, 1952, and saw a great number of Glaucous Gulls with their chicks at Store Dunøya. Two days later we went to the second island, Fjørholmen. Here also there was a great number of gulls. They had their nests in exactly the same places where I found them two years ago. — On August the 20th we came here again and saw a female eider duck who took her two newly hatched ducklings with her to the sea. On the way to the shore she was repeatedly attacked by gulls, but in each instance she was able to drive them off from her ducklings.

On the bog by a pond here, a pair of Arctic Skuas had their nest. They drove away all the gulls coming near it. — Two small young gulls that tried to cross the bog on their feet, were severely attacked and were several times rolled head over heels until they got outside the “three mile limit” of the skuas.

On August the 18th, 1948, we saw numbers of these gulls at Calypso-byen (14) in Bellsund. Earlier in the summer we had had our camp for some days at Måseneset (18), at the southern entrance to Van Mijenfjorden. Here we put up our tent close to an old hut with an almost horizontal roof. On July the 29th a pair of Glaucous Gulls had two half-grown young birds in their nest on the roof. — In the open doorway another pair had built and here two big chicks were sitting. These ran away when we came up to the hut. — This “building” was placed on the terrace that stretched at a height of 4—5 metres along the beach. On the steep brink of this terrace just beneath the upper rim, we found a row of gulls’ nests. They seemed, for the greater part, to have been in use recently. The circumference of the nests was great and some of them were very high in the middle. All of them were mainly built of moss with some grass-roots and other vegetable matter. — The young birds had left the nests and were found at the point of the nest, where there were also about a hundred adult birds, who stayed there. — On the sandy beach we saw fresh tracks of foxes every day, so the gulls must be able to defend their eggs and chicks against the Arctic fox, otherwise they would not have chosen such a nesting-place.

The roof of the hut we used as a dust-bin, and all eatable matter thrown there, disappeared immediately. The young birds thrived very well on this extra fare and grew so fast that we thought we could see them getting bigger from day to day.

On Mariaholmen, an island not far from our camp, we also found several nests, situated on the highest spots available, some of them in almost inaccessible places. On each of the two small and very steep islets between this place and the big island, Akseløya, six nests were found on July the 30th, 1948. — On Akseløya itself, no nests were found, but in

this place there were foxes. The only birds breeding here were Snow Buntings, Black Guillemots and a single pair of Red-throated Divers. The conditions here were exactly the same as those we found on the island Sørkappøya. — On islands to which the Arctic fox has found its way, no birds breed except those whose nests are protected by being in holes and crevices where the fox cannot get at them.

On the walls of the great mountain Midterhuken, behind the old hut, we could see the gulls sitting. They were breeding on grass-covered ledges. On August the 3rd we went to the uttermost point of the mountain where it projects into Bellsund. Here all the mountain-side, up to about 700 metres, is one big colony of Kittiwakes and Guillemots. Here, of course, the big gulls nest in great numbers. — It is difficult to win access to the colonies here, as the rock is steep and crumbles. The climbing is dangerous because of this disintegration. We found however a small bay where we could get to the beach and over the lower slopes covered with vegetation, thus we reached the foot of the sheer rock where the birds were breeding.

This bay was flanked on each side by steep rocks and on the summit of these several big gulls had their nests. Gulls were also seen sitting on ledges where they had their nests above the breeding birds in the colonies.

The Glaucous Gull is an exceedingly greedy bird. Close to the hut, on August the 4th, I shot a big seal (*Erignathus barbatus*) and so soon we had skinned it, more than a hundred gulls gathered around the carcass. In a few hours only the bones were left.

Here at Måseneset we also saw how this gull take young guillemots off the sea. On August the 3rd a pair of guillemots with a young bird that had just left the mountain, were swimming on the fjord just outside the hut. A big gull came flying past and dived for the young bird. The adult birds tried to drive it away, but were not successful. The young bird dived and dived, but each time it broke the surface the gull was at it. At last it was so exhausted it could not dive, when the gull caught it and flew towards the shore with it. The young guillemot was however so heavy that the gull had to drop it, and take it again repeatedly, before reaching the beach which was about 100 metres off. At last it reached land with its prey and began immediately to tear it with its bill, but soon afterwards the gull fell dead from a bullet through its head. — The young guillemot however was so damaged that we had to kill it, otherwise it would have fallen prey to the first big gull coming past. — When we returned to the hut on Måneneset on August the 12th, the young gulls were much grown. The time when they would be able to use their wings was not far off.

We came to Sveagrava (20), the mining town at the head of Van Mijenfjorden, on August the 6th, 1948. As in Longyearbyen there were here numbers of big gulls living on refuse, but here there were also Ivory

Gulls which likewise acted as scavengers. — Coming back here on August the 31st, we went to the glacier Paulabreen at the southern, innermost branch of the fjord. I hoped to photograph Ivory Gulls, but all I saw, were a few a long distance away. When I had shot a "snadd", a small seal (*Phoca hispida*), and had begun to skin it, 25 Ivory Gulls came out of the blue. With them there also arrived four young Glaucous Gulls who drove the others away. Otherwise it seems to be the Ivory Gull which is the aggressor. I have never seen an adult Glaucous Gull who could make a stand against it. — Now, however, we had to shoot the young gulls to photograph the Ivory Gulls.

In 1949 we stayed at Kapp Martin (17), on the north side of Bellsund, from August the 5th to the 17th. Here we found numbers of big gulls, just as on earlier visits. We saw them partly on a little lake close to the lighthouse where they bathed and sat on small skerries in the middle of the lake, and partly they were seen flying in great numbers to and fro along the beaches. — At this place we were shut in by packice from the 12th to the 17th and our ship was unable to fetch us. — We had run out of provisions and had to shoot young Glaucous Gulls for food. After having been cooked in milk and then broiled they were very good to eat. As we had plenty of condensed milk, we fared very well indeed.

At Kapp Linné (21) at the entrance to Isfjorden, there are always considerable numbers of these gulls. They were seen here on July the 23rd, 1948. Later in the summer of this year we stayed at Russekeila, a place near by, from August the 22nd to the 25th to fish for char (*Salmo alpinus*). In the lagoon where we had our nets, the tidal difference was about one meter. When the tide ebbed and the nets were left high and dry, the big gulls were quite a nuisance because they would eat the fish. Just the same thing happened to us in the same place in 1950.

On Erdmannodden, a peninsula on the north side of Isfjorden, we found a nest of the Glaucous Gull on July the 5th, 1952. The site of this nest was unique, as it was placed on a small low and sandy island, in the delta of a river. There the gull bred in absolute security, surrounded of water on all sides. — Three days later we came to the islets Tvillingholmane near another big peninsula, Bohemanneset (28a). Here we found 30 nests of the common eider. There were of course several gulls here, but no nest was found. On some small islets close to the shore there were eiders, also a great number of gulls.

At Longyearbyen (22) I have seen them in very great numbers in 1948, 1949, 1950 and 1952. As mentioned before, they are here protected and act as scavengers. At Hotellneset near by one finds them mostly on the beach.

On the islands Gåsøyane (25), by Gipshuken in Isfjorden, we saw a gull swallowing an eider duckling on July the 6th, 1950. — When we

came to Skansbukta (27) in Billefjorden (Isfjorden), on September the 4th, 1948, we saw numerous big gulls near the ledges on the mountain-side where the Fulmars had their nests. — In Sassenfjorden the Glaucous Gull nests on the mountain Tempelfjellet and also on a mountain close to the house of the trapper Mr. Hilmar Nøis, near the head of the fjord. Here the first young gulls were seen flying on August the 17th, 1950.

North of Isfjorden we saw them in great numbers at Sarstangen (32) in Forlandsundet, where they were found breeding on a mountain near the ness on July the 25th, 1948. — When we came to Ny-Ålesund (34) in Kongsfjorden (Kings Bay) the next day, we found them in flocks between the houses just as in Longyearbyen. Coming back here a month later, on August the 28th, the ground was covered with snow and the gulls were sitting on the roofs. — On a visit to the island Storholmen (Lovénøyane) (35) in Kongsfjorden, on June the 26th, 1949, we saw a great number of these gulls. — The trappers had told me that the Glaucous Gull could swallow the egg of an eider whole and here I got visual proof of the fact. — We had scared an eider-duck from her nest and, as we went away, a big gull alighted at the nest, took an egg, swallowed it and flew away. It settled some distance off, disgorged the egg and ate it. — Later in the day we found a nest of the Glaucous Gull on a small islet at the southern point of the island Gerdøya, with young birds just emerging from the eggs. — When we came back to Ny-Ålesund on August the 1st, the gulls were still numerous, both here and at Brandalpynten near by.

On a visit to the island Amsterdamøya (38) on August the 27th, 1948, the ground was covered with snow, but there were still big numbers of gulls.

In 1949 we stayed for some days at Bjørnhamna in Sørgattet (37) between the island Danskøya and the mainland. On June the 29th we went to the island Moseøya where these gulls were abundant. Nests were numerous, but all of them were empty. The eggs had probably been taken by people coming ashore to plunder the nests of the eiders. — At Danskøya, separated from the above island by a narrow sound, was a steep and almost inaccessible cliff facing the water. Here the gulls were breeding in great numbers, perhaps on account of the profusion of eiders nesting at Moseøya.

Staying in the hut of Mr. Kristoffersen at Biskayerhuken (42) from July the 6th to the 20th, 1949, we saw numbers of Glaucous Gulls. They were plentiful throughout our stay both here and about the peninsula. — When we came the snow was just disappearing and there was a flock of gulls just outside the hut where they feasted on the carcasses of a couple of ice-bears. In the lagoons at Breibogen south of the hut, we saw them bathing each time we were there.

In Liefdefjorden (45) they were to be seen everywhere, but in decidedly smaller numbers than on the west-coast. On July the 24th we saw fairly big numbers at the glacier Monacobreen at the head of the fjord. In a great circular eddy beneath the sheer ice-wall of the glacier (perhaps from fresh-water coming up from under the ice), about a thousands birds were swimming. Here there were Terns, Kittiwakes, Fulmars and not a few Glaucous Gulls. We could not see them eating anything, but as all of them (with exception of the fulmars) are fond of bathing in fresh-water, this may have been the reason for the gathering of so many birds within a relatively small space.

On the return journey we spent a couple of days in the hut of Mr. Kræmer at Sallyhamna (40) in Birgerbukta south of Norskøyane. On July the 27th we were furiously attacked by a pair of gulls that seemed to be nesting on the mountain behind the hut. Here several pairs must have had big chicks. The reason they bred here was firstly because of a colony of the Little Auk close by, and secondly because there was a big colony of eiders on the islet Steggholmen not far from the hut.

On August the 14th, 1948, I saw some Glaucous Gulls at Agardhbukta (48) on the east coast, and the next day some young birds at Bastianøyane (51) a group of islands at the entrance to Hinlopenstretet. — On September the 3rd, 1952, there were many gulls at Kvalhovden (54), a ness south of Agardhbukta.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm	Weight grams
Aug. 8. 1949	Kapp Martin, Bellsund	♀	447	191	57	71	-
Jul. 23. 1952	Hyttevika, N of Hornsund	♂	475	195	69	76	1750
Aug. 6. 1952	Hyttevika, N of Hornsund	♂	455	199	65	73	1400
Jul. 23. 1952	Hyttevika, N of Hornsund	♂	476	204	68	78	1900
Jul. 23. 1952	Hyttevika, N of Hornsund	♀	440	189	57	67	1250
Jul. 23. 1952	Hyttevika, N of Hornsund	♀	444	190	57	69	1300
Aug. 6. 1952	Hyttevika, N of Hornsund	♂	450	195	69	74	1500
Aug. 6. 1952	Hyttevika, N of Hornsund	♂	473	196	67	75	1600
Aug. 6. 1952	Hyttevika, N of Hornsund	♂	462	201	66	75	1600

32. *Rissa tridactyla tridactyla* (L.).

Norw. Krykkje. Engl. Kittiwake.

General Notes.

More than any other of our gulls the Kittiwake tends to breed in smaller or larger colonies and in Spitsbergen we find no exception to this rule.

This gull breeds in suitable places around the coasts of Vestspitsbergen but in far greater numbers on the western shores than on the east

side of the island. — I have found it breeding along the sea-shore and also in the fjords from Sørkapp Land (6) in the south, to the island Amsterdamøya (38) in the north and from there eastwards along the northern coast to Liefdefjorden (45). This is the easternmost place I have been to along this coast. — I have also found a colony on the island Barentsøya (49) on the eastern side of Spitsbergen.

The colonies are situated in places where the birds, as a rule, can find sufficient food in the vicinity, but there are exceptions where they have to go out to sea to get their food.

As far as I have seen the Kittiwakes will not take flesh, or not even a morsel of seal, and I have never seen them flinging themselves at such food after the manner of the greedy Glaucous Gull and the Ivory Gull. They in fact live mostly on pelagic food, small fish and eupheusidia (krill) and perhaps other small red-coloured crustacea, for their droppings are often red-coloured. Where there are glaciers near the colonies, the Kittiwakes like to sit on the snowfields and in such places the snow may be intensely red-coloured. The same thing is to be seen at the colonies of the Little Auk. This bird also lives on eupheusidia.

The places where the Kittiwake finds pelagic food are, besides the open sea, narrow sounds with strong tidal currents. When there are steep mountain-sides near those currents Kittiwakes are sure to nest on them.

There is such a place at the mountain Midterhuken in Bellsund. In the sound between the mountain and the island Mariaholmen, the current runs at 7 knots an hour. — Another place is Heleysundet (50) between Vestspitsbergen and the island Barentsøya (49) where the current runs up to 10 knots an hour. At both places there are big colonies of Kittiwakes.

These gulls can also be found breeding near glaciers, especially where these reach down to the water. — Near the fronts of the big glaciers there will always be numbers of different species of seabirds, seeking their food here. — The fresh-water from the ice makes the plankton grow and there is much animal life in the water in such places.

Colonies of Kittiwakes near glaciers I have found at the glacier Olsokbreen on Sørkapp Land (5), on the mountain Sofiakammen (9) near the glacier Paierbreen in Hornsund, near the glacier Kongsvegen in Kongsfjorden (Kings Bay), one colony on the mountain Tempelfjellet (24) not far from the glacier Von Postbreen in Tempelfjorden, where there were also two other colonies of this bird. In the north I found a colony on the mountain Siktefjellet near the glaciers Monacobreen (45) and Idabreen in Liefdefjorden.

The Kittiwakes prefer to nest under overhanging rocks as these protect them from dripping water and the droppings from the nests above. When all the places on a mountain-side are occupied, the birds

that have not found a nesting-site must settle on adjoining rocks more or less near the main colony. Those small settlements may consist of from five or six, up to 25 or 30 pairs of birds.

The nests are built of grass, moss and seaweeds and as they are constantly mended and built upon, they are, at least in some places, fairly high. — This mending goes on during the whole breeding period, till about the time when the young birds leave the nests.

Near the big colonies near the sea-shore, one can see hundreds of birds going out to sea all day. At the same time hundreds are returning with food for the nestlings.

The Kittiwakes prefer to bathe in fresh-water. They will therefore assemble on smaller or larger ponds or lakes near the colonies. Here, besides bathing, they gather moss and grass for their nests. They also sit here for hours doing nothing but preen their feathers.

These birds are, as a rule, very peaceable and do not disturb or molest other birds. It was therefore the more remarkable to see the Kittiwakes following our ship "Minna", pursue with great intensity a young Turnstone each time it tried to leave the ship.

The worst enemy they have is the Glaucous Gull. Although I have not seen it myself, there is good evidence it takes the eggs and the young birds in the colonies. It is not for any good that there are always several pairs of the big gull nesting above the Kittiwakes. — Another bird that pesters them is the Arctic Skua, but it is not nearly as fatal to them as the big gulls. — When a Kittiwake is coming in from the sea with food, the skua will attack it until it disgorges its food which the skua then catches in the air. If the Kittiwake is attacked out at sea, it often alights on the water and lies there for a long while, hoping that the skua will lose interest and go away.

In the colonies some nests may be found very low down on the mountain-side. They are however never placed so low that the Arctic fox can get at them. — There are nearly always one or two pairs of foxes near the big colonies. It may happen that a bird dies, or eggs or young birds fall out of the nests. — When the big gulls are raiding a row of nests, some of the young birds may fall down and be taken by the foxes. — Around the entrances to the foxes' earths, I have often found wings of adult Kittiwakes and in one instance also a head.

About the first week of August, the first young Kittiwakes are on the wing.

Observations.

During our stay at the island Sørkappøya (2) on July the 25th 1950, we saw numbers of these gulls going over. They were so numerous that I thought they were going to a big colony not far away. Later I was told there was another large settlement on the mountain Keilhaufjellet (1) on the other side of the bay.

When we came to Stormbukta (5) on July the 12th 1950, we found a colony on a sheer cliff-side about 300 metres from our hut. There also were several small settlements of five, six, ten, twelve and up to 25—30 pairs more or less near the big one. — As far as I could determine, there were young birds in the major part of the nests. — During nearly all the time we were staying here up to August the 8th, we almost daily saw the gulls coming with tufts of grass or moss in their bills. It is therefore certain that they mended and added to their nests during all the breeding period, i. e. until the young birds left the nests. We saw them gather moss on the great plain between the colony and the sea. The grass they mostly got near some small lakes. — The last time I put down such observations in my diary, was on July the 27th and the 30th.

On August the 4th, 1950, we came to the enormous bird-rock Sofiakammen on the north side of Hornsund. Here was the biggest colony of Kittiwakes I have seen on Spitsbergen. In some places the walls of the mountain were overhanging and in other places there were very deep ravines and clefts. It was mainly in such places that the Kittiwakes nested.

I came back here on August the 8th, 1952. As on my visit two years ago, thousands of Kittiwakes were breeding on the mountain-side. On the slopes beneath the bird-colonies were many remains of birds. It looked as if the skins were everted, therefore the Glaucous Gulls were to blame, not the fox, which carries the bird to its earth. We saw one of the big gulls attack and kill a fullgrown Kittiwake. — About half of the skins beneath the mountain belonged to this species.

When we left Sofiakammen on August the 4th, 1950, we went to the mouth of Hornsund. Here we stayed for some hours in the valley Revdalen (10). Over the uttermost ness the Kittiwakes came flying in from the sea, on their way to the colony at Sofiakammen. They came in a continous stream and all of them went exactly the same way, passing certain points in the landscape. — At the ness there were several skuas waiting for the Kittiwakes, who had to pay a tribute to the black rovers.

In 1952 we stayed at Hyttevika (11) north of Hornsund for about a month. — On days with a heavy wind from the north or from the south, the Kittiwakes came flying past the hut against the wind. On August the 10th and the 19th there were exceptionally great numbers of them. — On this last date we saw the first young birds of the year on the wing.

When we came to Recherchefjorden (15) on August the 18th, 1948, and two days later to Kapp Martin (17) in Bellsund, we found these gulls numerous in both places. Among them were relatively few adult birds. The major part consisted of young birds of the year, with a dark distal band across the tail and another dark band across the back of the neck. — Among the people one meets in Spitsbergen, there are many who think these young birds belong to a different species. They speak of

Sabine's Gull and other rare birds, when all they have actually seen are juvenile Kittiwakes.

During our stay at Måseneset (18) at the southern entrance to Van Mijenfjorden in the last days of July, and the first ones of August, 1948, we saw several colonies of these gulls on the sides of the mountain Midterhuken. — Wherever there were fresh-water pools, the Kittiwakes bathed. — In the sound between Måseneset and the island Mariaholmen, they sat in hundreds on the water, fishing in the strong tidal current.

Here I observed that the birds going to their nesting sites on the mountain, always followed a certain route where they rode on the rising currents of air along the side of the cliff. — On August the 3rd we went to a big colony on the uttermost point of the mountain. Most of the nests were on overhanging rocks and young birds in different stages of development could be seen. — When we came back here on the 12th there were still several young birds in the nests, but many of them were able to fly. — From this place to the mining town Sveagruva (20) at the head of the fjord, we saw Kittiwakes all the way.

In Isfjorden these gulls are to be seen everywhere. In the harbour of Longyearbyen they are usually very numerous. The only place in this fjord, where I have actually seen the colonies myself, is in Sassenfjorden (24). — On the mountain Tempelfjellet I found such a place on August the 17th, 1950. Here the birds bred on a big semicircular column of rock and on the adjoining sheer walls which were full of nests. On the same date we saw another big colony on a mountain not far from the house of Mr. Nøis. This mountain is situated where Tempelfjorden branches from Sassenfjorden.

At this time the greater part of the young birds had left their nests and we saw flocks of them every day, flying along the shore. There was rarely an adult bird among them.

On August the 2nd, 1949, we came to a colony in Kongsfjorden (Kings Bay) (35). Here the birds built upon an overhanging rock. The settlement is on the south side of the fjord, not far from the big glacier Kongsvegen.

From Sørgattet (37) along Smeerenburgfjorden, past Raudfjorden to Biskayerhuken (42), past Reinsdyrflya (44) and to the glacier Monaco-breen in Liefdefjorden (45), we saw several of these gulls during the month of July 1949, however no settlement was located until we came almost to the head of Liefdefjorden. — Not far from the hut at the foot of the mountain Siktefjellet I found a colony of Kittiwakes on July the 22nd. Close to the mountain-side there was the earth of a fox and here a lot of wings of different birds were strown about. Not a few of them were from Kittiwakes. I also found a head of a newly killed specimen of this gull.

On August the 24th we went to the glacier Monacobreen. Just beneath the northern part of the glacier, where the sheer ice-walls rose to about 50 metres above sea-level, there was a great circular eddy with big pieces of ice drifting along the edges of it. On the drift-ice coming from the glacier large numbers of Kittiwakes were sitting and in the middle of the eddy about a thousand birds were swimming, the major part of them Kittiwakes. — All at once all the birds would take wing and rise in the air like a cloud, immediately afterwards alighting again like a snowdrift. We could not see that they were eating anything, and possibly they were only bathing. Perhaps the water in the eddy was fresh, coming from a subterranean river, rising from under the glacier. These gulls are very fond of bathing in fresh-water so this may be the reason why so many of them assembled there. — As there was danger of big blocks of ice falling from the glacier, we could not go near for a more close investigation.

On the eastern side of Vestspitsbergen there are not by far as many of these gulls as on the west coast. — On September the 2nd, 1952, we saw numbers of them between Sørkapp (2) and Kvalhovden (54). — At Agardhbukta (48), farther north, there were several of them on August the 14th, 1948, and just north of this place, at Dunérbukta, we saw some later in the day.

Late in the evening the same day I found a big colony on Barentsøya (49). On the northern side of this island and not far from Heleysundet (50) there is a hut almost due east of the island Engeløya. The top of the mountain behind the hut is covered with an extensive stratum of diabase. Here there are big columns, deep ravines and crevices and in these places considerable numbers of Kittiwakes are breeding.

The next day we went through Heleysundet (50) and in the strong tidal current running here hundreds of Kittiwakes were fishing. — Later in the day we saw a few of these gulls on the eastern side of Barentsøya.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm	Weight grams
Aug. 8. 1949	Kapp Martin, Bellsund	♂	310	125	35	33	-
Aug. 9. 1949	Kapp Martin, Bellsund	♂	310	132	38	34	-
Jul. 22. 1950	Stormbukta, Sørkapp Land	♀	310	122	34	33	370
Jul. 22. 1950	Stormbukta, Sørkapp Land	♀	302	122	35	33	-
Jul. 22. 1950	Stormbukta, Sørkapp Land	♂	310	126	37	36	430
Jul. 31. 1950	Stormbukta, Sørkapp Land	♂	315	124	38	35	435
Jul. 31. 1950	Stormbukta, Sørkapp Land	♀	302	124	38	35	420
Jul. 5. 1952	Erdmannodden, Isfjorden	♂	312	137	36	36	370

33. *Pagophila eburnea* (Phipps).

Norw. Ismåke. Engl. Ivory Gull.

General Notes.

On the west coast of Spitsbergen the Ivory Gull is a relatively rare bird. The part of the country where it is mostly seen, is from Bellsund and to the head of Van Mijenfjorden (20). In other places along the west coast it is more or less a matter of chance if one meets an individual now and then.

It is especially at the colliery Sveagruva (20), at the head of Van Mijenfjorden, where I have seen them in greater numbers. At the head of the southernmost branch of the fjord, by the glacier Paulabreen, they are said to be breeding.

Apart from these places I have seen the birds in Hornsund, Sørgattet (38), Biskayerhuken (42) and Liefdefjorden (45). — On the eastern coast, where one is nearer to the known big breeding-places, they are more commonly met with. Here I have seen them all the way from Kvalhovden (54), Agardhbukta (48) and up to the islands Bastianøyane (51) at the entrance to Hinlopenstretet.

In its behaviour the Ivory Gull reminds one to a certain extent, of a tern. The voice of the bird is totally different from that of other gulls. — It is very fond of fat and will eagerly devour seal-speck. — This gull seldom rests upon the water and I have never seen it sitting upon the sea. I have tried to throw pieces of speck to it in shallow water and the bird waded out after them, but as soon as the water came up under its belly it flew up.

At Sveagruva where there used to be many of them (the mine is now closed) they acted as scavengers just like the big Glaucous Gulls. — Here it was curious to see that these big fellows did not dare to stand up against the much smaller Ivory Gull.

Observations.

On the north side of Hornsund, just outside the estuary of the river Revelva, we saw an Ivory Gull on August the 3rd 1952.

At Calypsobyen (14) in Bellsund we saw an Ivory Gull on August the 17th 1948. The trapper Mr. Blomli who lived there, told me that it was quite tame as he fed it daily. — In Recherchefjorden we saw six birds on the 18th and two days later, on August the 20th, 1948, a single bird at Kapp Martin (17) on the north side of Bellsund.

Mr. Blomli told me that there was a breeding-place of the Ivory Gull at Rubypynten on the mountain Observatoriefjellet in Recherchefjorden (15). Such informations given by trappers and other people in Spitsbergen must generally be taken with certain reservations, at least

until one has proved the facts. — It is of course not improbable that this gull may breed at Rubypynten, but in 1950 there were none nesting there. On August the 13th we visited the geologist Mr. Winsnes who worked here and had his headquarters just opposite the point. He had not seen Ivory Gulls at this supposed breeding-place and he had been there from the last days of June. He had not seen any of these gulls at his station until August the 10th. — But even if the birds did not breed there in the summer of 1950, it is of course not impossible that they may have bred there in earlier years and may nest there in the future. One should at least have the place under observation in the years to come.

On the above date, the 13th, we saw a single bird at the camp of Mr. Liestøl in Van Keulenfjorden (16).

When we came to the mining town Sveagruva (20) at the head of Van Mijenfjorden on August the 6th, 1948, the Ivory Gulls were numerous. On my later visits their numbers varied, but there was always 50—100 birds to be seen. The reason why they are more abundant in this place than in any other spot on the west coast of Spitsbergen, may be firstly perhaps because there is supposed to be a breeding ground at the glacier Paulabreen about 10 km to the south and secondly because it is a relatively short distance from Sveagruva to Agardhbukta (48) on the east side of the island. As the "crow" flies it is not more than 40 km. and as the bird is much more abundant on the east side, the birds at Sveagruva may be recruited from the east through the pass between the two places.

In the mining town the Ivory Gulls act as scavengers in company with large flocks of the Glaucous Gull. They take carrion and down at the beach I saw them gorge themselves with chunks of meat from a seal. — At the mess-room they took all eatable refuse thrown out to them. — I was said that one of the birds had become so tame that it would take food from the hand, but this I did not see. — On September the 1st, 1950, I gave them butter to get close up pictures, a bait to which they came very willingly.

We went to the glacier Paulabreen on August the 31st, 1948. When we arrived we only saw single birds at a great distance. To get them nearer, I shot a small seal (*Phoca hispida*). When we began to skin it a flock of about 25 Ivory Gulls immediately gathered around us. — They were not shy at all and would take pieces of speck not more than 2 metres away from us. — The greater part of them were adult birds, but there also were some young ones, easily recognisable because of the lace-like pattern of black spots on the white plumage.

It is said that the Ivory Gull never sits on the water. Perhaps it does so out at sea, but I have never seen it. — The birds we had around us at Paulabreen were no exception from this rule. — We threw pieces of speck to them and as it was flood-time, they went wading through the

rising sea to get at the speck. As long as they could wade all was well, but when the water rose so high that it touched the feathers under their bellies, they at once took wing.

The remains of the seal were lying on the beach, and now came other visitors. Four young Gloucoug Gulls arrived and drove the Ivory Gulls away. — Quite opposite to my earlier observations, the Ivory Gulls let themselves be driven away without putting up any resistance.

We wanted pictures of the Ivory Gulls and not of the others. To get rid of them we had to shoot them. The shots did not seem to disturb the Ivory Gulls at all. They took it quite coolly and did not stir. — The reason, I think, being that they keep to glaciers in summertime and are accustomed to hear cracks from them. Therefore the sound from a discharged gun makes no impression upon them.

In 1949 we saw a single Ivory Gull at the hut of Mr. Johansen in Bjørnhamna by Sørgattet (37). It came daily from June the 30th to July the 6th when we left the place. At Biskayerhuken (42) one on the 6th and two on July the 15th, and besides a single bird at the hut near Siktefjellet in Liefdefjorden on July the 22nd.

When we came to Kvalhovden (54) in Stortfjorden on the east side of Spitsbergen on September the 5th, 1952, there was quite a number of these gulls which gathered around the ship. One of my assistants who went on shore also saw many. — Among the adult birds there were several young ones.

In 1948 we visited Agardhbukta (48) some distance north of Kvalhovden. Here we saw a single bird on August the 14th and later in the day twelve of them a little farther north at Dunérbukta. We also saw one at Mistakodden and another at the northern part of the island Barentsøya. The next day we came to the islands Bastianøyane (51) at the mouth of Hinlopenstretet. We visited one of the islands, Kiepertøya and here we saw two Ivory Gulls. They came and flew crying around us for a long time. This was unexpected behaviour as they are usually more or less silent. Their voice is mostly heard when they have to protect some food against other gulls of their own kind.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm
Jul. 3. 1949	Bjørnhamna, Sørgattet	♂	353	155	36	38
Jul. 12. 1949	Biskayerhuken	♂	332	148	40	37
Jul. 14. 1949	Biskayerhuken	♂	330	144	34	36
Jul. 15. 1949	Biskayerhuken	♂	345	149	38	37
Jul. 25. 1949	Siktefjellet, Liefdefjorden	♂	338	150	35	38

34. *Stercorarius pomarinus* (Temminck).

Norw. Bredhalet jo. Engl. Pomathorine Skua.

General Notes.

The Pomathorine Skua has never been found breeding in Spitsbergen, but the bird has often been seen there. — The nearest breeding-places are on Novaya Zemlya and on the Kanin Peninsula. The first of these places is situated far more to the east and the other far more to the south than Spitsbergen. As most of the European birds go SW on the autumn migration, it does not seem likely that the birds from Novaya Zemlya go west and pass Spitsbergen on their way south, but in reality we do not know anything about this matter. On the other hand it is not impossible that the birds may be breeding somewhere in Spitsbergen.

Observations.

In 1948 we saw four Pomathorine Skuas on August the 20th at Kapp Martin (17) in Bellsund.

When we, on the return journey on S/S Regin, passed Sørkapp (2) on September the 9th, we saw four of these birds go by on a southerly course. Later in the day we saw more of these skuas, two and three together. They went south with a purposeful flight and never flew around the ship. I therefore do not think that the same bird passed the ship more than once.

When we came back to Kapp Martin again in the first half of August, 1949, I was of course anxious to find the bird again and we kept a sharp outlook for it. — On August the 11th we took a tame gosling with us on a trip down to the old beartrap not far from the camp. We then saw a skua who dived for the goslings. This bird proved to be a Pomathorine Skua. — The goslings was fairly big, almost halfgrown, and one would not expect a skua to attack it. But as this skua is a powerful bird, it could perhaps have killed the little goose. The next day we saw three of these skuas, and on August the 16th a young bird, whose tail-feathers (the two middle ones), were not fully grown. — This year we saw them ten days earlier than the preceding one, but it was not possible to say if they were on migration, as they used to go out to sea, but always returned to the shore again.

The big plains between the sea and the mountains from Kapp Martin to Kapp Linné should be closely examined. It would be very interesting if the Pomathorine Skua could be seen there during the breeding season.

At the big peninsula Bohemanneset (28a) in Isfjorden, I saw a Pomathorine Skua flying past us on July the 4th, 1952.

35. *Stercorarius parasiticus* L.

Norw. Tyvjo. Engl. Arctic Skua.

General Notes.

Where the ground is suitable the Arctic Skua breeds everywhere along the west and north coasts of Spitsbergen. On the eastern side of Vestspitsbergen it also occurs, but in much smaller number than on the west side.

On the great plains between the mountains and the sea, and on the low islands along the coast, one meets this species. The birds are distributed over big areas, sometimes only in single pairs and sometimes more together, even if each pair requires a fairly big piece of ground.

The nest is usually placed on or near boggy ground, but I have sometimes found it in perfectly arid surroundings.

There is mostly only one egg in the nest and I have rarely found more than one chick by the parents. — The reason for this is perhaps that they have no enemies in Spitsbergen. The big gulls are driven away, and the fox is lured away from the nest. Therefore they may need only one chick to preserve the species. In Norway I have always found them with two eggs and, as a rule, two chicks.

A nest is not built by these skuas. Usually they lay the egg in a depression in a hillock. Some of these seem to be very old as they are fairly high and grass-grown.

The behaviour of the bird in Spitsbergen does not differ from what is known about it in other places. — The bird suffering most from the Arctic Skua is the Kittiwake, but I have also seen it attack Black Guillemots and the Little Auk. — It very often takes eggs from the other birds, especially from the eiders and the divers. It will also take young birds. I have seen them attack newly hatched goslings of the Pink-footed Goose and I have also seen them catching and eating a lot of young Little Auks.

The Arctic Skua of Spitsbergen is lightcoloured, only in a few instances I have seen the dark phase. I should think that there is not more than 3—5 % of the dark phase in the islands.

The behaviour released in this bird when one comes near the eggs or young birds is quite stereotyped. It flaps its wings and jumps a couple of times into the air, or it waggles along with half-spread wings. In connection with man, both forms of display are without purpose, for nobody believes that the bird cannot fly. But it may be able to lure away the Arctic fox by playing lame. In Norway the Arctic Skua behaves very differently under similar conditions. I have seen it tumbling down from the air like a wing-shot bird and then lying on the ground crying and flapping. In this way it will almost certainly lure its enemies away from the nest.

In some years it was quite striking to see how few pairs of this bird were to be found with eggs or chicks in Spitsbergen. In some cases the eggs may have been taken, but in a lot of instances the skuas were non-breeding birds. — Another peculiar fact about this bird, also seen in other species here, is that the breeding period may stretch over a fairly long time within one and the same area.

Observations.

At Sørkappøya (2), an island visited by us on July the 25th and 26th 1950, there were about twelve to fourteen pairs of the Arctic Skua, but no occupied nest was found. — At a long distance we sighted a bird that might have been sitting on a nest, but as the matter was not examined, the possibility that the bird was breeding is very slight. I have very often seen skuas sitting on tussocks in a manner which reminded me of a bird sitting on a nest, but they were only resting.

The reason why the skuas and other birds did not breed on the island, was because there were foxes there. If any bird had tried to breed on the ground, the fox would certainly have had the eggs.

On the SW point of the mainland, Øylandet, and also at the island Tokrossøya (4) close by, we saw skuas on July the 16th and 19th. When we came to Stormbukta (5) on July the 12th we saw several pairs of the bird on the big plains around our camp. They were most frequently seen near the colony of Kittiwakes and these gulls were always pursued by them. — In none of these places did we find any nest with eggs nor young birds during the whole of our stay until August the 12th.

On the great plains Breinesflyane (6), north of the glacier Bungebreen, there were several pairs of skuas. On July the 16th we found six pairs here, but no eggs or young birds. On July the 23rd we went far inland from the coast, and here on this plain we found a nest. The bird was sitting on a single very beautiful egg in the middle of a patch of *Salix polaris* close to a big flat stone. When we approached the bird got up and disappeared. It came back again immediately, alighted, and made the usual display. We saw, however, only this single bird. It is unusual to have to wait long before the other bird comes. Sometimes a lot of skuas may come. These birds are however usually driven away by the pair occupying the territory.

On July the 29th we saw a skua near our hut in Stormbukta. This bird was pursuing a young fox and tried to get it to drop a piece of meat it was carrying, but without any luck. Another skua was pursuing a Kittiwake and when this bird was passing one of my assistants it dropped a stream of "krill", a small prawn (*euphausidia*) which almost fell on his head. The skua however did not dare to come to collect the prawns.

On July the 30th we saw two pairs of skuas on the plain Bjørnbeinflaya not far from the hut, but they were not breeding.

On the plains below the mountain Hohenlohefjellet by Hornsundneset (7) we saw several skuas on August the 2nd. The following day we saw two skuas sitting on the ice near the bird-rock Sofiakammen (9) in Hornsund. It was the first time I saw them sitting on drift-ice, but they were perhaps waiting for something to eat because we had shot some birds here.

On August the 3rd we came to the valley Revdalen not far from the mouth of the fjord on the northern side. — The bottom of this valley is very wide and here several pairs of skuas were seen, but only one pair seemed to have a chick.

When I came back here on August the 3rd, 1952, and went with my assistants northwards along the river, ten Arctic Skuas appeared and circled around us. — Midways between the shore and the lake Revvatnet, we found a small chick. Two days later we found another such bird here, but this one was almost fully fledged.

On the 18th we saw a skua close to the lake, pursuing a young Little Auk. The small bird could not fly very well and the skua tried repeatedly to press it down to the ground. Now came a Glaucous Gull and tried to take it, but was immediately driven away by the skua. At last it succeeded in getting the little bird in the right position and began to pluck it. When we came running up to it the skua of course flew away and we saved the Little Auk who was in fairly good condition. It had only lost a few feathers and seemed to be all right when we let it loose on the sea.

On August the 15th we saw a pair of skuas in a gully between the mountain Torbjørnsenfjellet and Rotjesfjellet, about 250 metres above the sealevel. It looked as if they were hunting for the young ones of the Little Auk of which there was a breeding-place.

North of this place, at Hyttevika where we had our headquarters, we found a pair of skuas on July the 12th. The nest held two eggs. — Close to the hut was the mountain Gulliksenfjellet and on the eastern side of it, in the valley Bratteggdalen we saw two pairs of skuas on the 17th at the lake Myrtjørna. They did not seem to be breeding here. When we went back to the hut we found a pair with two eggs just before we came to the plain Kvartsittsletta. On this plain we found another pair with a newly hatched young one.

At Russepynten, some way south of Hyttevika we saw three pairs on July the 22nd. One pair seemed to have chicks and soon afterwards we found a big one.

Two days later we went to a great bog just south of the hut. Here there were four pairs. One of them had no nest but the other two had eggs or chicks. The fourth pair which we had found on the 12th, had

still two eggs and hatched on the 26th. — On the 27th we again went to Kvartsittsletten. The young bird seen here on the 17th had grown and was now a big fellow who ran away with great speed. The other pair whose nest was also found on the 17th, had now hatched.

On August the 15th we came to two small ponds on the plain west of the mountain Rotjesfjellet near Hornsund. Here was a pair with two chicks.

On August the 4th, the skuas began to hunt for the young small auks and two days later we actually saw them catching the small birds. The skuas however, never went up to the colonies on the mountainside as the Glaucous Gulls did. They stayed on the plain and took in the air the birds who had to cross the place.

On August the 10th a pair of the dark phase, two entirely black birds, passed the hut and one of them was shot.

When the skuas pursued the Little Auks, it could not always be determined if it was to hunt for a young bird or for another matter. But on August the 17th we saw twice how they went after adult birds to get the food they had collected.

When we crossed Kvartsittsletta on the 25th we saw several skuas. Among these here were two fully fledged young birds who played with each other in the air, a very beautiful performance.

We went to the islands Dunøyane (12) on July the 14th. On the biggest island Store Dunøya we saw three skuas, but none of them seemed to be breeding. Two days later we came to the second island, Fjørholmen. Here were two pairs of which one most certainly had a nest. On the 20th the skuas were very busy in driving away every gull who came within their territorial border. Two small downy chicks of the Glaucous Gull were pursued and kicked head over heels until they came outside the danger zone. — One pair on Store Dunøya showed that they had one or two chicks on July the 26th. About a month later, on August the 22nd, we saw several skuas in this place.

On the island Store Isøya (12a) (north of Dunøyane) we found two pairs on August the 1st. One of them must have had chicks because they attacked us with great vigour. — On the 19th we went still farther north to Kapp Borthen (12b) and Nebbodden. At both of these places we saw several skuas.

On Mariaholmen (18), an island at the southern entrance to Van Mijenfjorden, we saw one pair on July the 29th, 1948. On the big island Akseløya (north of Mariaholmen) there were several pairs two days later. None of these birds had a nest. We had our camp at Måseneset on the southern side of the entrance to the fjord. Here we found two pairs on August the 1st, each with one chick. Later in the day we found another pair nesting at the uttermost point of the mountain Midterhuken. — On August the 4th we saw several pairs between Måseneset and the

mountain Wahlenbergfjellet, none of them seemed to be breeding. — On the 7th there were a few pairs at Sveagruva (20) at the head of the fjord. — At Calypsobyen (15) in Bellsund there was one pair on August the 17th, 1948, and several pairs at Kapp Lyell (13) on the 19th. None of them were breeding.

At the cairn on the hill Lågnesvarden near Kapp Martin (17) on the north side of Bellsund, two pairs were seen on August the 9th, 1949, and two other pairs at Lågnespynten close by on the 14th.

At Kapp Linné (21) at the entrance to Isfjorden, several Arctic Skuas were seen on July the 25th, 1948. The men at the radio-station here, told me that they had seen a completely black skua some weeks earlier. — At Hotellneset near Longyearbyen (22) there are always skuas to be found during the summer. On July the 2nd 1950 a nest with one egg was found here. We were almost always attacked by the birds when we approached the nest.

At Bohemanneset (28a) on the north side of Isfjorden, we saw two pairs of skuas on July the 4th, 1952. None of them were breeding. — On the islands Gåsøyane (25) by Gipshuken in Isfjorden we saw a pair on August the 10th, 1948, and found them there again on July the 6th, 1950. No nest or young birds were found. — On the big bogs along the river in Sassendalen (24) there was a pair with a young fully fledged bird on August the 16th, 1950. Near by there was another young bird. Both of them could fly and they possibly belonged to the same parents.

At Ny-Ålesund (34) in Kongsfjorden (Kings Bay) several birds were seen on July the 26th, 1948, also many on the sea between the above place and the islands Lovénøyane on June the 28th, 1949. — When we came back here on August the 3rd several skuas were observed at Brandalpynten not far from Ny-Ålesund. Here I saw an absolutely black bird.

On June the 26th, 1949, a pair was seen on the island Moseøya in Sörgattet (37), one pair at Smeerenburgodden (38) on the island Amsterdamøya on July the 2nd, one pair on the island Albertøya later in the day, also two pairs on the island Danskøya. All these birds were non-breeding.

On the plain W of Biskayerhuken (42) we saw three pairs on July the 8th. When we left here on the 20th none of them had begun breeding. — At the foot of the mountain Rabottfjellet south of Biskayerhuken, we saw a pair on July the 17th but also these were non-breeding.

On the biggest island in the group of Andøyane in Liefdefjorden (45), we found a pair breeding on July the 25th, 1949. — The next day I saw two non-breeding pairs in the delta of the river coming from the glacier between the mountains Siktefjellet and Ben Nevis. — On July the 29th there was a breeding pair near Arneliusneset (40) at Svenskegattet south of the islands Norskøyane.

On August the 15th 1948 I found two breeding pairs on the island Kiepertøya in the group of Bastianøyane at the entrance to Hinlopenstretet on the east side of Spitsbergen.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm	Weight grams
Jun. 29. 1949	Moseøya, Sørgattet	♂	326.5	-	30	42	-
Jul. 2. 1949	Moseøya, Sørgattet	♂	316	213	30	42	-
Jul. 30. 1950	Stormbukta, Sørkapp Land	♂	326	214	31	45	-
Jul. 30. 1950	Stormbukta, Sørkapp Land	♀	338	196	33	45	620
Jul. 30. 1950	Stormbukta, Sørkapp Land	♀	322	194	33	45	540
Jul. 4. 1952	Bohemanneset, Isfjorden	♂	324	214	33	43	650
Aug. 10. 1952	Hyttevika, N of Hornsund	♀	326	175	33	44	400
Aug. 18. 1952	Revdalen, Hornsund	-	325	189	32	45	600
Aug. 18. 1952	Revdalen, Hornsund	-	328	207	33	45	500

36. *Stercorarius longicaudus longicaudus* Vieillot.

Norw. Fjelljo. Engl. Long-tailed Skua.

General Notes.

The Long-tailed Skua has been observed repeatedly in Spitsbergen, but first in 1931 it was found breeding in the valley Adventdalen by the Englishman Mr. Tomkinson.

The bird is fairly common around Longyearbyen (22) and in Kongsfjorden (34) (Kings Bay). — Outside these places I have not seen it.

This bird is far more rare in Spitsbergen than the common Arctic Skua. — The reason may be that their manner of living is entirely different. The Arctic Skua, to a very great extent, lives on food taken from other birds, but the Long-tailed Skua does not do this, at least not to such a degree. Neither in Norway nor in Spitsbergen I have seen it attacking gulls terns, or other birds, to take food from them.

In Norway it is mainly found in Finnmark. In the southern parts of the country it occurs in the mountains in years when the small rodents are abundant, and it seems that the bird is especially dependent on this kind of food.

In Spitsbergen there are no rodents, except around the settlements of the mining towns where there are common rats and mice. These have come with ships from Norway and are not found outside these places and their surroundings.

It is perhaps only accidental that the bird is found near the two biggest Norwegian collieries where rats and mice occur, but one cannot be certain. In summer-time these rodents may spread out in the vicinity of their winter-quarters and then the bird might get some of

them. On the other hand it is a fact that Mr. Tomkinson found it breeding far up in Adventdalen.

What the bird lives on I have not been able to ascertain and as long as it is relatively rare, one cannot recommend that a number should be shot for this kind of investigation. — I have however, at least on a single occasion, seen blowflies being taken as food to a young bird.

Observations.

Near the football-ground at Longyearbyen (22) I saw a Long-tailed Skua on July the 22nd, 1948. It behaved as if it had a nest and soon afterwards we found a young bird about eight days old. — We found only this one and Mr. Tomkinson said that there was only one egg in the nest found by him. — When we began to seek for the nest, the bird got very aggressive. It alighted on the hat of my assistant and began to peck at it. — Later it sat down on the ground close before us and there it disgorged something like a pellet about the size of a walnut. The pellet consisted of blow-flies hard pressed together and it seemed that the young bird would have been fed with them.

The flies may have come from carrion near by, where a dead horse was lying. This animal was, I should think, shot during the war, and as there are no putrefactive bacterias here, it was not rotten, only dried up. On this carrion there were several blow-flies. These were also found in the settlements, but outside such places I have not seen them in numbers.

In the last days of June 1949 I saw a Long-tailed Skua at Hotellneset near Longyearbyen and also four of them at the quay of the settlement. — In 1950 I came to Hotellneset on July the 1st. Here we saw a single bird. Coming back here two days later we found a pair of them, and on the 5th the nest with two eggs was found. These were laid without any nesting material on a flat stone with a shallow depression in the middle. When we photographed the nest the pair came crying, also arrived five more birds and at last seven Long-tailed Skuas were sitting on the ground around us.

The birds of the nest were totally different. One of them, possibly the female, had a very long and beautiful tail. The other bird had only one leg and was easily known to us because of the short middle rectrices. These tail-feathers had perhaps been shed some time ago and were now growing. — Of the other five birds there was one with an unusually long tail.

The breeding birds got more and more excited the longer we stayed and at last one of them alighted on the cap of one of my assistants and sat there pecking at it. Between the peckings it cried excitedly. It sat so hard that he could walk about with it sitting on his head. When this bird at last flew away, another came and took its place. He now tried

to catch one of them, but was not successful. Then he took one of the eggs from the nest and showed it to the bird who just had settled on his cap. He held the egg in his left hand and the bird, who was looking intently at the egg, was caught with his right hand. — The bird fought hard and pecked his finger. At last we placed it on the ground where it held on to one of my fingers. It was absolutely free and when it at last found this out, it flew away. Afterwards it kept at a respectful distance from us.

In 1952 I saw a Long-tailed Skua at the quay of Longyearbyen on June the 30th and on July the 2nd a bird on the harbour there.

In the last days of June 1949 I saw a Long-tailed Skua in Kongsfjorden (Kings Bay) between Ny-Ålesund (34) and the islands Lovénøyane. On August the 2nd the same year, we saw two birds here and the following day three of them at Blomstrandhalvøya on the other side of the fjord.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm
Aug. 2. 1949	Lovénøyane, Kongsfjorden	♀	310	305	25	38.5
Aug. 3. 1949	Blomstrandhamna, Kongsfjorden	♂	300	300	27	40
Aug. 3. 1949	Blomstrandhamna, Kongsfjorden	♀	295	282	28	38

37. *Stercorarius skua* Brünnich.

Norw. Storjo. Engl. Great Skua.

At Hyttevika north of Hornsund I saw a very big skua on July the 29th. 1952. The bird was big with broad wings. At first I thought that it might be the dark phase of the Arctic Skua, but it was by no means so dark, much bigger and there were no prolonged tail-feathers to be seen.

I followed the bird with my glasses until it disappeared close to a big colony of the Glaucous Gull high up upon the mountain-side. Here the gulls began to make a big noise and flew about. These gulls never reacted in this way to the common skua, which bird was never seen to fly up the mountain-side. Therefore I hold the bird to be a Great Skua.

38. *Uria lomvia lomvia* (L.).

Norw. Spitsbergenlomvi. Engl. Brünnich's Guillemot.

General Notes.

This guillemot breeds along the west and north coasts of Vest-spitsbergen in smaller and bigger colonies. (Of course also on the east side, in places where I have not been.) They are also found breeding in suitable places far into the fjords. It very often breeds with the Kittiwakes,

but generally each species occupies its own part of the rock, though in small areas they may be found intermingled. To outward appearance there is the best understanding between the two and one never sees either molesting the other.

On most of the bird-rocks the young guillemots, as far as I have seen, leave the colonies between August the 7th and the 12th. — In some instances I have seen the young bird coming down from the rock and each time it came fluttering down with at least one of the parents close behind it. — Striking the water the young bird will dive and then when it comes up, cry for a while. Immediately afterwards the parent birds take it with them and out to sea. For this behaviour there are different reasons. One is that the birds try as soon as possible to reach places where food is abundant. Now when there are so many young birds to feed a great part of the inhabitants of the colony go far out to sea to fish and it is only natural that they like to take their offspring with them. Another reason is that the migration towards the south begins in the last half of August, and as long as the young guillemots are unable to use their wings, the birds have to swim. There is however a third reason that is very important. The adult birds try to get the young birds as soon as possible out of reach of the Glaucous Gull. The fact is that these gulls will attack and kill the young guillemots as soon as they have reached the sea. They can, however, not manage to eat their prey as long as it is lying on the water and therefore have to get it to the shore to devour it there. This is because the young birds at this time of the year are too big to be swallowed whole, as these gulls do with the eider ducklings. — Besides the young guillemot is too heavy for the gull to carry to the beach at one stretch. When it has caught its prey at, let us say, one hundred metres from the shore, it has to drop the young bird several times and catch it up again before it reaches land with it. — It is my opinion that the guillemots try to get their progeny out of the area where the big gulls are dangerous, as soon as possible. When they are far out it is too laborious for the big gulls to carry their prey to land where they can eat it.

In a colony the cliffs are often whitewashed by the excrements of the birds, especially below the nests but farther down at the foot of the rock, the slopes will be green. This is because of the manure and plants thriving on it.

It is often very difficult to get at the nests of these birds. They often breed high up on the face of the cliff and the climbing here is dangerous because of the disintegration of the rock. This fact is indeed important to the birds as the colonies are seldom raided by man. — The fox and the Glaucous Gull are really the worst enemies of this bird in Spitsbergen.

Observations.

The southernmost point where we saw guillemots was at the SW point of Sørkapp Land (4). Here we found small numbers of them on July the 16th, 1950. They were seen not far from the land. This should indicate that there must be a colony not far off, perhaps at the mountain Keilhaufjellet.

On August the 3rd in the same year we came to the bird-rock Sofiakammen (9) on the north side of Hornsund. The rock is about 600 metres high and goes almost perpendicularly down to the beach. When we crossed the fjord there were big numbers of guillemots to be seen both on the water and in the air. Some of them were sitting on ice-floes, a sight that was new to me.

The bird-rock was one of the biggest I ever have seen, with very steep walls and deep ravines and clefts. Here the guillemots were nesting in enormous quantities, partly by themselves and partly in close neighbourhood with the Kittiwakes.

I came back to Sofiakammen on August the 8th, 1952. For three seasons I had tried to find out how the guillemots in Spitsbergen got their young ones down from the cliff, but every time I went to the big colonies, I was either too early or too late. From earlier experience I had found that the birds left their breeding-places in the days between August the 7th and the 12th. This seemed to fit very nicely now, for when we came to the bird-rock, great numbers of the birds were sitting on the sea and the ledges of the mountain were full of them.

In the afternoon and in the evening we saw more than 20 young guillemots leaving the breeding-places. As among the Little Auks, the guillemots seem to follow the rule that they mainly leave the mountain in the evening and in the night. The young birds came whirring down from a great height at an angle of 45° . They used their small wings very rapidly, but they also sailed on stiffly expended wings for quite a distance. As a rule they flew in a straight line, but now and then a bird would make a smaller or bigger curve in the air before it alighted on the sea. As a rule both parents (or let us say two guillemots) followed the young bird closely). They kept close to it whether it went in a straight line or made a curve in the air. In a few instances only a single adult bird followed the young one, but once I saw a young guillemot accompanied by not less than seven grown birds.

During the flight, the adult birds uttered a characteristic growling note and by that we always could tell when the young bird was in the air. In no instance did I see the grown bird (as is told in Spitsbergen) try to push the young one upwards in the air to give it a greater height and prevent it falling on the beach.

When the young bird alighted it hit the water with a great splash, and bounced up again one or two times before it came to rest. In two instances we saw the bird turn summersaults and fall on its back. — I once saw a young bird come at a very steep angle, so steep that it disappeared under the surface. The young bird would dive of its own free will when it had stopped calling after the excitement of the big event had died down. Then one of the parents immediately followed it, but as long as it swam on the surface, neither of the adult birds dived. — As soon as the birds had calmed down they swam away, setting the course for the middle of the fjord.

In no instance did I see the big gulls capture a young bird on the sea, as I have seen on an earlier occasion. We saw, however, how the gulls in five different instances took the young guillemots on the ledges on the face of the cliff. It then flew down on the grassy slope beneath the mountain and killed the bird there with its very formidable bill. Thereafter it tried to swallow the small bird whole, but had to give up as it was too big. After having tried in vain for a while, it had to quarter its prey to get it down.

The following day, on August the 9th we stayed here for quite a while, but during the morning and the forenoon, not a single young bird was seen to leave the cliff. As the weather seemed likely to get really bad, we did not wish to stay here in a tent for another night and started for Hyttevika.

On a trip to Hornsund on July the 28th, we as usual saw a great number of guillemots on the fjord. — On August the 1st, 1952, we saw several guillemots between the mainland and the islands Dunøyane (12). They are very rarely seen so close to the shore here where the water is shallow.

The next big bird-rock with guillemots that is known to me, is the mountain Midterhuken in Bellsund (18) close to the southern entrance to Van Mijenfjorden. When we arrived here for the first time onboard the M/S "Minna" on July the 28th, 1948, there was a heavy fog. We could not see the land, but we heard the guillemots and kittiwakes on the rock. Later in the day when the fog lifted, we went along the mountain to Måseneset at the entrance of the fjord. During this passage we saw several big colonies on the cliffs and also hundreds of birds on the sea. — In the first days of August only a very few birds had got their young ones down from the mountain, the majority did not leave until about the 10th.

Near the uttermost part of the mountain where it stands out into Bellsund, is a big colony of Brünnichs Guillemots, which we came to see on August the 4th, 1948. The birds had settled on ledges not far above the sea and therefore we were able to get fairly close to them. They were

mainly sitting in long rows upon the ledges, but single pairs also nested among the Kittiwakes. The young birds kept hidden behind the adults and it was very difficult to see them. — On our visit here we saw a young bird coming down from the rock. It came at a great speed fluttering down with one of the parents close behind it. It hit the water with a big splash and disappeared under the surface. Coming up again it cried excitedly for a long time.

When we came back here on the 12th, there were only a few birds left. The benches on the mountain-side that had been filled with row upon row of the black and white birds, were now empty, but from the mountain and far out to sea we met flock upon flock of adults and young birds. — On the 19th there still were a few guillemots to be seen in Bellsund.

On August the 5th, 1950, we came to Kapp Martin (17) in Bellsund to stay there for about a fortnight. One of the main purposes in going here, was to visit the colony of guillemots at Midterhukken to see the young birds leaving the bird-rock. After my experience from the preceding year, the time from about August the 5th to the 12th should be the best, but unfortunately the weather became so bad that it was unthinkable to cross the fjord with our small boat. — When we arrived on the 12th, there was only a single guillemot left in the part of the colony that was accessible. On the sea the flocks of guillemots were very numerous and the main part of them consisted of adult birds which had a young one with them.

Another place where they are breeding in great numbers is on the cliff Alkhornet (29) on the northern side of the entrance to Isfjorden. Here there are usually many of them sitting on the sea and here we also saw a young bird that had left the nest as early as July the 24th, 1948, an unusually early date. — In the night of June the 24th, 1949, we had anchored in the harbour Trygghamna just below Alkhornet. Here the guillemots were very numerous.

On the mountains along the south side of Isfjorden from Kapp Linné (21) to Longyearbyen (22) the guillemots are breeding in many places. The great number of birds seen from the ship along this stretch of the fjord should indicate that there are several colonies on the mountainsides, and one can see that the sheer rocks near the summit of the mountains are inhabited by birds, but going past them at a great distance on board a ship does not allow for close investigation. — When we came here on June the 30th, 1952, there were as usual big numbers of guillemots to be seen on the fjord from Kapp Linné and until we rounded the point of Adventfjorden.

On June the 25th, 1949, we saw flocks of guillemots on the sea to the west of Prins Karls Forland (31). They were especially numerous

near the big bird-rock Fuglehuken (33) on the northern point of this foreland. Here there are colonies of this bird. There also were many of them in Kongsfjorden (Kings Bay) near Ny-Ålesund (34) on June the 27th, 1949.

A few birds were seen in Sørgattet (37) on the 29th, also some of them outside Danskeneset on the island Danskøya on July the 1st, 1949. — A few days later, on the 6th we went through the sound between the islands Fuglesangen (39) and Fugløya. Especially at the northern point of the last island there were great numbers. — Later in the day we went through Svenskegattet (41) where they were very numerous, but when we came near the mountain on the ness Flathuken, where there are big colonies, their numbers increased enormously. Across Raudfjorden from Flathuken there were thousands upon thousands on the water and in the air, but as we came nearer to Biskayerhuken (42) on the other side of the fjord, we saw less and less of them. I have never at any place seen so many guillemots as near Flathuken in Raudfjorden.

During the time we stayed at Biskayerhuken from July the 7th to the 20th, 1949, we almost daily saw the guillemots crossing the peninsula from east to west and back again. We also met them in the big bay Breibogen south of this place. During our stay in Liefdefjorden (45) from July the 21st to the 27th, we only saw single birds a couple of times, but when we came back to Flathuken on the 28th, there still were enormous numbers to be seen.

In Storfjorden, on the east side of Vestspitsbergen we saw several big flocks on August the 13th, 1948. We were then abreast of the glacier Vasilievbreen. The greater part of the birds were going south, but small flocks were flying in all directions. The number of young birds was very great. Farther north we saw less and less of them and when we came to Agardhbukta (48) there were only a few birds to be seen. From this place there was hardly one to be found until we came to the islands Rønbeckøyane and Bastianøyane (51) at 79° n. lat. Here enormous flocks were going south. — Hinlopenstretet was shut up by drift-ice so we could not get through. Near this belt of ice we saw small flocks of guillemots going north, but the greater part of them were going in the opposite direction.

On September the 3rd, 1952, we saw a great number of guillemots in Storfjorden between Sørkapp and Kvalhovden (54).

On the return journey south from Agardhbukta, we saw several birds on the 6th and also on the following day near Bjørnøya.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm	Weight grams
Aug. 12. 1949	Midterhukun, Bellsund	♂	219	42	36	35	-
Aug. 12. 1949	Midterhukun, Bellsund	♂	221	44	37	36	-
Aug. 9. 1952	Sofiakammen, Hornsund	♂	219	50	36	36	900
Aug. 9. 1952	Sofiakammen, Hornsund	♂	220	48	41	39	900
Aug. 9. 1952	Sofiakammen, Hornsund	♂	218	50	39	36	900
Aug. 9. 1952	Sofiakammen, Hornsund	♂	220	46	35	38	750
Aug. 9. 1952	Sofiakammen, Hornsund	♂	219	50	35	38	800
Aug. 9. 1952	Sofiakammen, Hornsund	♂	223	49	35	37	800

39. *Cephus grylle mandtii* (Mandt).

Norw. Spitsbergenteist. Engl. Black Guillemot.

General Notes.

The Black Guillemot breeds in places suitable for it all along the west and north coast of Vestspitsbergen, both on the sea-shore and also far into fjords. It also breeds on the east coast.

This bird never occurs in such great quantities as the other auks, e. g. the Little Auk and the Guillemot. It is, however, found almost everywhere without being numerous in any place. As a rule it is regularly distributed in pairs along the shores, but in some localities one may find up to 20—30 individuals together and on a few occasions I have seen as many as 50. — The Black Guillemot prefers coasts with steep brinks and rock-walls, especially where these are riddled with holes and crevices where they can breed. It is not necessary for the birds to have their nests at a great altitude above the sea-level, for as a rule the site of the nest is well protected. Therefore the rock-walls where they nest are rarely very high. The breeding-grounds may not even be situated on the shore, they may be several hundred metres from the beach.

In some places at Spitsbergen mighty stratas of diabase or basalt cover the mountain-tops and in other places these eruptive formations may be found at sea-level. In these strata there are holes, cracks and crevices and here the Black Guillemot is often found breeding. Thus I have found it nesting in walls of diabase several hundred metres above the sea. I have also been told that it breeds in holes in the strata of sandstone on the mountain-tops.

The Norwegian race of the Black Guillemot (*Cephus grylle atlantis* Salomonsen), will ordinarily breed near the sea, but my late friend Mr. Landmark told me that it can nest several hundred feet above the sea-level e. g. in Oksfjord and Aurlandsfjord.

The egg-laying period may vary a great deal. I have found young birds ready to get out of the egg as late as August the 10th, but I have also seen fully fledged young birds on the sea on August the 14th on the western as well as the eastern coast.

Observations.

At Sørkappøya (2) we found a few pairs of breeding Black Guillemots on July the 25th, 1950. — On the 13th we saw several that were nesting on the relatively low but steep hillsides along the plain Bjørnbeinflyane near our headquarters in Stormbukta (5). These breeding-places were situated several hundred metres from the shore. But the birds also nested on the sea-shore itself. On the steep, perpendicular walls of Fisneset close to our hut a few pairs were also nesting.

At Suffolkynten (7) on Hornsundneset we saw several individuals on August the 2nd, 1950, and the next day there were many of them along the coast from this ness to Gåshamna (8) in Hornsund. — At Hyttevika (11) north of Hornsund we saw numbers of this bird from July the 10th, until we left in the first days of September 1952. — At the islands Dunøyane (12), due west of Hyttevika there were also several. On August the 15th we saw the first young bird of the year on the sea.

From July the 29th to August the 5th, 1948, we met them in several places about Måseneset (18) at the southern entrance to Van Mijenfjorden. From this place and to the mountain Wahlenbergfjellet, they were found in pairs all along the coast where they bred in the low cliff-walls along the beach.

In the big bird-colony at the uttermost point of the mountain Midterhuken in Bellsund we found a small gathering of these birds among the common guillemots on August the 3rd, 1948. This was remarkable as they usually keep apart in pairs. — In Van Keulenfjorden we saw the first young bird on the sea on August the 13th, 1950.

At Kapp Linné (21) at the mouth of Isfjorden we saw several on July the 24th, 1948. Later in the summer, on August the 10th we came to the islands Gåsøyane (25) near Gipshuken in Isfjorden. Here the birds had their nesting-places in the perpendicular, but not very high, walls of diabase on the east and south side of the islands. A nest with two eggs was found. We heard the young birds crying and when we discovered the nest, the bills of the chicks were sticking out of the eggshells. The eggs were lying on a bed of small stones just at the mouth of a small crevice. — When I came back to this place on July the 6th 1950, the Black Guillemots were breeding in the same places where I had found them two years earlier.

At Skansbukta (27) in Isfjorden they were fairly abundant on July the 9th, 1950, also along the coast from Rundodden to the above

bay. — In Tempelfjorden (24) we saw many of them on August the 19th, 1950, and some days later, on the 24th, we found not a few from the mouth of the river Sassnelva to Diabasodden (23). Some of these were young birds with many white spots.

At Ny-Ålesund (Kings Bay) (34) I have seen them on different occasions, so on July the 26th, 1948, and June the 27th, 1949. — When we stayed at Bjørnhamna (37) in Sørgattet about July the 1st, 1949, we saw the birds in the sound daily. On the island Danskøya on the other side of the sound there was a very steep cliff near the sound between this island and Moseøya. Here we found quite a big colony on July the 5th, but the birds had settled far apart, each pair by themselves.

On the sea outside Biskayerhuken (42) we saw the birds daily from July the 6th to the 20th, 1949. Sometimes as many as 50 birds were assembled in a relatively small area. During this time we also saw them in the bay Breibogen south of Biskayerhuken. South of this ness the coast was mountainous and there were many of them. Farther south there came a stretch of level ground and here there were very few to be seen on the sea. At the southernmost part of the bay there were mountains again and here the birds also became numerous.

In Liefdefjorden (45) we stayed at a hut near the mountain Siktefjellet. Here we saw small numbers on the fjord about July the 25th, 1949.

When we came to the island Kiepertøya (51), in the group of Bastianøyane, at the entrance to Hinlopenstretet, on August the 14th, 1948, we found a great number of Black Guillemots breeding on the perpendicular walls of diabase on the east side of the island.

At Kvalhovden (54) in Storfjorden a young bird came close up to the ship on September the 5th, 1952. The next day we saw adults and young birds all the way south from Agardhbukta (48).

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm	Weight grams
Jul. 5. 1949	Sørgattet	♂	166	50	32	31	-
Jul. 14. 1950	Stormbukta, Sørkapp Land	♂	170	51	31	30	-
Jul. 11. 1952	Hyttevika, N of Hornsund	♂	170	45	37	31	440
Jul. 19. 1952	Hyttevika, N of Hornsund	♀	164	51	34	29	420
Jul. 19. 1952	Hyttevika, N of Hornsund	♂	165	44	30	32	430
Jul. 19. 1952	Hyttevika, N of Hornsund	♂	169	47	33	31	400

40. *Plotus alle alle* (L.).

Norw. Alkekonge. Engl. Little Auk.

General Notes.

This bird breeds along the west and north coasts of Vestspitsbergen and they are also found far into the fjords where they can find suitable localities for nesting.

They partly breed in holes and crevices in hard rock and are then found high up near the summits of the mountains. The majority of them, however, breed on the great rock-strewn slopes on the mountain-sides. Where these slopes go up to the tops of the hills, the birds have a wide nesting area.

Underneath these enormous stone-heaps the mountain is clad with a yellow-green moss, and, in the south, this is very characteristic of the breeding-places of the bird. Where snow lies in clefts near the colonies, it is often redcoloured from the droppings of the Little Auk. This has in some cases been mistaken for the genuine red snow which originates from a little red algae.

The nest is well protected, being in the heart of the stone-heaps where neither fox nor the big gulls can get at it. Here the birds have their single chick which has a thick downy coat, dark on the upperside with a light grey-white belly. When such a young bird is taken out of its hole and let loose, it is extraordinary quick in hiding itself among the stones.

From such a colony the calls of the bird can be heard afar. One cry resemble a hearty laughter and it can be heard both when the birds are sitting on the slopes and when they are on the wing. On sunny days the birds sit close together on all the big stones on the slopes. In a big colony the hill-sides are covered with the black and white small birds as far as one can see. — All at once a swarm of them take wing. The birds fly about crying for a while and then settle again. But sometimes it seems that the inhabitants of a great part of the colony fly up, all of them together. Even if they are small birds, the roar of the wings and the voices can be quite deafening.

One has to know something about the bird to understand these flying trips. They may seem fairly motiveless, but there are sound reasons for them.

In or near a settlement there are always several pairs of breeding Glaucous Gulls. The big gulls prey upon the auks who are very much aware of the danger. Therefore, when a big gull comes sailing along the hill-side, all the birds sitting near take wing and they do not come back again until their enemy has disappeared. On such occasions only small flocks rise, the whole performance being more or less local. Even if I never have seen the gulls take a grown bird, this flight is without doubt

necessary, otherwise the birds would care just as little about a Glaucous Gull as they do when a Kittiwake is coming past.

When the young birds are fully fledged, they come out of the holes among the stones and sit in the sunshine beside the parents. One can then see them using their wings very rapidly to get exercise, but as soon as the adult birds fly away, the chicks dive into the holes and do not show themselves again until the parents have come back. — When they are fully grown they leave for the sea. It seems that the majority go out with swarms of adult birds when they are relatively secure, but even then a big gull will sometimes hunt such a young bird out of a flock and kill it. On a few occasions I have seen a young bird leaving the colony in company with its parents, when the danger of its being caught is much greater. But when they go out alone, they are almost certain to be hunted both by the Glaucous Gulls and the Arctic Skuas. — If they can reach the sea where the water is deep, and dive, they are safe at least for a while.

In a big colony an enormous lot of young birds are caught and eaten by these two birds. — The young auks also have a dangerous enemy in the fox, as can be seen when one inspects a fox's earth. Around the holes lie heaps of remains of little auks.

The Little Auk seems to live mainly on "krill", a small pelagic prawn (*euphausidia*) and all the birds examined were full of them. This prawn has a red colour and accordingly the droppings of the birds are red.

Observations.

On the sea near the big glacier Olsokbreen on Sørkapp Land (5) the birds were numerous on July the 19th, 1950. They did not breed near this place, but there might be colonies on the mountains Keilhaufjellet (1) or Kistefjellet farther south. On August the 2nd, 1950, we came to the mountain Hohenlohefjellet at Hornsundneset (7) and on the rock-strewn slopes of this mountain thousands and thousands of the birds were breeding. The areas beneath the slopes where the birds bred, were covered with a yellow-green moss. This moss must thrive on the guano from the birds, for all the places here where the small auks lived looked alike. Such green mountains, discernible at a great distance, we saw from Lidfjellet (6) south of Hornsund and up to Hohenlohefjellet at the entrance to this fjord, and on the north side of Hornsund from Rotjesfjellet and up to Gulliksenfjellet by Hyttevika. But it was only on the sides of the hills immediately at the seaside that the verdure showed this remarkable growth. When we came into the fjord (Hornsund) the Little Auk was breeding on several places from the glacier Hansbreen and to Rotjesfjellet. Here the belts of moss were to be seen, but not to the same extent as on the seaside.

On the mountain Hohenlohefjellet the Glaucous Gulls were sitting on ridges of rock protruding through the débris of stones covering the hillside. We could see no nest, but they were surely breeding here. There were also several foxes and these animals are always to be found near big colonies of the Little Auk.

In some places there had been slides down the mountain-sides and where they had stopped, great stone-blocks were covering the ground. On one of these places, a great number of birds were breeding. — Here I put up a hide, and while I was photographing, my two assistants sat some distance off, looking at the birds. — They observed, as I had done previously at Biskayerhuken, how the birds left when a big gull or a fox came near to them. Here they also saw how one of the gulls caught a Little Auk. We thought then that it was an adult bird, but from what I saw in 1952, I am sure that it must have been a young bird. At this time, August the 2nd, the chicks had begun to sit outside the holes, and as I have never seen the gulls take an adult bird, I am almost sure that it must have been a young one.

What they saw was as follows: A Glaucous Gull came sailing along the hill-side and the auks swarmed out, crying as usual. All at once the gull dived down and caught a bird coming up from a hole between the stones. It then flew away with it, but was immediately attacked by another gull. The result was that it dropped the Little Auk which was caught in the air by the attacking gull. This one, however, was set upon by the first one, and now in his turn had to drop the prey. Both the gulls had now come so low that neither were able to catch the Little Auk in the air. Therefore the poor bird managed to crawl into a hole and save itself.

Where I took my pictures there were many breeding, and we succeeded in finding two nests with a young bird in each. One still had its egg-tooth, the other had lost it, and was a little bigger. — Both male and female incubate as both have breeding-patches.

One the way from Hornsundneset to Gåshamna (8) in Hornsund on August the 3rd, we found the small auks very numerous on the fjord. Also the next day when we crossed the fjord they were very abundant. On the north side of Hornsund all the hills west of the glacier Hansbreen were more or less green and numerous numbers of auks were there. Near the mouth of the fjord, the valley Revdalen (10) goes northwards. The mountains on both sides were green and above the vegetation the Little Auk was breeding. There were so many of them that the wide valley was filled with the sound of their voices. — When we rounded the uttermost point by the hill Rotjesfjellet, this mountain and all the others northwards up to Gulliksenfjellet were green-clad and also here there were uncountable numbers of these birds.

At Hyttevika (11) at the foot of the above mountain there are mighty heaps of stones like bastions along the shore. All these rows of scree were covered with birds. — Out at sea we saw them everywhere from Hornsund up to this place.

On July the 10th, 1952, I came back to Hyttevika to stay there for seven weeks. During this time I had the opportunity of a continuous study of these birds and as they are here breeding down to almost the water's edge, this place is one of the best in all Spitsbergen for observing them.

Along the shore-line here there are rows of scree at a distance from the sea from 40—100 metres and our hut was situated about 20 metres from the southernmost of them. This heap of stones was about 300 metres long and 200 metres wide, rising from sea-level to about fifteen metres in front and to perhaps 30—40 metres where it met the mountain-side. — It consisted mainly of enormous boulders, many of them as big as a small house. In front the ground sloped down to the grassy plain that stretched to the shore, the stones were much smaller, but the birds were breeding among them as well as among the boulders.

To the north there was scree upon scree for about a kilometre and all along the density of the birds was such that it had to be seen to be believed. — Behind the hut and the row of scree the mountain Gulliksenfjellet rose to about 500 metres and at all suitable places the hillside was full of the birds up to the highest peaks.

On the 11th and 12th we found eggs of the Little Auk. They seemed to be very near hatching. We also caught an adult bird in a net to try the method, in case it should be necessary later to catch numbers of them for ringing. — On the 17th we went round the northern slopes of Gulliksenfjellet and into the valley Bratteggdalen on the east side of the mountain. Here the birds were numerous on both sides of the valley.

Up to July the 19th we had found eggs in the nests, but on this date we found the first chick. It was perhaps eight days old and still had the egg-tooth on the tip of the bill. It was absolutely coal-black with an underside of a somewhat lighter hue. We also found a lot of empty eggshells so now the hatching period was on. — On the 20th the weather was very fine with a warm sun. The Little Auks were very lively. Enormous numbers of them were on the wing and all the slopes were full of them to a much greater extent than I had seen before. In cloudy weather there are by no means so many to be seen. — In the shallow water by our boat-place I found an empty egg-shell. This indicates that the bird sometimes will carry off the shell after the hatching.

On July the 24th we took a trip along the bogs at the foot of Gulliksenfjellet to the south of the hut. We went to the divide between this mountain and the next one Trulsenfjellet. In this place along the brook coming down between the two hills, the small auks live very high up against the summits, but, going back, we found them lower down the

nearer we came to the hut, and here they were breeding only a few metres above sea-level.

There were many polar foxes in the vicinity of the hut and on the top of the scree behind it we found a fox's earth. Here there were numerous remains of birds, mostly of the Little Auk. Quite a number of half-eaten birds were lying about.

On the 27th four nests close behind the hut were marked, so we could find them again and follow the development of the young birds. — The following day we crossed Hornsund and as usual we saw great numbers of small auks. — On the 31st we investigated the nests found on the 27th. In nest no. 1 the young bird was perhaps eight days old, in no. 2 it was considerably larger, but had still much down even if it had begun to disappear in some places, as on the head. The third young bird was almost fully fledged. It had very little down on the underside where only a narrow longitudinally black stripe showed in the middle of the otherwise pure white breast and belly. The head was almost free of down and the wings had only a few not fully developed feathers. — In the afternoon we went southwards from the hut to the mountain Torbjørnsenfjellet. Here there also were numbers of the birds, but they lived very high up on the hillside. — On a trip from Dunøyane (12) to the island Isøya (12a) on August the 1st, we saw the birds all the way.

The first young bird seen outside the nest, was observed on August the 2nd. It came crawling out of a hole and sat down beside the adult birds. Here it began to walk to and fro, trying its wings. Every time a Glaucous Gull came flying past and the parents flew away, the young bird disappeared among the stones, to come forth again as soon as the parents returned. This bird was easily recognised as a young one. The colour of the head was grey-black and had not the chocolate-brown gloss which is characteristic of the adult birds. On that date we did not see more than this single young bird. — The adults came in from the sea with food in the well filled throat-pouches. When a bird was coming in with food it sat for a little while looking around in all directions, then it disappeared among the stones and stayed for a longer or shorter period. — There were some more empty egg-shells on the beach, but the greater part of them are left in the nests where we found them when we were looking for the young birds. — About this time it seemed to me that the birds were more restless than they had been earlier.

On August the 3rd we went to the mountain Rotjesfjellet near the entrance to Hornsund. On the western slopes the small auks were very abundant, also on the east side of the hill towards the valley Revdalen we saw great numbers of them. As in 1950, all the hills around this valley were populated with enormous numbers of little auks.

The next day there was great activity among the birds at Hyttevika. The adult birds came in with food all the time, singly, in smaller

and in bigger flocks. — The Glaucous Gulls seemed to know that something was going to happen; any time they were much keener on patrolling the hillsides than they had been earlier. — The poor little auks did not get any rest.

On August the 5th there was a marked difference in the behaviour of the birds. They did not keep so much to the smaller stones on the slopes, but sat in great numbers on the big boulders on the top of the screes. Still a lot of them were bringing food, but not so many as earlier.

There was definitely a greater number of birds to be seen now, probably because the young birds would soon be leaving the colony. As they have fine warm coats it is not necessary for the adults to cover them any more. There is also another possibility, but I do not know if it is right. Perhaps the young birds get less food in the last days before they leave home. Perhaps they need the urge of hunger to make them go.

Quite a number of young birds were sitting outside their burrows. They were using their wings for a long period at a time. — All over the screes one could hear the young birds crying for food. The sound “tick, tick, tick . . .” could be heard everywhere.

Some of them began to leave the colonies alone, but almost always it ended in disaster, as the big gulls caught them as soon as they came out. Out of six the gulls took four this evening and only two escaped by diving. When the small birds dived the gulls settled on the water and waited for them to come up again, but they always came up at quite a distance from the gulls who did not get them. — We did not see a single young bird return to the colony.

On August the 6th we saw a young bird coming down to the shore a couple of metres from the water's edge. A gull who tried to take it was shot. — Of ten big gulls that we got on this date, six had taken small auks. — For some hours I sat near a colony watching the Little Auks. On quite a small area I saw ten young birds training their wings. About one half of the birds on the slopes were young ones. The adult birds were sitting in dense flocks on the big boulders.

This day the gulls took a lot of auks. They drove the young birds out of the flocks of adults. The Arctic Skua did the same on two occasions. The gulls also tried to get them on the slopes, but as a rule without a result. — If the young bird can reach the sea without being caught, it will be saved in most cases provided the water is not too shallow. — On the 7th there seemed to be less birds on the slopes than on the previous days. We found three young birds. Two of them still had much down, but the third was fully fledged. — Of fourteen Glaucous Gulls shot, ten had taken small auks, most of which had been swallowed whole. — The gulls were now killing them in great numbers and the whole thing had to be seen to be believed. During that day I saw 20 young birds killed. — Often the gulls pursued them with tremendous speed, so

fast that the young birds hit the water so hard, in trying to dive, that they were rendered more or less unconscious, giving the gulls a good chance to pick them up. They also catch them in the air. One bird was very clever at it. This gull took all the auks from underneath and very seldom missed its prey. — The Arctic Skua also took a great number.

We could hear that there were young birds in the flocks flying around. Hitherto it had been impossible to recognise them in the air. The gulls, however, who have much sharper eyes than man, saw them without difficulty. They could therefore easily drive such a bird out of a flock and kill it.

Until then we had not in a single instance seen the gulls taking an adult bird, either in the air, on the sea or on land. They took only young birds. That they also take grown birds seems to be a fact, otherwise these would not take wing when a gull flew past.

With both the Little Auk and the Spitsbergen Guillemot it is a fact that most of the young birds leave the colonies in the afternoon and in the night. It is difficult to understand why they do this as the light still is very strong at night in the first fourteen days of August. The fox, the skua, and, above all others, the big gulls are waiting for them in the night as well as in the day, and it does not seem to matter to them in what time of the 24 hours they hunted.

On the 10th we still could hear the young birds calling for food. They had now come forth in great quantities and were training their wings on the slopes all day. By now we had learned to see the difference between the young birds and the adults in the flocks flying about, as their flight was more unsteady and fluttering than in the grown birds. We could also distinguish the young birds by their voices, as their cry was more light than in the adults. The voice sounded something between the hunger cry “tick, tick, tick” and the full voice of the adult bird.

The gulls were still catching numbers. When they got a small bird they sometimes tore it asunder, but in most instances the small auk was swallowed whole. On several occasions I saw the gulls catch the young auks in the air and immediately swallow them.

On the 11th a great part of the birds had left the colony. We often observed a young bird accompanied by one or both the parents going out to sea. That these should come back to the colony is not likely. We have however seen young birds return to the slopes, both singly and with the flocks, but this has been only after short flights. In the flocks coming in from the sea, we never saw a young bird.

In the evening we went down to the beach to shoot Glaucous Gulls who were hunting the small birds. I stood about half a metre from the water's edge when I saw something coming out of the sea close to me. It was a young little auk which walked over my shoes, then it took wing

and flew up to the nearest slope where it disappeared among the stones. A gull who dived for it was shot.

On August the 12th not more than the tenth part of the original population of the small auks were left on the slopes and every day the young birds were leaving in the evening and in the night. We wondered how long it would take before all of them had left. — The gulls were still hunting for them. — Young birds who had left the slopes alone were found hiding in different places. Once we took out our boat and found a young bird hiding under it. — On the 13th we came to Revdalen (10) in Hornsund where there were still some of these birds, but the noise of the thousands of birdvoices that filled the valley in the summer was not to be heard any more. — On the 14th we heard young birds calling for food on the slope behind the hut, so some birds were still here. — In the evening we saw the gulls taking four birds.

The birds living near the summits of the hills seemed to have begun breeding later than those living almost at sea-level. — On the 15th we climbed up into a gorge between the mountains Torbjørnsenfjellet and Rotjesfjellet. Here there were still small auks on the screes at 300 to 400 metres above the sea. Glaucous Gulls and Arctic Skuas were hunting for young birds. On the shelves on the hillsides above the small auks, we could see several nests of the big gulls. — On the other side of the crest we went down to the lake Revvatnet, where there were some very steep slopes. In the steepest places on the last 200 metres above the lake there still were some birds and it was obvious that earlier in the summer there must have been very great numbers of them here. — When the young birds begin to loose their downy coat and the feathers begin to grow, they crawl to the opening of the hole in which they are living. Here they sit exercising their wings. Now and then they turn around and eject a spurt of excrement. These openings of the holes are therefore whitewashed, and one can easily see where nests have been. On the 17th I saw a flock of 30 birds, the largest I had seen for some days. On the 18th we found three young birds in a net we used for catching char (*Salmo alpinus*) in Revvatnet. When we were about to leave the place where we had taken in the net, we saw an Arctic Skua chasing a young bird. This bird did not fly very well and the skua soon caught it and began to pluck it. When we came near the skua flew away. The Little Auk had lost some feathers but otherwise it was quite all right. Later we let it loose on the fjord where it seemed to manage very well. — We came back here on the 19th and saw a big gull pursuing a young bird who saved itself by diving in the lake. — The next day we saw a flock of more than a hundred birds at Hyttevika, the largest we had seen for several days. — On August the 23rd I saw eight birds and the last one on the slopes was seen on the 26th.

In the three preceding summers I had not had the opportunity to find out when the Little Auks left the colonies, but after August the 27th no more were seen on the fjords where earlier in the summer they could be found in big numbers. This corresponds very well with the observations from Hyttevika, 1952.

When we stayed for some days at Måseneset (18) at the southern entrance to Van Mijenfjorden in the last days of July 1948, we saw several colonies on the mountain Midterhuken close to our camp. — Along the southern shores of Isfjorden there were colonies of them on almost all the mountains up to and including Adventfjorden (22). On the north side I have seen them nesting on both sides of the bird-rock Alkhornet.

At Longyearbyen (22) they breed near the summits of the mountains, especially along the north side of the valley. On August the 9th, 1948, I saw a young bird swimming on a small freshwater-pond. Somebody had found it lying on a road in the mining town and had put it there.

At Trygghamna (29) beneath the mountain Alkhornet we saw great numbers of them on June the 26th, 1949. — The next day big flocks were met with to the west of Prins Karls Forland (31). Along the coast from Kongsfjorden (Kings Bay) (34) up to Magdalenefjorden (36) we saw enormous quantities of them on June the 29th, 1949. Sea and air were filled with them, to try to estimate the numbers of them was impossible. — Later in the day we came to the sound Sørgattet (37), between the mainland and the island Danskøya where we were going to stay for some days in a hut at Bjørnhamna. We arrived in a dense fog so we could not see anything, but we could hear the voices of the small auks on the hill behind the hut. When the mist lifted we found several small colonies there. — On July the 5th we went over to Danskøya and saw several big colonies on the rock-strewn mountain-sides.

When we went across the mouth of Raudfjorden the following day, we saw enormous numbers. — On the hill south of Biskayerhuken (42) there was a big colony and also on the mountain Mt. Blanc to the west of the above place. Here they lived in crevices in the solid rock so far down against the grass-clad slopes, that the lowest nests were just out of reach of the foxes.

On July the 19th I sat in a hide in the colony south of Biskayerhuken to photograph the birds. Suddenly all the birds as far as I could see, left the hillside with a tremendous noise. The only bird left was a male Snow-Bunting who gave its warning note. A moment afterwards I saw an Arctic fox close to the hide. It disappeared immediately but I could follow all its movements by looking at the bunting which followed it closely, all the time, giving its warning note. After the fox had disappeared it was a long time before the birds came back again.

On July the 21st we rounded the point Velkomstpynten (44) and went to the head of Liefdefjorden (45). All the way we saw flocks of small auks. They continued as far as the glacier Monacobreen. We saw them every day going out and in the fjord at all hours until we left on the 27th. — When we passed Raudfjorden on our return journey on July the 28th, they were not so numerous, but they were still present in a colony on a hill at Birgerbukta south of Svenskegattet (40) on July the 29th, 1949.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm	Weight grams	
Jul. 10. 1949	Biskayerhuken	♂	124	36	14	19	148	
Jul. 10. 1949	Biskayerhuken	♂	125	38	15	21	150	
Jul. 10. 1949	Biskayerhuken	♂	125	37	15	21	152	
Jul. 20. 1949	Biskayerhuken	♂	126	38	14.5	20	.	
Jul. 20. 1949	Biskayerhuken	♂	124	35	14	22	.	
Jul. 20. 1949	Biskayerhuken	♂	123	32.5	15	21	.	
Jul. 20. 1949	Biskayerhuken	♂	119	37	14	20	.	
Jul. 20. 1949	Biskayerhuken	♂	128	36	15	21	.	
Jul. 20. 1949	Biskayerhuken	♂	123	36	16	22	.	
Jul. 20. 1949	Biskayerhuken	♂	123	37	15	21	.	
Jul. 20. 1949	Biskayerhuken	♂	124	37.5	15	21	.	
Jul. 23. 1949	Siktefjellet, Liefdefjorden	♂	125	35	15	20	.	
Aug. 3. 1950	Hornsund	♂	126	36	15	22	180	
Aug. 3. 1950	Hornsund	♂	121	37	14	22	180	
Aug. 3. 1950	Hornsund	♂	125	39	16	21	200	
Aug. 3. 1950	Hornsund	♂	130	38	15	22	170	
Aug. 3. 1950	Hornsund	♂	120	36	15	21	170	
Aug. 3. 1950	Hornsund	♂	121	35	16	22	160	
Aug. 3. 1950	Hornsund	♂	121	39	16	21	200	
Aug. 3. 1950	Hornsund	♂	122	35	14	21	145	
Aug. 3. 1950	Hornsund	♂	120	39	16	21	180	
Aug. 3. 1950	Hornsund	♂	123	39	14	21	150	
Aug. 7. 1952	Hyttevika, N of Hornsund	juv	taken on the nest					130
Aug. 7. 1952	Hyttevika, N of Hornsund	juv	taken on the nest					125
Aug. 7. 1952	Hyttevika, N of Hornsund	juv	taken on the nest					125
Aug. 20. 1952	Revvatnet, Hornsund	juv	taken in a net					120

41. *Fratercula arctica naumanni* Norton.

General Notes.

Norw. Lundefugl. Engl. Puffin.

In contrast to the Guillemots and the Little Auks which can be found in large colonies in Spitsbergen, the Puffin is nowhere very numerous. It also lives in colonies, but according to the relatively small numbers seen on the sea near their haunts, not more than a few hundreds of them live together in any one place. This is remarkable as the nominant form *F. a. arctica* (L.), that lives in Norway, occurs in enormous quantities in some places such as Lovunden and at Værø and Røst in Lofoten.

In Spitsbergen they nest in holes and crevices on steep mountain-walls and on rock-strewn slopes. I have never seen them in holes dug

out by themselves on grassy slopes as in Norway. The reason may be that it is too cold in a hole of a metre or more in length where the ground is frozen, it may also be that the birds fall easy prey to Arctic foxes in such places. On their breeding-grounds in Norway there are no foxes.

It is also remarkable how the Puffins keep relatively close to the shore in Spitsbergen, far more so than the other auks. Far out at sea I have never seen them.

Among the breeding birds of Spitsbergen the young Fulmars and Puffins stay in the nests much longer than the other birds. Incubation lasts a long time, for the Puffin about 40—43 days, and the young bird stays about 40 days in the nest. After this period it is deserted by the adults and has to go to sea alone and fend for itself. This refers to Norwegian birds and there is no reason to believe that it is otherwise with the Puffins in Spitsbergen.

The steep mountain-sides where the Puffins nest are as a rule white-washed by the droppings of the birds. — One place where this is especially prominent is at Diabasodden (23) at the mouth of Sassenfjorden (Isfjorden). — The relatively small colonies are often situated not very high above the sea-level, as at Diabasodden and at the islands Gåsøyane (25) on the far side of Sassenfjorden, but the birds also breed very high up as at Skansbukta (27) (Isfjorden).

Observations.

At Sørkapp Land (6) in the month of July we did not see any Puffin south of Stormbukta (5) where we had our headquarters. On trips north to Breineset (6) we always saw a few. First when we came to the mouth of Hornsund (7) they became more numerous. Here they were partly found relatively close to the shore but also at the uttermost skerries, farther out than we had seen them elsewhere.

On August the 3rd, 1950, we saw them all the way from the mouth of Hornsund and to Gåshamna (8). When we crossed the fjord the next day, we saw none until we came near the land on the far side. Here on the big bird-rock Sofiakammen (9) there were several Puffins breeding among the great numbers of the other birds. — When I came back to this place on August the 8th and the 9th, 1952, we saw some Puffins flying along the mountain-sides among the guillemots. They more or less disappeared in the great swarms of these birds, but one caught sight of them fairly often. Their numbers were, however, very small in relation to those of the guillemots.

Outside Russepynten about three km south of our hut in Hyttevika, we saw a couple of puffins on August the 15th. Here we had seen them on previous occasions. Somewhere on the sides of the mountain Torbjørnsenfjellet a few pairs seemed to be breeding. On the 18th we saw

them here again. They came from the mountain at a great height down to our boat. These birds are full of curiosity and as usual they circled around the boat, this time so close that we almost caught one of them. — Between the islands Dunøyane (12) and Store Isøya (12a) we saw two birds on August the 1st, 1952.

At Midterhuken (18) in Bellsund we saw several on July the 29th, 1948, here also they were in a marked minority in relation to the guillemots. — Outside Kapp Linné (21) at the mouth of Isfjorden we saw them on July the 24th, 1948, and the same at Trygghamna (29) on the other side of the fjord on June the 26th, 1949, where there were a few to be seen. At Gåsøyane (25) some small islands near Gipshuken, we found a small colony on August the 10th, 1948. Here they had settled in holes in the perpendicular walls of diabase on the east side of the islands, also among the broken rocks at the foot of the cliffs. — When I came back here the summer 1950, they were breeding in the same numbers as two years previously. — At Skansbukta (27), not far from the above islands, they were fairly numerous on September the 4th, 1948. — At Diabasodden (23), on the west side of Sassenfjorden, we had seen great parts on the mountain-side covered with the white droppings of birds. When we came here on August the 24th, 1950, we found that puffins were nesting here. We also found colonies on the mountain Tempelfjellet on August the 17th and on the steep rock-walls along Tempelfjorden. — We stayed in the house of Mr. Hilmar Nøis not far from the beach at the head of Sassenfjorden. To the east of the house there is a very steep hill where the puffins breed. Beneath the cliffs the slopes were covered with grass and moss. Here one should think the puffins might breed, but no sign of burrows could be found. All had settled on the most steep and inaccessible parts of the mountain.

In Forlandsundet (32) we saw a few puffins on July the 27th, 1948. — Between the north point of Prins Karls Forland, Fuglehuken (33) and Ny-Ålesund (34) in Kongsfjorden (Kings Bay) they were fairly numerous on June the 27th, 1949. At Sørgattet (37) between the island Danskøya and the mainland we saw a few on June the 29th, 1949. — When we went through the sound between the islands Fuglesangen and Fugløya (39) on July the 6th, 1949, the Puffins were more numerous than I have seen them in any other place in Spitsbergen. From here and to Biskayerhuken (42) there were relatively few of them in relation to the guillemots. They also kept far more close to the shores.

On the sea just outside Biskayerhuken we saw them frequently during the first fortnight of July 1949 and on the 8th we also found a few in the bay south of this place. — At the head of Liefdefjorden (45) where we stayed in the last days of July, we saw none of these birds. — When we came back to the sounds between the islands Fuglesangen, Fugløya, Norskøyane, etc. on July the 28th, 1949, there were many of them. The

year before I had been there on August the 28th. At that time the guillemots and small auks had disappeared, but the puffins were still in fairly big numbers. — Coming to Ny-Ålesund (34) on August the 2nd, 1949, we saw several puffins on the ledges of the steep mountain-sides west of Brandalpynten. On the east side of Spitsbergen I have seen none.

Measurements.

Date	Locality	Sex	Wing mm	Tail mm	Bill mm	Tarsus mm	Weigh grams
Jul. 1. 1949	Sørgattet	♀	182	51	51	28	-
Jul. 8. 1949	Biskayerhuken	♂	182.5	50	50	31	-
Jul. 22. 1950	Stormbukta, Sørkapp Land	♀	187	55	50	31	-
Aug. 3. 1950	Hornsund	♂	186	53	50	33	620
Aug. 3. 1950	Hornsund	♂	178	50	53	30	710
Aug. 3. 1950	Hornsund	♂	180	52	50	30	660
Aug. 3. 1950	Hornsund	♂	185	53	50	32	660
Aug. 3. 1950	Hornsund	♂	185	54	55	31	630
Aug. 3. 1950	Hornsund	♂	188	56	52	30	630
Aug. 3. 1950	Hornsund	♂	186	55	53	31	690
Aug. 3. 1950	Hornsund	♀	182	54	51	30	660

42. *Lagopus mutus hyperboreus* Sundevall.

Norw. Spitsbergenrype. Engl. Spitsbergen Ptarmigan.

General Notes.

The ptarmigan is resident in Spitsbergen all the year. That the bird can endure the winter here must be connected with the fact that the snow gets blown away in several places. Moreover the cover of snow is rarely so thick that the birds cannot get down to the ground and reach the leaves of the polar willow (*Salix polaris*), and also other plants that help out their food during the wintertime.

Where the mountains have suitable vegetation one will in summertime find these birds. At this time of year they are not so often seen on the lower parts near the sea. They keep more inland. — They are not easily found because they have very efficient protective colours. Another point is that they are not shy. They are indeed so tame, at least in summertime, that they may almost be trodden on before they fly up. On account of this they are rarely seen in the summer. — Because they are very stationary in this time of year, the best way to find them is to seek in places where they have been found earlier. — The trappers and hunters mostly know where to look for them and are usually willing to give information. — As a rule the ptarmigan keeps to a very rocky ground, and therefore one has to look for them at places fairly high above sea-level. They are often seen in places similar to these the Norwegian ptarmigan prefers.

Observations.

Just beneath the summit of the mountain Hilmarfjellet on Sørkapp Land (5) one of my assistants shot a male ptarmigan on July the 24th, 1950. It was in high moult and could not be used for a skin.

On the mountain Midterhuken in Bellsund (18), ptarmigans were seen from July the 29th to August the 12th, 1948, by the topographers working there (Mr. Solheim). — At Sveagruva (20) near the head of Van Mijenfjorden, I was told that several ptarmigans had had their nests close to the mining town in the summer of 1948. Some of the nests were found quite close to the houses.

In the valley Gruvedalen by Longyearbyen (22) Professor Johansen and I found a big clutch on August the 19th, 1949. The young birds, eight in all, could fly very well. They were about half the size of the female. They were so tame that they would hardly go aside for us. When Professor Johansen wished to shoot one of them (the only bird shot), I had to kick at it to get it to fly up. — The rest of them went about quite unconcerned and did not mind the shot at all.

This brood we found on the steepest and most rockstrewn part of the hillside and their colour protected them so effectively that we did not see them until we were in the middle of the flock.

The men working on the erection of the radio-lighthouse at Rundodden (27) at the mouth of Billefjorden (Isfjorden) found two clutches of ptarmigans on a hilltop nearby on August the 25th, 1948, and the geologists working at Skansbukta (27) that summer had seen ptarmigans all the time they had been there (Mr. Winsnes).

Near the hot springs in Bockfjorden (47) I found the shells of hatched ptarmigan-eggs year on July the 27th, 1949.

Mr. Odd Lønø, who wintered on the island Edgeøya 1950—51, saw the first ptarmigan (four of them) near Zieglerøya in Tjuvfjorden (53) on October the 12th, 1950. From this time on he saw a few now and then until April, 1951. The birds were not very abundant during the winter. In all he and his companion shot fifteen ptarmigans.

Printed October 1954.

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