SEABIRDS AND SEALS IN SOUTHEAST GREENLAND

Results from a survey in July 2014

Scientific Report from DCE - Danish Centre for Environment and Energy No. 117

2014



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Data sheet

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Abstract:	This report describes the results of a survey for colonial seabirds and seals along the almost unexplored coasts of Southeast Greenland. In July 2014 the region between Nanortalik and Tasiilaq was covered and it is the plan to cover the region further north to Ittoqqortoormiit in 2015. Very few colonial seabirds were found breeding in 2014, breeding colonies were small and scattered and they were dominated by black guillemots (max. 275 indvs. at a colony) and iceland/glaucous gulls (max. 31/20 pairs per colony). Only five occupied colonies of kittiwakes were found (max. 123 pairs) and additionally nine abandoned kittiwake colonies were seen. Moreover were there signs of a poor breeding season for species such as Arctic tern and common eider. The seal survey was targeted at harbour seal and grey seal habitats, which were used by seals tracked in 2009 and 2010.
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Summary

This report presents the results of a ship based survey of seabird breeding colonies and harbour seal habitats in Southeast Greenland between Prins Christian Sund and Tasiilaq and carried out in mid- to late July 2014. In total, 73 colony sites were visited in this region and additionally 11 sites between Nanortalik and Prins Christian Sund were surveyed.

The most frequent species was black guillemots (n = 44 colonies) and the two common gull species, glaucous gull and Iceland gull, were found in 27 and 21 colonies respectively. Common eider was located at 15 sites. Kittiwakes were only found at five sites, however additionally nine sites where the species previously have been breeding were visited.

The most remarkable sites were:

- the small archipelago Qeertaartivit (64504) at Umiivik where a high diversity of both breeding and moulting birds were found,
- the eastern island of Graah Øer (65506) with the highest number of black guillemots observed and in addition kittiwakes,
- the cliff at 64508 with largest kittiwake colony seen (n = 113 Appenetly Occupied Nests, AONs).

The survey confirmed that Canada goose has expanded the breeding range to Southeast Greenland, and an increase of the population must be expected there.

Finally, two sites were visited where locals previously had observed thickbilled murres on the cliffs, without finding any murres.

Although the breeding season for seabirds was evaluated as poor (especially for common eider and Arctic tern) probably due to a delayed spring and much snow remaining on many low islands, it can be concluded that the fauna of breeding seabirds in this part of Southeast Greenland is limited; low diversity, low numbers and widely dispersed colonies.

A number of sites where harbour seals were tracked to in 2009-2011, were visited to gain knowledge of these previously unknown habitats and to survey these sites. However, besides bearded seals and ringed seals only a young of the year seal, which perhaps was a harbour seal, was observed there.

Sammenfatning

Denne rapport præsenterer resultaterne af et skibsbaseret togt, der havde to formål: Dels at kortlægge og optælle fuglefjelde og -øer i området mellem Prins Christian Sund og Tasiilaq og dels at besøge og beskrive nogle levesteder (formentlig ynglesteder) for spættet sæl. Disse steder blev benyttet af et antal spættede sæler, der blev forsynet med satellitsendere på øgruppen Qeqertat lige øst for Kap Farvel i 2009 og 2010.

I alt blev 73 fuglefjelde og -øer besøgt i den pågældende region. Dertil kommer elleve tilsvarende steder besøgt mellem Nanortalik og Prins Christian Sund. Den mest udbredte og talrige art var tejsten, som blev fundet i 44 ynglekolonier i regionen. Næsttalrigest var hvidvinget måge og gråmåge med henholdsvis 21 og 27 kolonier. Almindelig ederfugl blev fundet på 15 øer og rider kun på fem fuglefjelde - yderligere ni steder blev besøgt, hvor den tidligere har ynglet.

Det skal nævnes, at ynglesæsonen blev vurderet til at være dårlig for flere arter, fordi foråret var forsinket og fordi der stadig lå store snefaner helt ned til havniveau på mange af de lave øer. Men på trods heraf kan det konkluderes, at ynglefuglefaunaen langs kysterne i Sydøstgrønland (syd for Tasiilaq) er fattig; både i antal fugle, antal arter og ved de meget spredt beliggende ynglekolonier.

Flere steder langs kysten blev undersøgt for tilstedeværelse af spættet sæl og gråsæl. Et sporingsstudie af sæler mærket på øgruppen Qeqertat øst for Nanortalik i 2009 og 2010 (Rosing-Asvid et al. 2013) viste, at mindst fire af de mærkede spættede sæler (ud af tolv) foretog lange ture op langs kysten formentlig til ynglepladser, samt at en ung gråsæl også søgte herop (Figur 23). Hverken grå- eller spættede sæler blev observeret med sikkerhed her, men der indsamledes viden om disse meget afsides liggende levesteder.

Kalaallisut naalisagaq

Nalunaarusiaq una umiarsuaq atorlugu angalanermit marlunnik siunertaqartumit paasisanik nalunaarutaavoq: Ikerasassuup (Prins Christian Sund) Tasiilallu akornanni innat qeqertallu timmissat ineqarfiinik nalunaarsuinissaq aammalu qasigissat najugaasa ilaat (erniorfigigunagaallu) niuffigisarlugit misissornissaat. Tamakkua qasigissanit Kap Farvel-ip kanginnguani qeqertani 2009-mi 2010-milu qaammataasakkoortunik nalunaaqutsikkanit atorneqartarput.

Tamaani innat qeqertallu timmissat ineqarfii katillugit 73-it tikeraarneqarput. Taamatuttaaq taamaattut aqqanillit Ikerasassuup Nanortallillu akornanniittut tikinneqarput. Timmiaq takussaanerpaa tassa serfaq piaqqiorfii tamaaniittut 44-t nanineqarlutik. Tulliupput naajat marluk, hvidvinget måge naajarujussuarlu (gråmåge) takkua 21-nik 27-nillu erniorfeqarlutik. Miteq siorartooq qeqertani 15-ini nanineqarpoq taateraalli erniorfii tallimaannaat – allat qulingiluat tikinneqarput siornatigut ineqarfiusimagaluartut.

Taasariaqarpoq artinut arlalinnut tunngatillugu erniorfiup nalaa ajorsimammat, kingusissumimmi upernarsimavoq aammalu suli qeqertaaqqani arlalinni sissaq tikivillugu apusineqartiterpoq. Taamaakkaluartorli oqartariaqarpoq Tunup kujataani (Tasiilap kujataani) erniortuisammat; Timmissat artillu ikeqimmata erniorfiillu akuttoqalutik.

Sinerissami arlalinni qasigiaqarnera puisi sigguttoo qarneralu misissorneqarpoq. Puisit 2009-mi 2010-milu Nanortallup kangiani, Qeqertani, (Rosing-Asvid et al. 2013) nalunaaqutsikkat malittarineqartut takutippaat qasigissat nalunaaqutsikkat (aqqaneq marluusut) ilaat minnerpaamik sisamat sineriak sinerlugu ingerlawsarsimasut nalunanngitsumik piaqqivigisartakkaminnukarlutik, aammalu puisi sigguttoo inuusukaaq tappavunnarsimavoq (Fig. 23). Puisi sigguttoomik qasigissamilluunnit qularnaatsumik takunnittoqarnersoq erseqqissumik oqaatigineqarsinnaanngilaq, kisiannili taakkununnga tunngatillugu tikikkuminaatsumik najortagaat pillugit paasissutissat katersorneqarput.

1 Introduction

The survey described in this report had two purposes. Mapping of breeding seabirds and a description of harbour seal habitats.

The coast of Southeast Greenland is an almost white area on the seabird distribution map of Greenland. Very few observations have been reported, and many of these reports are outdated. In recent years only one survey has been performed - in July 2008, when the coast was surveyed from aircraft with the aim to locate common eider colonies (Merkel et al. 2010).

In 2009 and 2010, 14 harbour seals and one grey seal in the archipelago Qeqertat east of Aappilattooq were equipped with satellite tracking devices. Four harbour seals and the grey seal were tracked to habitats on the southeast coast of Greenland up to 243 km from the tagging site (Rosing-Asvid et al. 2013). The biology and habitat preferences of these seals are poorly studied, why it was highly relevant to combine studies of these sites with the seabird survey.

The shelf off Southeast Greenland has hydrocarbon potential, and specialized seismic companies have been granted prospecting licenses there. However, this region was not included in the recent oil exploration strategy (2014-2018) from the Greenland government, why more dedicated exploration will await an opening in the future.

Until then it will be appropriate to gather updated environmental background data, to be included into a strategic environmental impact assessment which will be an essential part of the decision documents.

DCE - Danish Centre of Energy and Environment and Greenland Institute of Natural Resources (GINR) received funding from the Danish Environmental Protection Agency to a two-season survey of the coasts of Southeast Greenland between Kap Farvel and Ittoqqortoormiit, and the Greenlandic Environment Agency for the Mineral Resources Activities (EAMRA) as well as our own institutions supplied additional funding. In July 2014 the first leg of this survey was carried out - between Kap Farvel and the town of Tasiilaq.

2 Methods

The scientific crew was David Boertmann (AU) and Aqqalu Rosing-Asvid (GINR). The boats were operated by Ole Isaksen and his wife Marie, by Vittus ('Maaru') Mikaelsen and Lasarus Mikaelsen and by Sigurður ('Siggi') Petursson and Stemmi Petursson. Michael Lindskov Jacobsen also joined the crew.

2.1 Observation platforms

Three boats were used (Figure 1), a base ship and two survey boats which replaced each other. The base ship was necessary to carry fuel for the survey boats, as there are no settlements between Aappilattoq and Isortoq (>700 km):

- Ole Isaksens boat, a Falcon 26, with a cruising speed of 20-23 knots in calm conditions, was used between Nanortalik and Kap Walløe at 60° 30′ N.
- Vittus Michealsens boat "Steven", a Finnsport 650 with a cruising speed of 20-23 knots in calm conditions was used between Kap Tordenskjold (61° 24′ N) and Tasiilaq.
- Sigurður Peturssons ship "Uiloq", a 52 feet previous KNI supply and passenger boat, with a cruising speed of 7-8 knots was used between Aappilattoq and Tasiilaq.



Figure 1. The three boats used during the survey in 2014. A: the Finnsport 650, B: The Falcon 26 and C: Uiloq.

Coasts were searched for seabird breeding colonies and seals by binocular when steaming. Previously known sites were seeked out and in the case of harbour seals and grey seal habitats, sites known from satellite tracking were visited. The main effort was along the outer coasts, where an oil spill from potential future activities most likely will end up.

As harbour seal and grey seal are the only Greenlandic seals that regularly hauout on land, these were searched for by surveying the coastlines. Other seals were recorded as well, but the search was not systematic. All bearded seals encountered on route were recorded and so were concentrations of hooded seals. Ringed seals and harp seals in open water were only recorded opportunistically, while small seals in inlets and archipelagoes were as far as possible studied more closely to check whether they were harbour seals or not.

All sites, to which harbour seals were tracked in 2009 and 2010 were visited and moreover did we visit sites where both Ole Isaksen and Maaru often had observed the species, e.g. at Kangerluaraq (mouth of Lindenow Fjord) a former whelping site.

Figure 2 and 3 show our route, along which all coasts were searched. Steep cliffs were searched from the boat, and a few were surveyed from a distance from land based sites e.g. at the anchor sites. Most islands were also surveyed from the boat, but we went ashore some places e.g. on Qeqertat and Qeertaartivit.

The birds in the colonies were counted as Apparently Occupied Nests (AON) if possible (kittiwakes, gulls, cormorants etc. which build obvious nests) and as individuals present for terns and black guillemots. Common eiders were recorded as females with chicks on the water near colonies, and nests (with eggs or hatched) were counted, although not systematically, on visited islands.

The observation conditions from the Falcon were not as good as from the Finnsport, because the view ahead was limited. Moreover was the fuel consumption much higher - the Finnsport went 10 hours and 15 min. on a full tank - 120 l.

Although the target area of the survey was the southeast coast of Greenland (to the north of Prins Christian Sund), some days were spend sailing along the coasts between Nanortalik and Prins Christian Sund. The ship Uiloq could not arrive until 20 July and had to fuel in Aappilattoq before starting the survey. Therefore we spend 18, 19 and 20 July surveying from the Falcon 26 within reach of Aappilattoq (for re-fueling).

Five-numbered figures e.g. 61501 all refer to the code numbers in the Greenland seabird colony register.





Figure 3. The northern half of the surveyed area. Survey route, seabird breeding colonies, settlements and major features are indicated. Anchor sites are where the night was spend.



2.2 Weather conditions

The weather during the survey was generally very good with sunny and calm days. Only during the first days, 18 and 19 July, the wind was strong and prevented survey. No fog was encountered and only light rain on 19 July.

Mosquitoes and blackflies were numerous in some of the places where we went ashore, especially Lindenow Fjord and Skjoldungen.

2.3 Ice conditions

The drift ice ('Storis') was gone except for some floes among the glacier ice in Køge Bugt. However, glacier ice from brash to huge bergs was frequent and hampered sailing in many places: For example in Napasorsuaq Fjord (24 July), west and north of Puisortoq (24 July), Timmiarmiut Fjord (25 July), off Bernstorff Isfjord (26 July), off Gyldenløve Fjord (26 July), in Køge Bugt (27 July) and Ikertivaq (28 July). It also prevented us from surveying the coasts of northern Jens Munk \emptyset and the inner parts of Umiivik, Køge Bugt and Ikertivaq. Solid fast ice was only seen in Napasorsuaq Fjord.

2.4 Itinerary

18 July

Sailed from Nanortalik in the Falcon 26 to the archipelago Kitsissut, where some of the southernmost islands were surveyed and from there to the settlement Narsarmiit (Frederiksdal). From there to Kap Christian and plans for sailing to Kap Farvel had to be given up (wind too strong) and sailed instead to Itilleq on the NE-coast of Eggers \emptyset . Here is a hut in good shape, where we stayed overnight. Weather overcast, and wind from west.

19 July

Strong winds during the night. Overcast during the day, light rain and generally too windy for surveying along the outer coast, why we went to the settlement Aappilattoq. During the afternoon we tried to approach Kap Farvel again, this time from the east, but still too windy. However, we surveyed the coast on the way.

20 July

Generally sunny and calm. Sailed with the Falcon 26 from Itilleq and surveyed the archipelago Qeqertat in the mouth of Ikeq. We passed Kap Farvel at noon and surveyed the islands off the cape. From there we went to Kap Christian and back to Aappilattoq, where the ship "Uiloq" had arrived.

21 July

Generally cloudy, but calm and sunny now and then. Both "Uiloq" and the Falcon 26 left Aappilattoq in the morning. We surveyed from the Falcon through Prins Christian Sund, past Kap Ivar Huitfeldt, into the outer reaches of Lindenow Fjord, where we had a lunch stop at Kuugarmiut Qeqertat. Here is a house in a fairly good condition. The survey ended at Kap Walløe and the Falcon 26 went back to Nanuuseq Fjord at Noret (Torgilsbu on the nautical chart), where Uiloq had anchored.

22 July

Sunny and calm. The Falcon 26 went southwards and we planned to survey from "Uiloq" northwards. However, soon after departure, the Falcon 26 suffered from engine failure and "Uiloq" went back to salvage the boat and towed it back to Prins Christian Sund, where another boat from Nanortalik would assist it back. "Uiloq" then went back to the anchor site from yesterday (Nanuuseq Fjord at Noret).

23 July

First cloudy and calm, but afternoon sunny and weak wind from NE. Survey from "Uiloq" of the outer coast from Kap Walløe to Kap Tordenskjold, where a small inlet just west of the cape served as anchor site. Late at night the Finnsport 650 with Maaru and his son Lasarus arrived from the north.

24 July

First cloudy, but later sunny and only slight wind. Surveyed from the Finnsport 650 from Kap Tordenskjold to Timmiarmiut, with side trips into Napasorsuaq Fjord, Puisortoq Fjord and along the Puisortoq-coast.

25 July

Sunny and calm. Surveyed from the Finnsport 650 from Timmiarmiut into Timmiarmiut Fjord and around Timmiarmiit Island via Timmiarmiit Tunorquttariit, east of Griffenfeld Ø, through Vend Om (where we met the research schooner 'Activ') to the former fishery site Skjoldungen where "Uiloq" already had arrived.

26 July

Sunny and calm. Surveyed from the Finnsport 650 from Skjoldungen along the coasts of Thor Land, Odin Land, Colberger Heide, Umiivik and arrived simultaneously with "Uiloq" to in an inlet on Fridtjof Nansen Halvø west of Gerner Ø where we anchored.

27 July

Mostly cloudy (sun visible through clouds) and calm. Survey from the Finnsport 650 from Gerner Ø along Jens Munk Ø, across Køge Bugt (much ice, why we had to cross over from Ikermiit to Aqitseq without surveying the inner parts of the bay). Then we surveyed the islands in the archipelago Graah Øer ending op in Orsaajiit on Dannebrog Ø, where "Uiloq" had arrived earlier.

28 July

Sunny and calm, but heavy swell in the mouth of Sermilik and south of Tasiilaq. Surveyed from the Finnsport 650 from Graah Øer acrosss Ikertivaq (much ice, why the inner parts were not accessible) to the settlement Isortoq, and from there north of Kitak to Tasiilaq. "Uiloq" arrived to Tasiilaq 1.5 hours later than the Finnsport 650.

Tabel 1. Survey data.						
Date in July	Platform	Distance sailed	Survey time			
		during survey				
		km	hours			
18	Falcon 26	168	10.30-16.30			
19	Falcon 26	19	15.35-16.18			
20	Falcon 26	105	07.30-15.05			
21	Falcon 26	256	09.50-21.20			
22	Uiloq	No survey	No survey			
23	Uiloq	117	07.00-20.00			
24	Finnsport 650	260	08.40-22.15			
25	Finnsport 650	164	09.25-19.00			
26	Finnsport 650	206	08.55-21.50			
27	Finnsport 650	249	09.10-21.00			
28	Finnsport 650	157	08.23-15.30			

3 Seabirds

3.1 Species account

Red-throated diver Gavia stellata

Seen here and there (n = 30) throughout the survey. Primarily birds feeding in coastal waters, but also in lakes, e.g. at Itilleq on Eggers \emptyset .

Great northern diver Gavia immer

Two adults on the water and three flying in the mouth of Lindenow Fjord, one adult in Nanuuseq Fjord all on 21 July, one imm. flying off Kap Walløe on 23 July.

Northern fulmar Fulmarus glacialis

Breeding birds were only observed at the well-known colony at Kap Christian (59010) to the west of Kap Farvel (Boertmann 2004). The colony seemed to have the same vertical distribution as in 2003.

Single fulmars were recorded here and there along the southeast Greenland coast, even in inshore waters and where ice covered the sea.

Great cormorant Phalacocorax carbo

Breeding was only recorded at colony 65511 in Isertup Kangertivat, where 12 nests were occupied on 28 July (Figure 4). The chicks were all large and clutch size in ten nests was: 1 (n=1), 2 (n=3), 3 (n=5) and 4 (n=1). The other site (65509) previously reported as a breeding colony, was only a roost with six birds. Elsewhere were cormorants only recorded twice: one in Kangersuneq west of Kap Molkte on 26 July and one on Søren Nordbyes Øer on 27 July.



Figure 4. Nesting great cormorants in the colony near Tasiilaq.

Greylag goose Anser anser

A moulting (flightless) bird was observed at the archipelago Qeertaartivit (64504) on 26 July.

Canada Goose Branta canadensis

Three observations: A pair with three chicks on an island SE of the old settlement Timmiarmiit on 25 July represents the first breeding record from East Greenland. Further north were a flock of 5 - probably non-breeders seen on Qeertaartivit (64504) on 26 July. A flightless bird was observed on Pros Mund \emptyset on 27 July.

Barnacle goose Branta leucopsis

A flock of six individuals in heavy wing moult (some were flightless) was observed at the small archipelago Qeertaartivit (64504) on 26 July.

Brent Goose Branta bernicla

Two single individuals were observed (probably moulting) in the archipelago Qeertaartivit (64504) on 26 July.

Mallard Anas platyrhynchos

Three at the lake at Itilleq on Eggers \emptyset on 20 July, six in Ternebugt on 24 July, a pair + 16 probably moulting birds in Napasorsuaq Fjord 24 July, a female in Timmiarmiit Tunorquttariaat on 25 July.

Pintail Anas acuta

A single adult male in moult (flightless) was found in a small pond on the main island of the archipelago Qeertaartivit (64504) on 26 July.

Teal Anas crecca

A single adult female in moult (flightless) was found in a small pond on the main island of the archipelago Qeertaartivit (64504) on 26 July.

Common eider Somateria mollissima

Two colonies were visited to the south of Prins Christian Sund. The wellknown Qeqertat (59004) were three islands were inspected and where only ten females where brooding, but approx. 200 females were resting on coasts and in the sheltered waters. Hundreds of old nest cups from previous years were counted. The other was one of the islands west of Kap Christian (59020) where a female with newly hatched chicks were observed.

No breeding common eiders were encountered between Prins Christian Sund and the island of Uutorsiutit (the former weather station Tingmiarmiut 62° 30' N). From here to Dannebrog Ø (65° 15' N) 15 sites with breeding common eiders were visited (Figure 5, 6). At three previously known sites breeding could not be confirmed, and the general impression was that many common eiders did not breed this summer.

Table 2. Common eider clutch sizes - number of eggs.

	1	2	3	4
Qeqertat (59004)		3	2	1
Timmiarmiut (62502)	1	11	8	1
Qeertaartivit (64404)			3	1

In total, 1250 non-breeding or presumably non-breeding common eiders were observed along the route. Of these were 61 % females and 30 % males.

Figure 6. Distribution of common eider colonies in the northern part of the 2014 survey-area.

King eider Somateria spectabilis

Only one observation: A male in a flock of common eiders in mouth of Gyldenløve Fjord on 26 July.

Red-breasted merganser Mergus serrator

Only a few and scattered observations: a pair in Nanuuseq Fjord on 22 July, a female in Timmiarmiit Tunorquttariaat on 25 July, four in flock in Kangersuneq west of Kap Molkte on 26 July.

White-tailed eagle Haliaaetus albicilla

A pair of adult birds at Peers Vig in Lindenow Fjord on 21 July behaved like a well-established pair in a non-breeding year. An immature was observed in Puisortoq Fjord (61° 53'N) on 24 July. The remains of an immature (feathers and two humeri) was found among the garbage in one of the abandoned houses at Skjoldungen. Finally Jeppe Møhl on board 'Activ' had seen an immature at Dronning Marie Dal in inner Skjoldunge Sund on 24 July.

Peregrine falcon Falco peregrinus

An adult resting at the islands west of Kap Christian on 18 July, a resting adult at Kivinak in the mouth of Bernstorff Isfjord on 26 July, an adult resting on top of Sneedorff Ø on 27 July, an adult female on Koklapperne on 27 July. This latter bird caught a black guillemot right in front of us. It later landed on a ledge and disappeared into a crack in the cliff above the guillemot colony (a nest here?).

Gyr falcon Falco rusticolus

Only one observation; of an adult and a recently fledged young at Kap Tycho Brahe on 28 July.

Ringed plover Chardrius hiaticula

Only one observation: one heard calling in the settlement of Isortoq on 28 July.

Turnstone Arenaria interpres

A single bird on a small island on north side of Timmiarmiut on 25 July. Five on the islands of Qeertaartivit (64504) on 26 July.

Arctic skua Stercorarius parasiticus

Breeding or supposed breeding was encountered at seven sites between Colberger Heide ($64^{\circ} 20' \text{ N}$) and Dannebrog Ø ($65^{\circ} 20' \text{ N}$), and with only one or two pairs at each site (Figure 9). Of colour identified birds six were dark phase and three light phase.

A single bird was observed at Kulusuk (59002) west of Kap Farvel on 18 July.

Common gull Larus canus

A single adult stayed among the breeding gulls on the main island of the archipelago Qeertaartivit (64504) on 26 July.

Lesser black-backed gull Larus fuscus

Breeding pairs (n = 2) were located at Kulusuk (59002) and on the islands to the west of Kap Christian (n = 6) on 18 July (Figure 7, 8, 9). On the east coast two pairs were found on Qeertaartivit (64504) on 26 July and a pair was associated the Iceland gull colony on Aqitseq (64512), although apparently not nesting. All breeding pairs were found on low islands among colonies of Iceland gulls.

Herring Gull Larus argentatus

An adult at the harbour of Aappilattoq on 19 July.

Figure 7. Lesser black-backed gulls breeding among Iceland gulls in colony 59020 near Nanortalik.

Figure 8. Distribution of lesser black-backed gull, Arctic tern and razorbill colonies in the southern part of the 2014-survey area. Figures at Arctic tern symbols indcate number of individuals observed.

Figure 9. Distribution of lesser black-backed gull, Arctic skua and great cormorant colonies in the northern part of the 2014survey area. No Arctic skua or great cormorant breeding sites/colonies were found in the southern part. Note that the eastern cormorant symbol indicates a roost, which previously may have been a breeding site.

Iceland gull Larus glaucoides

South of Prins Christian Sund three breeding colonies were encountered - of which only the colony on Kap Christian was known. Three more colonies with unidentified Iceland/glaucous gulls were seen here. Further north 21 colonies were located + four with unidentified Iceland/glaucous gulls (Figure 10, 11). They were all very small with up to 31 AONs. Two sites were previous/local information indicated that Iceland gulls bred were without gulls.

Figure 10. Distribution of Iceland gull and undetermined Iceland/glaucous gull colonies in the southern part of the 2014 survey area.

Figure 11. Distribution of Iceland gull and undetermined Iceland/glaucous gull colonies in the northern part of the 2014 survey area.

Glaucous gull Larus hyperboreus

South of Prins Christian Sund five breeding colonies were visited, further north in total 27 breeding sites were seen (Figure 12, 13). All were small with up to 20 AONs and at many sites (n = 8) only a single pair was found among other gulls.

Great black-backed gull Larus marinus

Breeding pairs were only observed to the west of Kap Farvel (Figure 14): on Kulusuk (59002), on Naajat (59018), on the islands just west of Kap Christian (59020) and on Qeqertat (59004). To the east and north of Prins Christian Sund only a few immature birds were recorded. Remarkable, that no breeding birds were encountered on the east coast.

Kittiwake Rissa tridactyla

In total 14 kittiwake breeding sites were visited (Figure 14, 15). Five of these were occupied with AONs ranging from 15 to 113; the most spectacular colony at Taateraat Nuuat (61501) had only 29 AONs (Figure 16). All other sites were without birds.

Ole Isaksen showed us a site behind Kap Iver Huitfeldt (60506) where kittiwakes were breeding in the 1990s. The former colony at Lindenow Fjord (60501), which has not been seen since 1926 (Knudsen 1935) could not be located (and was not seen in 2008 either) and must have been abandoned long ago. The colony at Umiivik (64501) (seen in 1933, Hørring 1939) could not be located either by us or by the 2008 survey, and may be abandoned or perhaps misplaced on the colony register map. **Figure 15.** Distribution of kittiwake and Arctic tern colonies in the northern part of the 2014 survey area. Figures indicate number of AONs in case of kittiwakes and individuals in case of Arctic terns recorded in 2014.

Among the kittiwake sites, Maaru showed us six sites where he uses to find breeding birds in the region between Køge Bugt (64° 50) and Dannebrog Ø (65° 15′ N). But only two of these were occupied in 2014.

Ivory gull Pagophila eburnea

In Køge Bugt, two single adults were overflying the boat when we struggled in the dense ice on 27 July, seven km east of Schumachers \emptyset .

Figure 16. Taateraat Nuuat, the most spectacular seabird colony in the surveyed region. The kittiwakes have their nests inside the cave to the left and on the pale wall to the right.

Arctic tern Sterne paradisaea

Arctic terns colonies were recorded in the region between Qullit (61° 30′ N and Isortoq (65° 30′) and in total twelve sites were visited (Figure 8, 15). However only four were occupied in 2014 and the numbers were low with up to 20 individuals at the sites.

Among the empty sites, several islands were designated by Maaru as regular colony sites. He also noted that the population generally has decreased and he explained this as a result of increased predation from polar bears.

Thick-billed murre Uria lomvia

No thick-billed murres were observed. We visited two sites where Ole Isaksen previously (in the 1990s) had seen murres on the cliffs. At the island right to the south of Kap Farvel (59012) on 18 July and on Kap Walløe (60507) on 21 July.

Razorbill Alca torda

Razorbills were only observed at the islands just off Kap Farvel: two birds at colony 59008 and 23 at 59012 (Figure 8).

Black guillemot Cepphus grylle

To the south of Prins Christian Sund nine sites with breeding black guillemot were visited. Further north 44 colony sites with black guillemots were located (Figure 17, 18). Except for one site, all colonies were attended by one to 65 individuals. The exception (65506) had much more: 275 individuals, but is in fact a small island with several subcolonies.

Little auk Alle alle

The island Kulusuk (59002) in the archipelago Kitsissut off Nanortalik was by Salomonsen (1950) indicated as a probable breeding site. He did not see the island himself, but relied on information from local hunters. We visited the island on 18 July, and saw no little auks, and the island looked not very suited for the species, being completely smooth without any loose screes or cracks (Figure 19).

A single bird in winter plumage was observed in a small inlet in Puisortoq Fjord on 24 July.

Figure 19. The island Kulusuk (59002) seen from northeast. Little auks were presumed to breed here in the 1940s.

Atlantic puffin Fratercula arctica

No puffins were observed. This was unexpected, as Glahder (1993) observed a bird flying with fish northeast of Prins Christian Sund. It might have been a breeding bird on its way to a colony on the coast. If there is such a colony, it can only be situated on the coast we did not survey, south of Prins Christian Sund and north of Ikeq. However, Ole Isaksen directly inquired, said that there were no breeding seabirds on this part of the coast.

Other bird species

Ravens (*Corvus corax*) were seen here and there along the entire route. Snow buntings (*Plectrophenax nivalis*) were observed at most of the sites we went ashore incl. the small islands. Wheatears (*Oenanthe oenanthe*) were numerous at Aappilattoq, Skjoldungen and in Tasiilaq, lapland longspurs (*Calcarius lapponicus*) were only observed on Eggers Ø and in Tasiilaq, redpolls (*Carduelis flammea*) were observed in Appilattoq, at Skjoldungen and in Tasiilaq and meadow pipits (*Anthus pratensis*) were observed in Tasiilaq.

3.2 Seabird colony account

In total, 84 colony sites were visited and we received local information from additionally two sites. This resulted in 187 new entries to the Greenland seabird colony register.

The sites were distributed with four new sites south of Prins Christian Sund and 52 new sites to the north of the sound i.e. in SE Greenland. I addition, 29 previously known sites were visited of which seven were to the south of Prins Christian Sund (Figure 2, 3).

4 Seal survey

Harbour seal Phoca vitulina

Harbour seals were especially searched for in a number of sites either where the tracked individuals had stayed or where Ole Isaksen and Maaru knew they occurred (Figure 20, 21). Harbour seals were observed in the Qeqertatarchipelago on 20 July, where at least four individuals were present - one of them probably a young of the year (Figure 22). In addition a seal pup, which most likely was a harbour seal, was seen in a small inlet in the mouth of Puisortoq Fjord on 24 July.

Figure 20. Harbour and grey seal areas based on local knowledge and satellite tracking (see Figure 23) and a hooded seal congregation area observed on 24 July in the southern part of the 2014 survey area (Rosing-Asvid et al. 2013).

Figure 22. A harbour seal hauled out in the Qeqertat archipelago.

Grey seal Halichoerus grypys

No grey seals were observed during the survey. Both the site where they were observed in 2009 and 2010 (Qeqertat archipelago) and the fjord to where the tracked animals moved were visited (Figure 23).

Hooded seal Cystophora cristata

Hooded seal concentrations were observed three times (Figure 20, 21). South of Otte Ruds Øer/Qeertartivaq ($62^{\circ} 03' \text{ N} 42^{\circ} 10'$) on 24 July, in Køge Bugt ($64^{\circ} 56' \text{ N}, 40^{\circ} 10'$) W on 27 July and to the southeast of Ørsted Ø on 27 July. In these areas hooded seals were resting on the ice in densities higher than one indv./km² (Figure 24). Single individuals in the water were observed here and there.

Bearded seal Erignathus barbatus

Single bearded seals were observed here and there, in total 14. Seven of them were in the water and the other seven hauled out on ice. All seemed to be in some stage of moult (a brownish pelage).

Ringed seal Pusa hispida

Single ringed seals were observed scattered along the route, mainly in the water, but also on the limited areas of fast ice (Napasorsuaq Fjord).

Figure 23. Positions of four harbour seals and one grey seal tacked on Qeqertaq in August 2009 and September 2010 (Rosing-Asvid et al. 2013).

Harp seal Pagophilus groenlandicus

Harp seals were observed in small numbers along the entire route. Mainly adult seals in flocks 'amissut'.

Polar bear Ursus maritimus

A single adult bear was observed on the fast ice in Napasorsuaq Fjord on 24 July, where it was lying in wait of two ringed seals.

Figure 24. Among the many hooded seals encountered on 27 July a few were young of the year individuals 'bluebacks'.

5 Discussion

5.1 Seabirds

The numbers and densities of breeding seabirds in the Southeast Greenland region covered by the survey in 2014 were very low and much lower than seen in West Greenland. This was evident both by the number of birds in the single colonies and by the very scattered colonies. However, the 2014 survey added 52 new seabird breeding colonies from Southeast Greenland (to the north of Prins Christian Sund) to the Greenland seabird colony register. Previously 38 (of which 24 were found during the 2008-survey) sites were known from this region. The most frequent species was black guillemot (n = 44 colonies) and the two common gull species, glaucous gull and Iceland gull, were found in 27 and 21 colonies respectively. Common eider was located at 15 sites. Kittiwakes were only found at five sites, however, additionally nine previously known breeding sites were visited.

The most remarkable sites were:

- the small archipelago Qeertaartivit (64504) at Umiivik (Figure 25) with high species diversity,
- the eastern island of Graahs øer (65506) with the largest number of black guillemots and in addition kittiwakes however only one of three former subcolonies on the island was occupied,
- the cliff at 64508 with largest kittiwake colony seen (n = 113 AONs).

Figure 25. The archipelago Qeertaartivik seen from the top of the main island towards east.

The Qeertaartivit archipelago (64504) and Ikermiit (64502) had the highest diversity found on the survey: as fives species of seabird were breeding in these sites. Qeertaartivit in addition also held a considerable variety of nonbreeding birds, of which Canada geese, a greylag goose (four previous records in Greenland, all in Northeast), two species of high arctic geese (barnacle and brent), two species of dabbling ducks of Icelandic origin (teak and pintail) and a common gull were really exceptional. This group of islands may qualify as a Greenland FBO (Egevang & Boertmann 2012).

Kittiwake colonies were very few, small and scattered. Maaru showed us several sites which had no birds in 2014 (see above) and two kittiwake colonies observed in 2008 was either without birds (60502) or with considerably fewer (61501) in 2014. However, at two other sites (63502 and 64515) 19 and 21 occupied kittiwake nests were observed, where no kittiwakes were seen in 2008.

The survey also confirmed that Canada goose has expanded the breeding range to Southeast Greenland, and an increase of the population must be expected here.

The breeding sites of thick-billed murres reported by local hunters were both without birds.

Another remarkable observation was the lack of great black-backed gulls in the entire surveyed area of Southeast Greenland.

According to Maaru from Tasiilaq, the spring in 2014 was delayed and in addition huge amounts of snow fell during the winter. This was evident in the region between Bernstorff Isfjord and Isortoq, where snow drifts during the survey still covered large parts of low islands right down to sea level (Figure 26). This most likely had a negative influence on the breeding population of especially Arctic terns and common eiders. Both species were found breeding in much lower numbers and at fewer sites than expected.

Figure 26. Large snowdrifts on a low island in Umiivik on 26 July.

Many common eider females were seen in small flocks resting on spits and on the water near potential breeding islands and behaving like nob-breeding birds. Moreover many nest cups on the islands visited were not used this season. The number of non-breeding common eiders was surprisingly low compared to the result of the June 2008 survey, when several thousand birds (mainly males) were recorded in the region to the south of Tasiilaq (Merkel et al. 2010). Do these birds leave the region after the moult or do they move to the inner parts of the fjord, which were not visited in 2014?

Very few Arctic terns were observed and Maaru showed us several islands where they use to breed, but were absent in 2014. A colony (65516) found in 2008 (50 indvs.) had no birds in 2014. On 28 July two large tern flocks were seen from the helicopter between Tasiilaq and Kulusuk. Such flocks are usually adults which have given up breeding for the season.

Maaru also told us that there were generally very few seabirds breeding on the coast. However, in two areas there were higher numbers of esp. terns, eiders and gulls; at Timmiarmiur (= the bird people) and at Umiivik, a pattern we also noted in 2014.

5.2 Seals

According to Teilmann & Dietz (1993), two breeding-localities for habour seals were known in the area between Kap Farvel and Tasiilaq in the late 1980s. This information derived from hunters that were interviewed in the period 1988-1990 (Siegstad 1992). One locality was on the west-side of the island Saningasoq (59° 31′ N, 43° 20′ W) near Kap Farvel and the other about 86 kilometers further north in the fjord "Kangersiuasik" (60° 20′ N, 42° 33′ W) (on the map: Kangerluaraq).

Reconnaissance in the Kap Farvel-area during 2008 and 2009 showed that the southern colony had moved to the small archipelago Qeqertat (59° 32′ N, 43° 17′ W) about five kilometers north of Saningasoq. In 2009 and 2010 this population was estimated to be about 40 individuals and twelve of these were equipped with satellite linked data-loggers (two of the seals were tagged in both 2009 and 2010) (Rosing-Asvid *et al.* 2013). The transmitters were glued on the fur right after moulting (primo September) and seven adult seals were transmitting long enough to include the breeding period in early June to early July the following year. Four of these seals stayed around Qeqertat, but three (one male and two females) swam about 240 km northward to the west side of the peninsula Puisortoq (the coast between 61° 32′ N, 42° 10′ W - 62° 00′ N, 42° 04′ W) (Figure 23).

The 2014 survey failed to find harbour seals at these sites. This can very well be ascribed the timing of the survey, which due to the ice conditions, probably was too late. The lactation and the tight bond between harbour seal mother and pup cease around early to mid-July. Moreover, did the tagging study show that the adult seals had left the Puisortoq-area by the last half of July.

Harbour seals have been hunted intensively in Greenland until the hunt was banned in December 2010. The hunt resulted in a constant change in the location of whelping sites and the existence of well hidden and undiscovered whelping sites is therefore likely. This survey visited areas that rarely if ever are visited (Figure 20, 21), but only a probable harbour seal was observed. Two grey seals were observed during the harbour seal tagging-study on Qeqertat in 2009 and they were the first certain registration of grey seals in Greenland waters (Rosing-Asvid et al. 2013). In 2010 a grey seal pup was caught here and equipped with a satellite-linked data-recorder. Contact with the seal only lasted 28 days, and in that period the seal swam about 220 km up the coast where it entered Napasorsuaq Fjord (Figure 23) (Rosing-Asvid et al. 2013). We saw no signs of grey seals either on Qeqertat or in Napasorsuaq Fjord.

The West Atlantic hooded seals moult on the drift ice off the southeast Greenland coast during June and the first half of July. An extensive tagging study with satellite-linked data-loggers have given a detailed insight into the hooded seal migration pattern from the end of the moult and until the seals moult again the following year (Andersen et al. 2009, 2013a, 2013b, 2014). It showed that most hooded seals leave southeast Greenland right after the moult, but some stay for a few weeks to forage and a few mainly younger seals, stays in the area throughout the year. The moulting seals spend most of the day on the ice and foraging seals that have filled their stomach will also often rest on ice. They mainly use multi-year ice so that they can rest 1-1½ meter above sea surface.

Almost all hooded seals would have finished the moult when we approached the moulting area. The drift ice had completely disappeared from the area, which was unusually early. Hooded seals that wanted to haul-out would therefore have to move into glacier-fjords and stay on glacier ice or thick winter or multi-year ice formed in the glacier-fjords. We sailed through three such areas with concentrations of hooded seals on the ice (Figure 20, 21).

Satellite-linked data-loggers show that bearded seals will haul-out for about 70-80 % of the day in July when they grow new hair (Rosing-Asvid et al. 2014). We registered 14 bearded seals of which 50 % were in the water and all seemed to be in some stage of moult (a brownish pelage). In areas with ice the seals were seen hauling out.

The relatively high fraction of bearded seals in the water indicates that our route (in open water areas along the coast) did not include the main areas for bearded seals at that time of the year. Bearded seals seek out ice for haul-out in July and they were also seen in the patches of ice with many hooded seals. Surveys into the densely packed ice-fjords would probably reveal higher concentrations of bearded seals in July.

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SEABIRDS AND SEALS IN SOUTHEAST GREENLAND

Results from a survey in July 2014

This report describes the results of a survey for colonial seabirds and seals along the almost unexplored coasts of Southeast Greenland. In July 2014 the region between Nanortalik and Tasiilaq was covered and it is the plan to cover the region further north to Ittoqqortoormiit in 2015. Very few colonial seabirds were found breeding in 2014, breeding colonies were small and scattered and they were dominated by black guillemots (max. 275 indvs. at a colony) and iceland/glaucous gulls (max. 31/20 pairs per colony). Only five occupied colonies of kittiwakes were found (max. 123 pairs) and additionally nine abandoned kittiwake colonies were seen. Moreover were there signs of a poor breeding season for species such as Arctic tern and common eider. The seal survey was targeted at harbour seal and grey seal habitats, which were used by seals tracked in 2009 and 2010.

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