



SEABIRD COLONIES IN THE MELVILLE BAY, NORTHWEST GREENLAND

Scientific Report from DCE - Danish Centre for Environment and Energy

No. 45

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Data sheet

Series title and no.: Scientific Report from DCE – Danish Centre for Environment and Energy No. 45

Title: Seabird colonies in the Melville Bay, Northwest Greenland

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Publisher: Aarhus University, DCE – Danish Centre for Environment and Energy ©
URL: <http://dce.au.dk/en>

Year of publication: January 2013
Editing completed: December 2012
Greenlandic translation: Bjørn Rosing
Referee: Anja Skjoldborg Hansen

Financial support: Bureau of Mineral and Petroleum, Greenland

Please cite as: Boertmann, D. & Huffeldt, N.P. 2012. Seabird colonies in the Melville Bay, Northwest Greenland. Aarhus University, DCE – Danish Centre for Environment and Energy, 34 pp. Scientific Report from DCE – Danish Centre for Environment and Energy No. 45 <http://www.dmu.dk/Pub/SR45.pdf>

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Abstract: This report describes the results of a survey for breeding and colonial seabirds in a hitherto un-surveyed area of Northwest Greenland - the Melville Bay. The results shall be included as background data for oil spill sensitivity mapping, preparation of environmental impact assessments of petroleum activities in Baffin Bay and for the regulation (by the Greenland government) of petroleum activities. The survey showed, that compared to other coasts of West Greenland, the Melville Bay holds only few breeding colonies and low numbers of breeding seabirds. The most widespread and numerous species is the black guillemot followed by the glaucous gull. However, one colony is of national significance – Sabine Øer, with high numbers of breeding Arctic terns and Sabine’s gulls. Other noteworthy observations were puffins on Thom Ø and many new Iceland gull colonies that extended the known northern breeding limit in Greenland by approx. 240 km.

Keywords: Melville Bay, colonial seabirds, breeding distribution

Layout: Graphic Group, AU Silkeborg
Maps: Daniel Spelling Clausen
Front page photo: Sabine’s gull, Sabine Øer, August 2012

ISBN: 978-87-92825-82-7
ISSN (electronic): 2245-0203

Number of pages: 34

Internet version: The report is available in electronic format (pdf) at <http://www.dmu.dk/Pub/SR45.pdf>

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Summary

In the period 1-16 August the southern and central part of Melville Bay was surveyed for seabird breeding colonies. Bad weather prevented searching the northern part. The survey period was late in relation to breeding seabird, as their breeding season is close to an end and many chicks are fledged. However, it was demanded by the usually very late clearance of sea ice in the coastal parts of the bay.

The observation platform and means of transportation was a 43 feet sailboat (Figure 1). The Melville Bay has never been surveyed for breeding seabirds before due to the remoteness and the expectation that there are very few breeding seabirds. However, oil exploration in Baffin Bay has made seabird knowledge needed as background data for many purposes in that context: Oil spill sensitivity mapping, input to oil spill countermeasure strategies, authority regulation of the activities, preparation (by the license holders) of environmental impact assessments of the activities and of net environmental benefit analysis.

The survey showed, that compared to other coasts of West Greenland, the Melville Bay holds a relatively low density of breeding colonies and the numbers of breeding seabirds are low. The most widespread and numerous species is the black guillemot followed by the glaucous gull. However, one colony is of national significance – Sabine Øer, with high numbers of breeding Arctic terns and Sabine's gulls – the largest colony of this species in Greenland. Other noteworthy observations were puffins on Thom Ø and seven new Iceland gull colonies that extended the known northern breeding limit in Greenland by approx. 240 km towards north.

Sammenfatning

Denne rapport beskriver resultaterne af et skibsbaseret fugletællingstogt i Melville Bugt. Målet var at besøge så mange som muligt af de i forvejen kendte havfuglekolonier (dvs. fuglefjelde og fugleøer) og at finde nye. Togtet var finansieret af Råstofdirektoratet, og resultaterne skal indgå som baggrundsviden i forbindelse med DCE's vidensbaserede rådgivning omkring olieeftersforskning, og de stilles desuden til rådighed for de olieselskaber, der skal udarbejde miljøvurderinger af deres aktiviteter.

Som transportmiddel og observationsplatform benyttedes en 43 fods sejlbåd (Figur 1), og togtet foregik i august. Dette er ikke optimalt for at registrere havfuglekolonier, men havisen i Melville Bugt forhindrer normalt sejlads i juni og juli.

De sejlede ruter og undersøgte kyster ses på Figurerne 2, 3 og 4.

Resultaterne viser at tætheden af ynglekolonier for havfugle er lav sammenlignet med andre nordvestgrønlandske kyststrækninger, og at kolonierne i de flestes tilfælde er små. Koloniernes fordeling fremgår af Figurerne 5, 8, 10 og 12.

Det undersøgte områdes vigtigste havfuglekoloni er øgruppen Saa-tut/Sabine Øer. Her er en stor koloni af havterne (vurderet til ca. 3000 par), og Grønlands største forekomst af ynglende Sabinemåger findes her, idet der var mindst 500 par. Der er desuden en større koloni af ederfugle (mindst 55 par). De mest udbredte koloniynglende havfugle i området var tejst og gråmåge. Af mere bemærkelsesværdige observationer kan nævnes at der sås lunder ved Thom Ø og Thayers måger ved et fuglefjeld nær Nuussuaq. Der fandtes flere kolonier af hvidvinget måge og den nordligste af disse var 240 km nord for den hidtil nordligste i Vestgrønland. Om der er tale om en udvidelse af yngleområdet, eller de blot har været overset kan ikke afgøres. Omkring Fisher Øer sås flere ismåger. Der er ingen kendte ynglesteder for denne rødlistede art i Melville Bugt-området, men deres tilstedeværelse tyder på, at der må være en mindre koloni i nærheden.

Undervejs blev der optaget støj i vandet (Figur 15 og 16), idet flere olieselskaber samtidigt udførte seismiske undersøgelser i deres licensblokke længere ude i Baffin Bugt.

Naalisagaq kalaallisoq

Nalunaarusiami uani Qimusseriarsuarmi angallat atorlugu timmissanik kisitsilluni angalaarneq nassuiarneqarpoq. Timmissat imarmiut ineqarfiisa (tassa innat qeqertallu timmiaqarfiusut) naluneqanngereersut sapinngisamik amerlanerpaat tikinnissaat nutaanillu nassaarniarnissaq angalanermi siunertaavoq. Angalaneq Aatsitassanut Ikummatissanullu Pisortaqarfimmit aningaasalersorneqarpoq, misissuinerullu inernerer DCE-p uuliasiornermut tunngatillugu ilisimasat tunngavigalugit siunnersuinerani ilisimasanut ilaalersussaapput, aammalu paasisat tamakkua uuliasioqatigiiffiit ingerlaminnut tunngatillugu avatangiisinik nalilersuinerannut atugassanngortineqartussaapput.

Misissuinermilu angallatigalugu aallaavigalugulu atorneqarpoq tissiartaat 43 fodinik takissusilik, angalanerlu augustusimi ingerlanneqarpoq. Piffissaq taanna timmissat imarmiut ineqarfiinik nalunaarsuineri naleqqunnerpaajungikkalarpoq, Qimusseriarsuarli sikoqarpallaartarmat junimi julimilu angallammik angallavigineq ajornartarpoq.

Angallaviit sinerissallu misissorneqartut Figur 2, 3 aamma 4-mi takuneqarsinnaapput.

Misissuinerit inernerisa takutippaat timmissat imarmiut erniorfii Avannaani sinerissanut allanut naleqqiullugu akulikigisassaangitsut, aammalu ineqarfiit amerlanersaat ikittuinnarnik timmiaqartut. Timmissat piaqqiorfiisa sumiinneri Figur 5, 8, 10 aamma 12-imi takuneqarsinnaapput.

Misissuiffigineqartumi timmissanik imarmiut ineqarfiisa pingaarnersaat qeqertani Saattuniippoq/Sabine øer. Tassani imequtaalarpasuit ineqarput, Kalaallit Nunaannilu sabinemågit piaqqiortut amerlanersaat tamaaniipput, minnerpaamik aappariikkuutaat 500-t. Aammalu miternik ikigisassaangitsunik tamaani erniortoqarpoq. Timmissat imarmiut ataatsimoorlutik erniortartut tamaani nalinginnaanersaraat serfat naajarujuusuillu (gråmåge). Takusanut eqqumiiginarnerusunut ilaasutut taaneqarsinnaapput Thom Ø-mi qilangit aammalu Thayers måger Nuussup qanittuani innami timmiaqarfimmiittut. Naajat hvidvinget mågit ineqarfiinik arlalinnik peqarpoq taakkualu avannarpasinnerisaat Kitaani avannarliusutut ilisimaneqartunit 240 km avannarpasinnerusumiipput. Kisianni erniortarfisik annertusisimanageraat imaluunniit sionratigut takuneqanngitsuuinnartarsimangersut oqaatigineq ajornarpoq. Fisher Øer eqqaanni naajavaarsuit arlallit takussaapput. Timmiaq taanna nungutaasinnaasutut nalunaarsorsimaffimmiittoq Qimusseriarsuarmi erniorfeqarnersoq ilisimaneqanngilaq, taaninneratali tamaani annertunngikkaluartumik erniofeqarsimanissaannut takussutissaagunarpoq.

Ingerlaarnermi immami pisorpaluk misissorneqarpoq (Figur 15 aamma 16), tassami uuliasioqatigiiffiit arlallit ataatsikkut sajuppillatitsisarlutik tamatumaa nalaani Baffin Bugtimi avasinnerusumi akuersissutaateqarfimmini misissuimmata.

1 Introduction

Since 1992, Greenland's west coast has been searched for seabird colonies as a part of the background studies carried out in relation to oil exploration activities. In 1992 the area between Aasiaat and Paamiut was searched (Boertmann & Mosbech 1992); in 1994 between Ilulissat and Holm Ø (just south of Kullorsuaq) (Boertmann et al. 1996), in 2003 between Kap Farvel and Arsuk in South Greenland (Boertmann 2004), in 2006 in Disko Bay and the two large fjord-systems south of the bay (Boertmann 2006). However, Melville Bay has yet to be surveyed, although a few seabird breeding colonies were recorded during aerial surveys conducted for moulting seaducks in the 1990s (Boertmann & Mosbech 2001). As oil exploration activities have been initiated in the Baffin Bay, the need for information on the breeding seabirds in the Melville Bay is obvious. Danish Centre for Environment and Energy (DCE) therefore planned a survey and received funding from the Bureau of Minerals and Petroleum of the Greenland Government as a part of the strategic background study program for the Baffin Bay.

Besides the seabird survey, hydro-acoustic recordings throughout the water column were conducted at stations on our route. The purpose was to record noise emitted from seismic surveys in the Baffin Bay, and it was part of another background study to be carried out in the offshore Baffin Bay area.

The survey was planned within the period from 1 Aug. to 21 Aug. 2012. This seems late in relation to breeding seabirds, whose chicks have more or less fledged by then. However, the sea ice is the determining factor for the region, which in the inner parts of the Melville Bay usually disappears in late July. The plan was to survey at least as far north as the Savissivik settlement, but bad weather unfortunately forced us to return towards Upernavik on 14 Aug., approximately two days of surveying from Savissivik. Weather forecasts indicated bad weather on 16, 17 and 18 Aug., which gave us the only fair weather window on 14 and 15 Aug. for our return.

The survey was initiated in the town of Upernavik, where there are scheduled flights two or three times a week to Kangerlussuaq, the main airport in Greenland. However, the coast between Upernavik and Holm Ø was only superficially surveyed, as the time had to be spent in the unsurveyed Melville Bay north of Holm Ø. However, one of the islands of Ederfugleøer and two sites just south of Holm Ø were visited on our journey north. While on our return journey south, the large thick-billed murre colonies of Kap Schackleton and Kippako as well as a few sites close to the sailing route were visited.

Ministry of Domestic Affairs, Nature and Environment (NNPAN), Greenland Government kindly gave permission to enter the Melville Bay Nature Reserve, where access normally is prohibited to the interior part of the reserve.

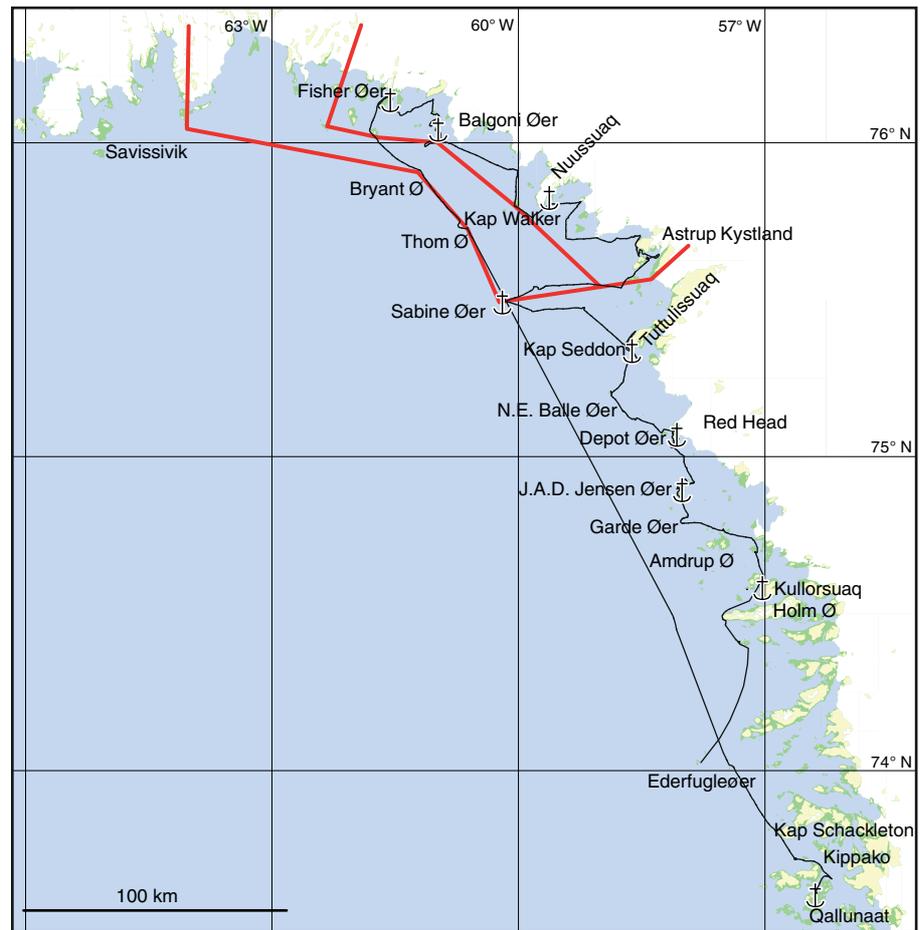
2 Material and methods

The observation platform was a 43 foot yacht “Arctic Tern UK” from Falmouth, UK, owned and sailed by Les and Ali Parsons (Figure 1). Although a sailboat, the weather conditions did not allow for sailing except for one occasion, and the engine was used almost exclusively. The approximate cruising speed by engine was 5.5 knots, and with the aid of foresails the speed increased to 7.5 knots. The sailed track is shown in Figure 2.

Figure 1. The survey platform, the sailboat Arctic Tern UK from Falmouth.



Figure 2. The sailed route. Anchor symbols show overnight stops. Red lines indicate the borders of the Melville Bay Nature Reserve, with an inner and an outer zone. From the Qallunaat island there are further 90 km south to Upernavik, the main town of the region.



During the survey, as many of the previously known colonies as possible were revisited, and the coastline was searched for new colonies. Figures 3 and 4 give an overview of the surveyed coastlines. 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 on a few e.g. Sabine Øer. The birds in the colonies were counted as Apparently Occupied Nests (AON) if possible (gulls, cormorants etc. which build obvious nests) and as individuals present for terns, Sabine’s gulls and black guillemots. The number of birds in large tern and Sabine’s gull colonies were estimated. 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.

Figure 3. The surveyed coasts in the southern part of the region. Red surveyed thoroughly; blue surveyed from a distance (from boat or land), and small colonies, of e.g. black guillemots, may easily have been overlooked there. Surveyed islands and archipelagos are encircled with red, and the sailed route is shown with a thin black line.

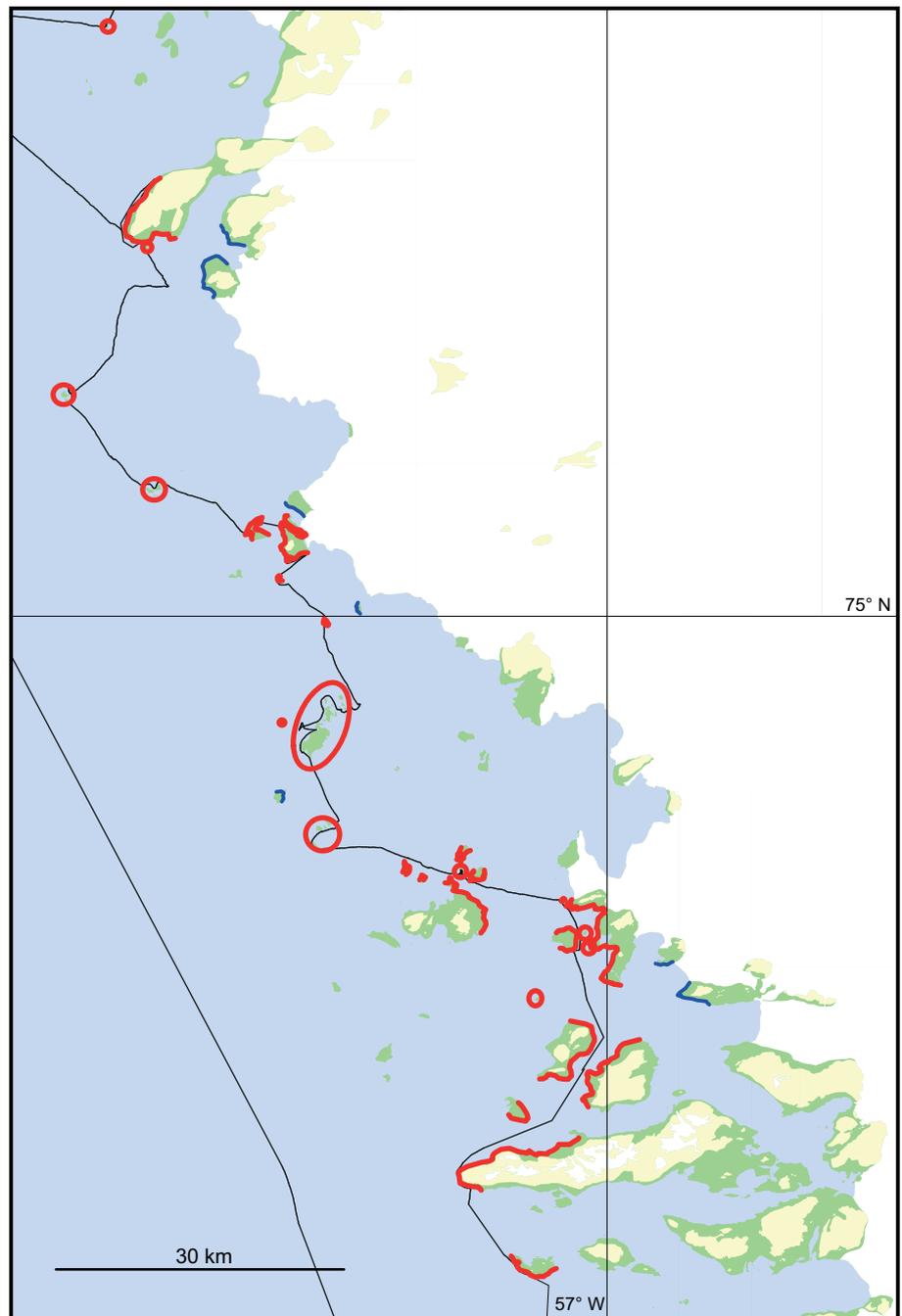
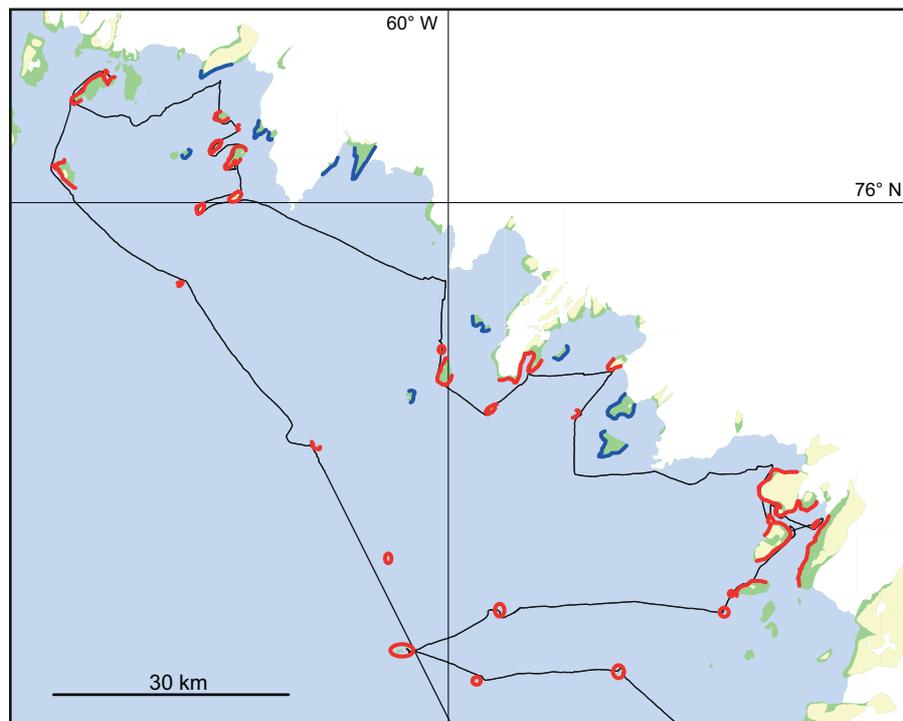


Figure 4. The surveyed coasts in the northern part of the region. Red surveyed thoroughly; blue surveyed from a distance (from boat or land) and small colonies of e.g. black guillemots may easily have been overlooked there. Surveyed islands and archipelagos are encircled with red and the sailed route is shown with a thin black line.



2.1 Survey conditions – weather

In the first part of the survey the weather was very fine with sunny days (and nights) and light to no wind giving excellent survey conditions. However, on 6 Aug. the wind and waves were too strong for surveying, and an extra day was spent at the anchor site at Kap Seddon. From the evening of 11 Aug. the weather turned worse for a longer period with gale force wind from SE and rain. Both 12 and 13 Aug. were spent in a sheltered bay on the north side of western Fisher Ø. On 14 Aug weather improved, and the journey southwards was initiated. The weather centre in Kangerlussuaq had forecasted two days of good and calm weather followed by at least three days of gale force winds.

2.2 Survey conditions – ice

Although the sea ice was gone, there was much ice from the glaciers in the surveyed area. This ice prevented us from surveying some of the coast and from visiting some previously recorded seabird colonies: 75006 and 75007 on Tuttulissuup Sarqallersua and 75008 to the west of Kong Oscar Gletscher.

The observations were carried out by the authors of this report, and the survey was initiated on 2 Aug. on Ederfugleøer. The surveys stopped on 15 Aug., although a few additional observations were made on 16 Aug.

2.3 Itinerary

The route is shown on the map in Figures 2, 3 and 4.

1 Aug. 2012. Departure from Upernavik and steaming straight to Kitsissorsuit/Ederfugleøer off Nuussuaq/Kraulshavn.

2 Aug. 2012. On-shore of the central Ederfugleø, and from here to Kullorsuaq.

3 Aug. 2012. From Kullorsuaq (moved to Otto Havn during the night as the wind increased) via Amdrup Ø, Bluhme Øer, Garde Øer to J.A.D. Jensen Øer.

4 Aug. 2012. From J.A.D. Jensen Øer to Red Head. Two noise recordings were carried out.

5 Aug. 2012. From Red Head via Depot Øer (Naseruaq), N.E. Balle Ø (Miteqarfiit) to Kap Seddon on Tuttulissuaq. One noise recording was carried out.

6 Aug. 2012. Kap Seddon. Bad weather limited survey to north shore of Tutulissuaq returning to the same anchor site as the previous night.

7 Aug. 2012. From Kap Seddon via Kuupeerqarfik and the unnamed island ESE of Sabine Øer to Saatut/Sabine Øer.

8 Aug. 2012. From Sabine Øer via the rocks (Siattat) NNE of Sabine Øer and Tuttulissuup Qeqertaa to the northeast corner of Naalungiarsuaq. Two noise recordings carried out.

9 Aug. 2012. From Naalungiarsuaq to the fjord towards the east, and from here passing the Nansen Glacier to Stenersen Ø, Melville Monument, Innaargissorssuaq to the inlet on the east coast of Nuussuaq. Two noise recordings were carried out.

10 Aug. 2012. From Nuussuaq via Welhaven Øer, Kløft Ø, Issuussarsuit Saamiutaat to a small inlet on the east coast of the largest of the Balgoni Øer. Ice prevented access to the island with Kivioq Havn. One noise recording was carried out.

11 Aug. 2012. From Balgoni Øer to land east of Rink Glacier, and from here south and west of Fisher Øer to the north side of the western Fisher Ø. Ice prevented viewing the east side and the south side of Fisher Øer. One noise recording was carried out.

12 Aug. 2012. The north side of western Fisher Ø. Bad weather (gale from SE and rain) prevented any sailing.

13 Aug. 2012. The north side of western Fisher Ø. Bad weather (gale from SE and rain) prevented any sailing.

14 Aug. Weather improved. We departed the harbour at Fisher Øer, and sailed towards Upernavik. Surveyed the south side of Leven Ø, Bryant Ø and Thom Ø. Sailed throughout the night.

15 Aug. Passed by Kap Schackleton and Kippako and anchored in a small bay on the north side of the island Qallunaat. NPH did vegetation studies on Kippako, while a noise recording simultaneously was conducted.

16 Aug. Departed Qallunaat early in the morning, and arriving at Upernavik at 13.30 h.

3 Results

3.1 Species accounts - birds

Red-throated Diver *Gavia stellata*

Breeding pairs were observed on Tulugarlissuaq (1 pair) and on the large island in the N.E. Balle Øer (three pairs). Red-throated divers were also seen sporadically along the coast north to Astrup Kystland.

Northern fulmar *Fulmarus glacialis*

No breeding sites located, but fulmars were seen in low concentrations in all waters incl. those with high densities of glacier ice.

Great cormorant *Phalacrocorax carbo*

No breeding cormorants were found north of Holm Ø, but on the island Inussulik, and on Wilcox Head (on Holm Ø) small colonies (2-3 nests) were observed (Figure 5). These two colonies are the northernmost hitherto recorded in Greenland.

Figure 5. Distribution of great cormorant and common eider colonies observed during the survey in 2012. The number of cormorant pairs recorded in the colonies ranged between 2 and 12 pairs/AON, and the largest numbers of eider nests/females with chicks was 55 (on the main island of Sabine Øer) and 64 (on the central island in the Ederfugleøer archipelago).



Snow goose *Anser caerulescens*

A non- or failed-breeding pair was seen flying over Sabine Øer on 7 Aug., and a pair was seen on the island Upernaviarsuk (colony no. 72004) on 16 Aug.

Canada goose *Branta canadensis*

A flock of 21 non-breeding and flightless birds utilised the lush herb vegetation on the winter-house ruins on Kap Seddon on 7 Aug (Figure 6). Four flying Canada geese were observed on Welhaven Øer on 10 Aug. The moulting birds were of the subspecies *interior*.



Figure 6. Moulting and flightless Canada geese at Kap Seddon 7. Aug.

Brent goose *Branta bernicla*

Three flightless, non-breeding birds were observed on the coast of the anchor inlet on Tuligalissuaq (the largest of the J.A.D. Jensen Øer) on 3 and 4 Aug.

Common eider *Somateria mollissima*

Female common eiders with chicks (many newly hatched) were seen widespread along the coast. Colonies were recorded on 10 islands to the north of Holm Ø, and most of these were surprisingly small with only a few females around (Figure 5).

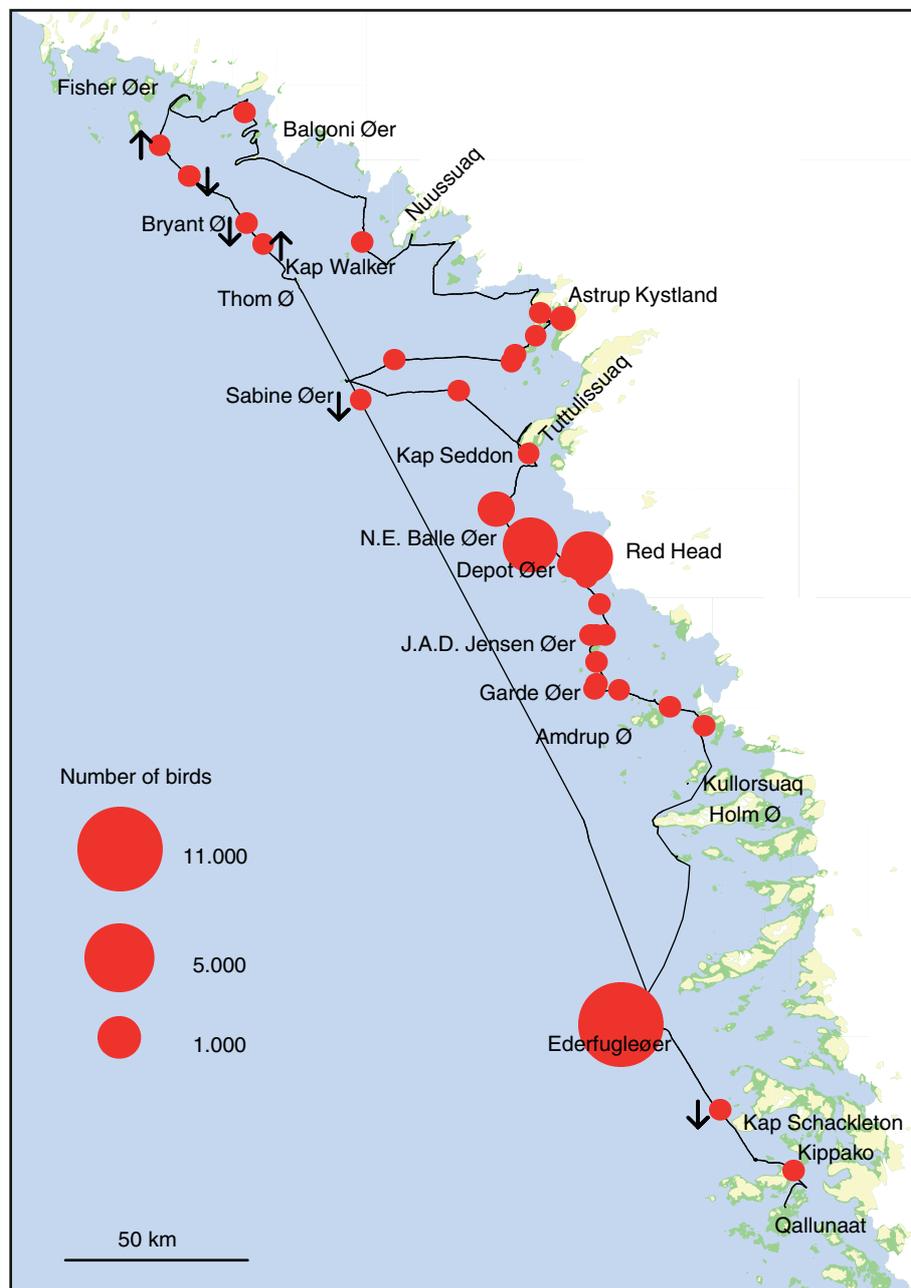
South of Holm Ø, the central island of Ederfugleøer was visited, and here at least 64 pairs/nests were seen. The density of nests on the island was however low. Two nests still had eggs on 2 Aug., while several crèches stayed on the water along the coast.

Surveys on land were carried out on 74025 (Amdrup Øer), 75011 (N.E. Balle Øer) and 75001 (Sabine Øer); however none of these islands were searched systematically. On 75025, only six hatched nests from this season were found. But there were about 100 old nest cups. On 75011, five females with chicks and at least 6 hatched nests from this season were observed. On Sabine Øer, there were several hatched nests from this season, at least 55 recorded.

King Eider *Somateria spectabilis*

Large numbers (almost 18,000) of non-breeding birds were observed. Most were found at Ederfugleøer (11,000), the fjords east and south of Red Head (2200) and at the islands of Depot Øer (2500) and N.E. Balle Øer (600) (Figure 7). Many were flightless or at least reluctant to fly. King eiders on migration were observed on 14 Aug. when several flocks were seen when we were sailing far from the coast.

Figure 7. Distribution of king eiders observed during the survey in August 2012. Arrows indicate flight direction of migrating flocks.



Long-tailed duck *Clangula hyemalis*

Low numbers observed sporadically, e.g. at J.A.D. Jensen Øer (n = 5), Red Head (n = 4) and a nest hatched this season was found on Amdrup Øer on 3. Aug.

Peregrine falcon *Falco peregrinus*

A breeding pair was observed at a small gull colony on the south coast of Nuussuup Qeqertarsua (Welhaven Øer, colony no. 75029) on 10 Aug. An immature hunted black guillemots on Sabine Øer (7 Aug.), and another was seen off Astrup Kystland on 8 Aug.

Gyr falcon *Falco rusticolus*

A juvenile (white) was observed on Kippako on 15 Aug and another juvenile (grey) in Upernavik town on 18 Aug.

Turnstone *Arenaria interpres*

Juvenile turnstones in small flocks (max. 20) were observed staging on the coasts or on direct migration here and there.

Pomarine skua *Stercorarius pomarinus*

Only a single observation, an adult in Upernavik Isfjord on 16 Aug.

Arctic skua *Stercorarius parasiticus*

A single adult, light phase bird was observed on one of the J.A.D. Jensen Øer. Although perched on a stone, there was no indication of breeding.

Long-tailed skua *Stercorarius longicaudus*

An adult was seen east of Sabine Øer on 8 Aug.

Iceland gull *Larus glaucoides*

The northernmost known colony of Iceland gulls was observed in 1994 on the north coast of Nuussuaq (c. 74° 30' N). During this survey seven colonies were found to the north of this site, with the northernmost on Balgoni Øer (c. 76°) (Figure 8). Seven pairs recorded as glaucous/Iceland gulls on Leven Ø (colony no. 76036) were probably Iceland gulls.

Thayer's gull *Larus thayeri*

Thayer's gulls were observed at a gull colony on Innarqissorsuaq (Norden-skiöld Gletcher, colony no. 75004) on 9 Aug. (Figure 9). Two typical adult birds (bright orange-yellow bills, dark eyes, dark grey mantle and black markings on primaries) and 2 adult and one 4K bird with *kumlieni*-characteristics (dark eyes, paler mantle and bill and grey markings on primaries) were observed.

Herring gull *Larus argentatus*

A highly territorial pair was observed on N.E. Balle Øer on 5 Aug.

Great black-backed gull *Larus marinus*

A single breeding pair on Ederfugleøer on 2 Aug, and a single bird on the small northern islands of J.A.D. Jensen Øer (no indication of breeding).

Figure 8. Distribution of colonies of Iceland gull (n = 7, ranging from 2 to 35 AONs) and glaucous gull (n = 30, ranging from 1 to 50 AONs).

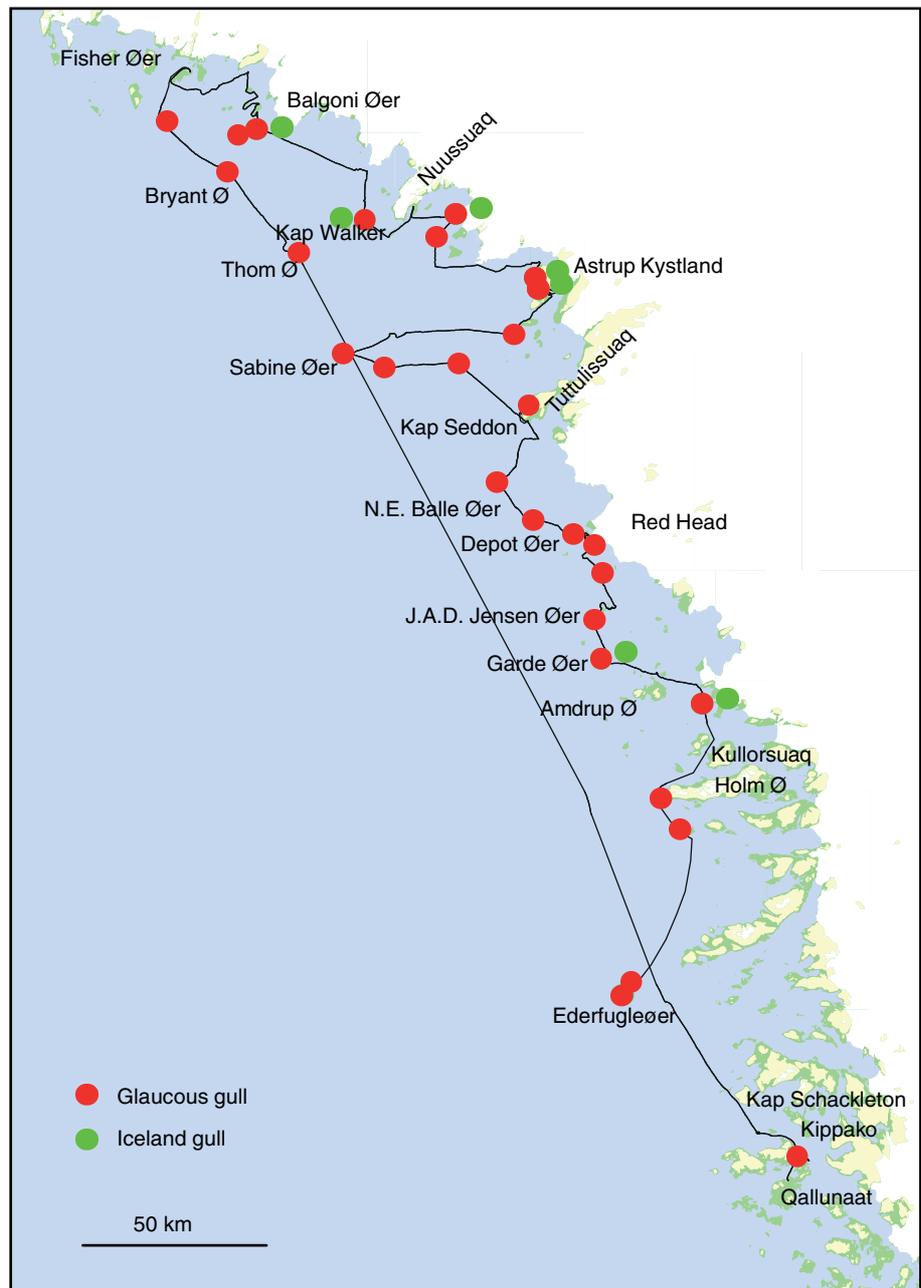




Figure 9. The cliff at Innarqissorsuaq with colony no. 75004, where Thayer's and Kumlien's gulls were observed together with Iceland and glaucous gulls. The colony is situated at the orange patches on the right hand cliff face.

Glaucous gull *Larus hyperboreus*

In total 23 colonies were recorded to the north of Holm Ø (Figure 9). Colony sizes ranged from 2 to 30 pairs.

Sabine's gull *Larus sabinii*

The large colony on Sabine Øer had increased since 2007. The population, roughly estimated at 500 pairs, were distributed all over the island (Figures 10 and 11).

Ivory Gull *Pagophila eburnea*

Seven adult birds were observed in waters with high concentration of glacier ice to the east and south of the eastern Fisher Ø. A seal or whale carcass was seen floating on the water from afar and at least two of the ivories were sitting there. Two adults were seen between Fisher Øer and Leven Ø on 14. Aug.

Black-legged kittiwake *Rissa tridactyla*

Three colonies were located (Figure 10): On Qeqertarsuaq (off Hovgård Kystland, colony no. 74023, 95 AONs), on Garde Øer, (colony no. 74004, 168 AONs) and on Naalungiarsuaq south of Astrup Kystland (colony no. 75023, 53 AONs).

Figure 10. Distribution of colonies of Sabine's gull (n = 1, 500 pairs), black-legged kittiwake (n = 3, ranging between 53 and 168 AONs) and Arctic tern (n = 7, ranging from 50 indivs to 3000 pairs). An additional two Arctic tern sites were not occupied in 2012.

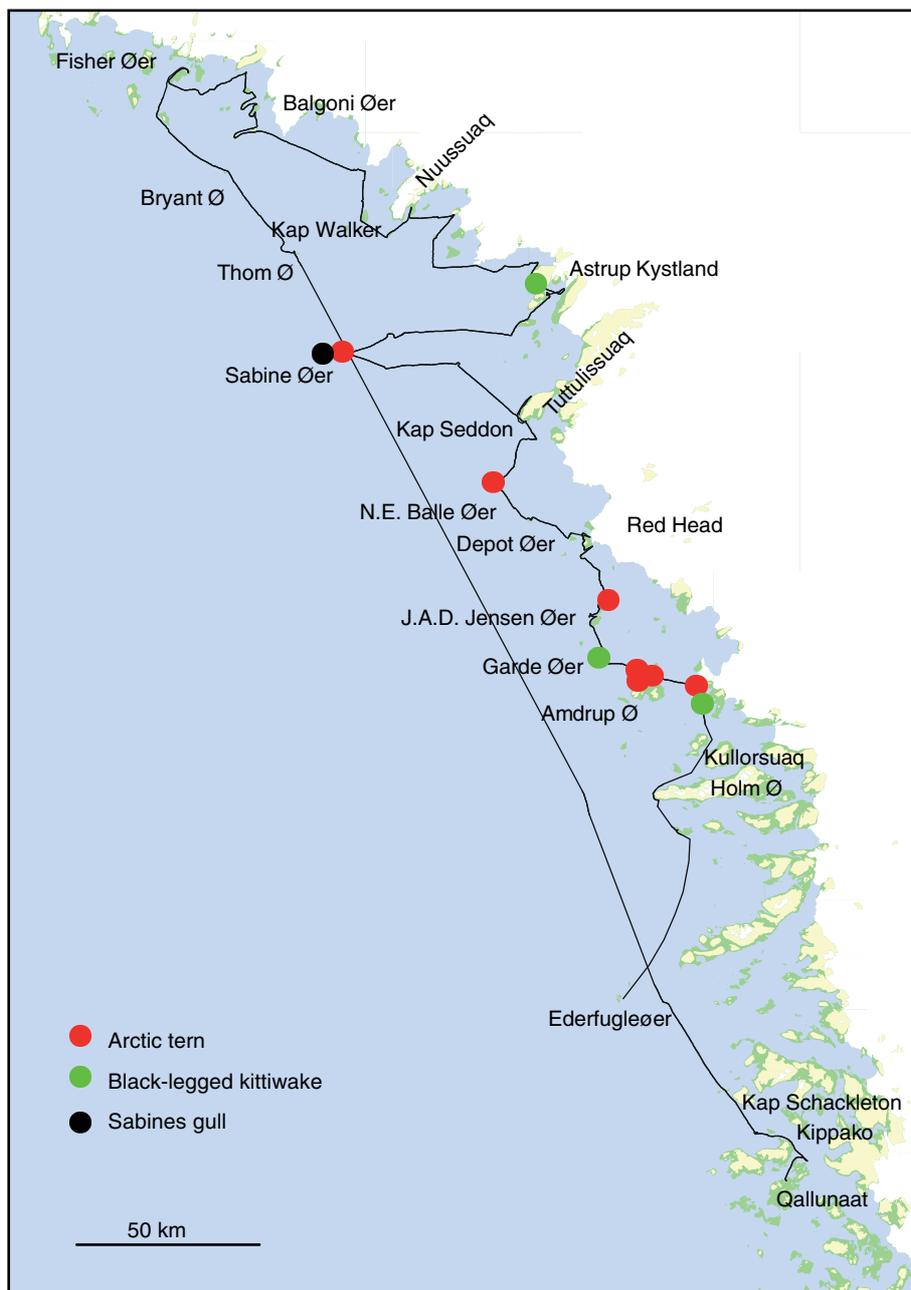


Figure 11. The breeding Sabine's gulls are highly aggressive towards intruders in their territories on Sabine Øer.



Kittiwakes were regularly observed east of Fisher Øer and south of Balgoni Øer, suggesting the location of a breeding colony in this neighbourhood. But none was found.

Arctic tern *Sterna paradisaea*

In total, seven islands with breeding Arctic terns were recorded (Figure 10). Moreover there were two previously known colonies without birds this summer. All the sites were known from previous information. The largest colony was located on Sabine Øer (colony no. 75001) where 3000 pairs were roughly estimated on the main island (none on the other islands). The neighbouring island (colony no. 75002) had no terns this summer.

Thick-billed murre *Uria lomvia*

Only a few stragglers were seen in the waters around Sabine Øer on 7 Aug. and along the offshore route from Leven Ø to Sabine Øer on 14 Aug.

Razorbill *Alca torda*

Only recorded on Ederfugleøer at the colony on the middle island (colony no. 74002), in total 70 individuals.

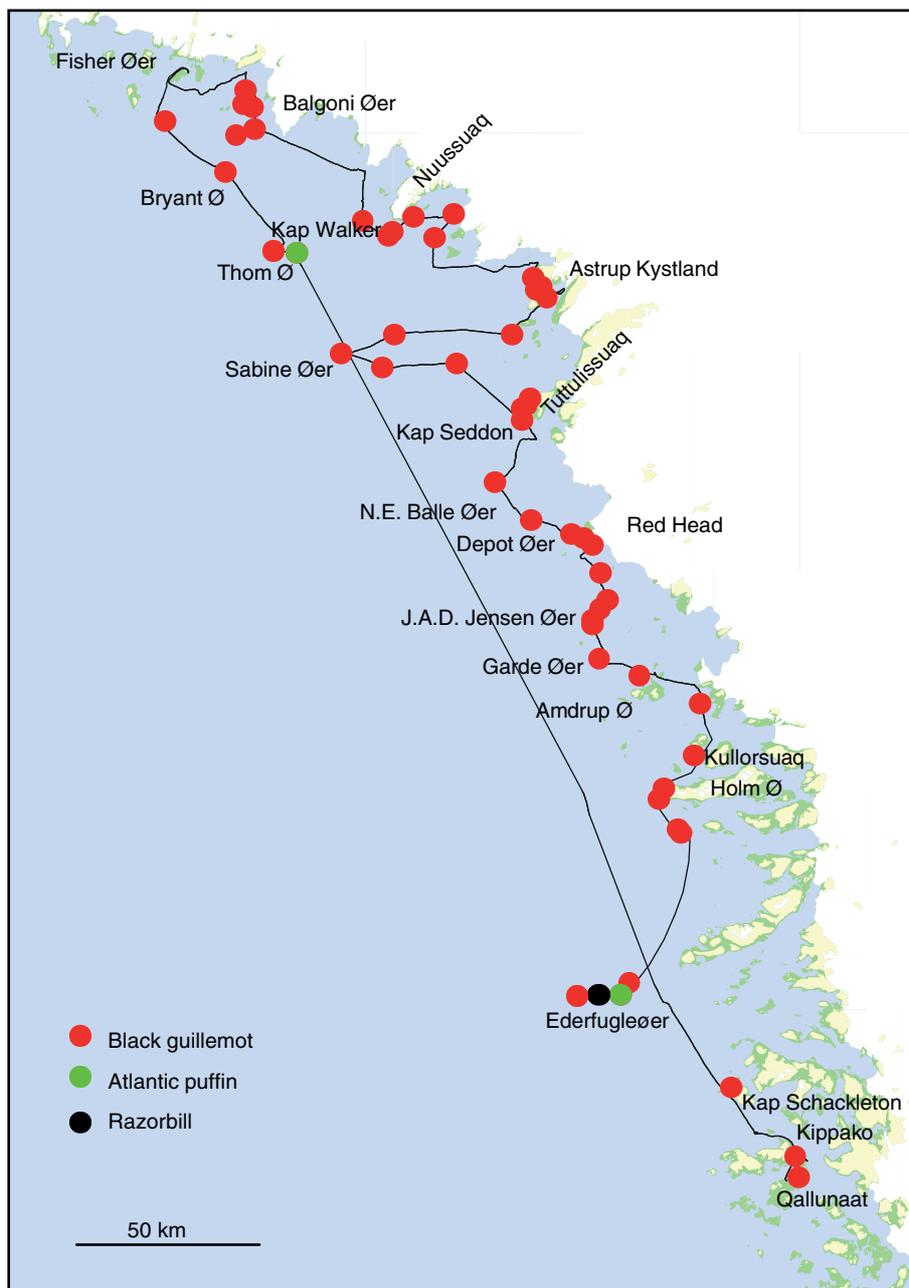
Black guillemot *Cephus grylle*

The black guillemot was the most widespread breeding bird in the surveyed area (Figure 12). In total, 53 colonies were recorded north of Holm Ø, and a total of almost 4000 individuals were counted at these colonies.

Atlantic puffin *Fratercula arctica*

At the well-known colony on Ederfugleøer (colony no. 74002) there were 24 birds on the water in front of the cliff. Surprisingly, puffins were also found at Thom Ø (colony no. 75031), where five birds were seen below the cliff on the northwestern spit (Figure 12).

Figure 12. Distribution of auk colonies in the surveyed area. Black guillemot (n = 52) numbers ranged between 1 and 500 indivs, puffin colonies (n = 2, with 5 and 24 indivs) and the single razorbill colony had 70 indivs.



Raven *Corvus corax*

Ravens were seen here and there, mainly on the mainlands, e.g. up to 7 at Kap Walker near the narwhal-hunting camp. A raven on its way to the off-shore island Kuupeerqarfik (colony no. 75019) was observed on 7 Aug.

Northern wheatear *Oenanthe oenanthe*

Juveniles on migration were seen sporadically, the northernmost on Balgoni Øer on 10 Aug.

Snow bunting *Plectrophenax nivalis*

Both adults and juveniles were sporadically observed on many of the islands and headlands along our sailing route. On Kippako there was a migrating flock of approximately 100 individuals observed on 15 Aug.

Lapland bunting *Calcarius lapponicus*

A few juveniles were seen on Ederfugleøer (2 Aug.) and on Tulugarlissuaq (J.A.D. Jensen Øer) (4 Aug.).

3.2 Species account – marine mammals

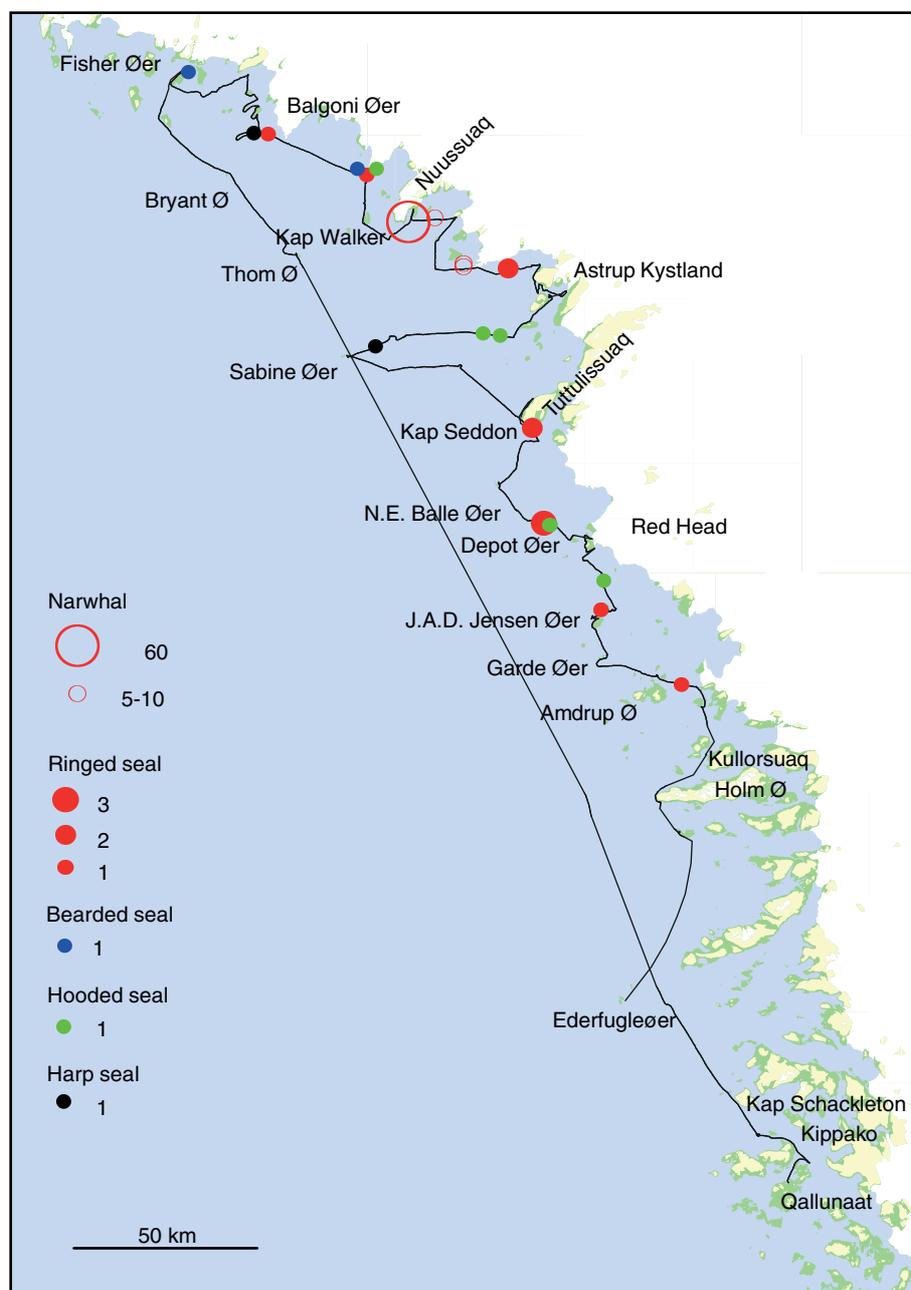
Ringed seal *Phoca hispida*

The most numerous seal, although seen only in low numbers. In total, eleven were recorded (Figure 13), however, some observations were not recorded in the field notes.

Harp seal *Phoca groenlandica*

Only two records, see Figure 13.

Figure 13. Distribution of seal and whale observations in the Melville Bay, August 2012.



Hooded seal *Cystophora cristatus*

In total five observations (Figure 13).

Bearded seal *Erignathus barbatus*

Only two observations (Figure 13).

Narwhal *Monodon monoceros*

Narwhals were only observed in the waters south of Nuussuaq on 9 Aug. (Figure 13). Several pods were seen. Five passed the boat during a noise recording session and a large concentration consisting of at least 6 pods (50-60 indivs) were under close observation of hunters in the waters directly east of Kap Walker.

3.3 Seabird colonies

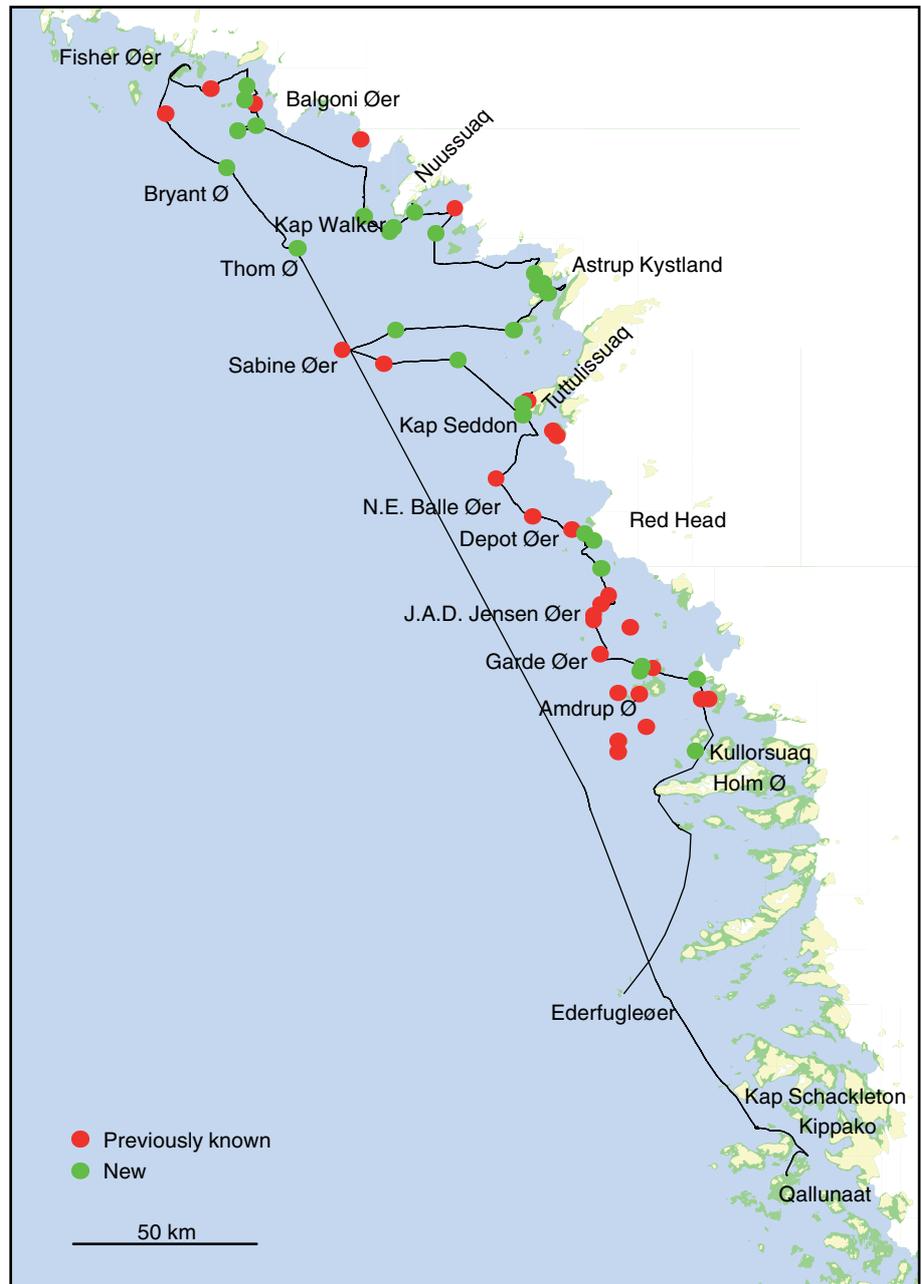
Within the surveyed area (north of Holm Ø), 27 colonies were registered in the database before the survey. Most of these were either reported by local people from Kullorsuaq or seen during aerial surveys for moulting seabirds in 1994, 1995 and 1998 (Boertmann & Mosbech 2001). The present survey revisited 20 of these colonies, while discovering an additional 28 previously unknown (to the database) colonies (Figure 14).

In addition there were some previously known colonies (n = 14) on and to the south of Holm Ø surveyed, and one new colony was recorded in this area.

In total 108 database records were obtained from the area north of Holm Ø, and an additional further 37 colonies to the south of this area.

On the south facing side of Devils Thumb, there were signs of breeding gulls (Iceland gulls presumably), but they were so high up, that it could not be ascertained.

Figure 14. Distribution of seabird colonies known before the survey in August 2012 and colonies discovered during the survey. Red lines indicate the Melville Bay Nature Reserve.



3.4 Noise recordings

Recordings of noise from the seismic activities further offshore in Baffin Bay were carried out at ten stations (Figure 15) with a DSG-logger (Loggerhead) (Figure 16). Recordings took place in 10, 20, 40, 60, 80 and 100 m depths for 2 to 3 min. at each depth. Two sets of recordings were conducted at each station. The results will be reported elsewhere.

Figure 15. The ten sites where noise recordings were carried out.

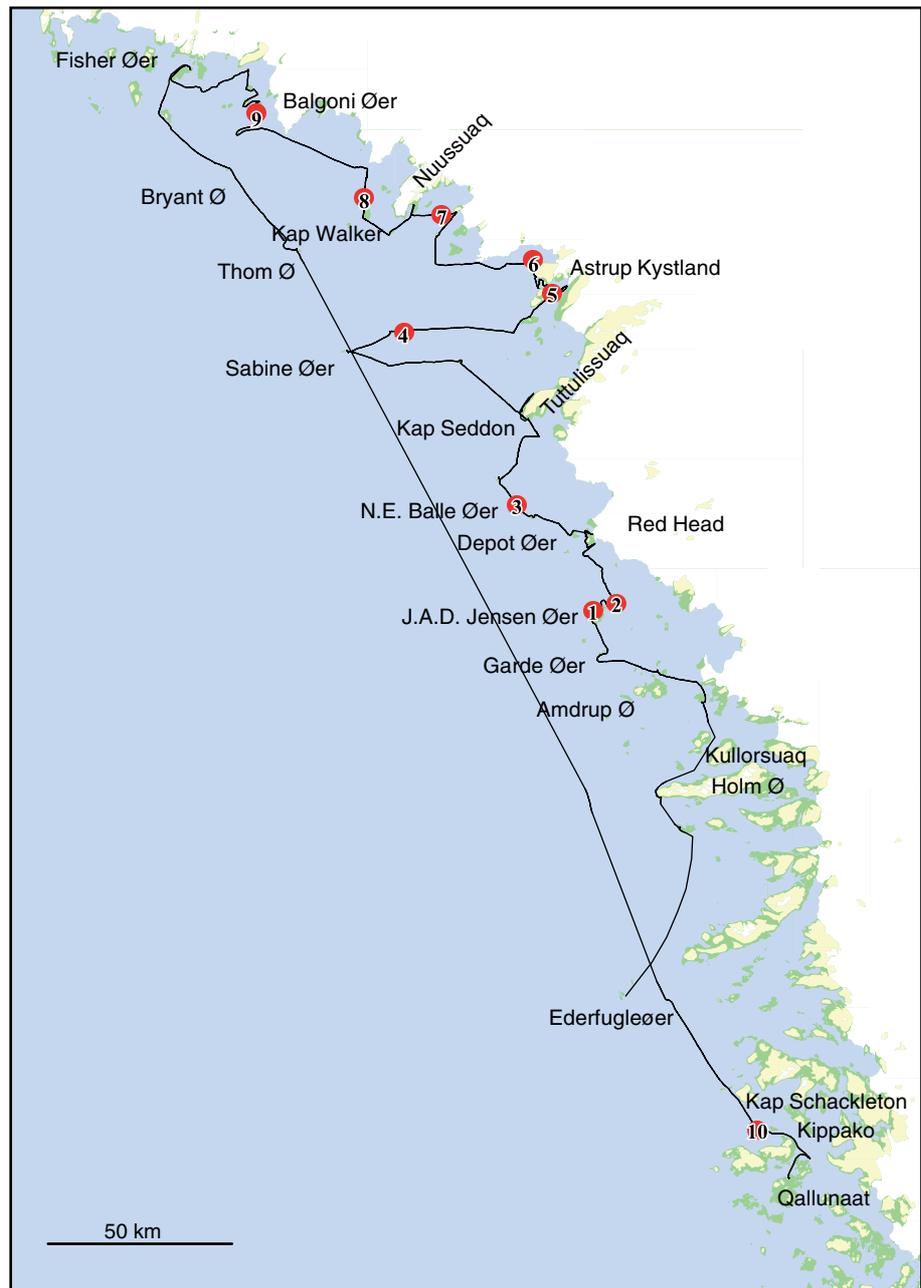


Figure 16. The noise recording equipment, with the hydrophone protruding from the top



3.5 Coastal morphology

The geology of the surveyed area was bedrock gneisses throughout, and almost all coasts were rocky. Very few and very limited stretches of beach with sand or with loose rocks were observed, and no sedimentary coasts were seen.

The topography of the land areas was generally low rocky coast, offering few suitable sites for cliff nesting birds, except for black guillemots. However, there were some marked exceptions: especially the Astrup Kystland had very high and vertical rock faces (Figure 17). Also the south side of Nuusuaq incl. Melville Monument had vertical cliffs (Figure 18). Low islands were abundant.



Figure 17. Astrup Kystland seen from the northwest.



Figure 18. The Melville Monument seen from the southwest.

3.6 Local use

After we left Kullorsuaq we met very few people. A couple of dinghies near J.A.D Jensen Øer were seen at distance. At Astrup Kystland six dinghies with narwhal hunters (had kayaks on board) passed by on their way south. Further on, a campsite with a single tent and a single dinghy including a kayak on board, were observed on the south part of Astrup Kystland. At the point just south of Kap Walker on Nuussuaq a larger camp with five tents and five to six dinghies was seen on 10 Aug. Three kayakers were on a whale hunt in the nearby waters.

Common eider females with chicks and crèches were observed at many coasts. The adult females were extremely shy, and abandoned the chicks at several occasions when our boat came too close (> 100 m). Such unattended chicks usually are easy prey to the ever present glaucous gulls.

3.7 Archaeology

Remains of previous eskimo settlements were observed at some places: On Tuttulissuaq, the well-known ruins at Illuminersuit, Tupersuaa and Uisakassaqs Boplads (Bay et al. 1980) were seen. Along the coast between these sites there were numerous meat caches, and at one of the house ruins at Illuminersuit there was an old weathered walrus skull.

On Sabine Øer, groups of winter house ruins were observed at two locations on the main island. Two winter houses at the sandy beach on the east side, and at least three winter house ruins and a grave on the north coast east of the northern tip. One of the ruins at the landing site is situated so low that extreme high water threatened the remains. There are some meat caches and graves in the higher part of the island, and old whalebones were seen near the house ruins on the north coast.

Finally, there were some winter house ruins observed on the head of the west facing bay of Thom Ø. We did not go ashore, and they were only observed from afar (Figure 19).



Figure 19. The house ruin site (white arrow) on Thom Ø.

3.8 Miscellaneous observations

The water was strikingly clear all over the survey area, and the noise recording equipment (grey) was visible to at least a depth of 20 m, indicating very low contents of organic matter, and consequently a very low primary production.

At two occasions we searched in vain for islands indicated on the maps. One between Red Head and Depot Øer (indicated on both topographical maps and on the nautical charts) and one indicated just west of Stenersen Ø on the nautical chart.

4 Conclusions

Compared to other coasts of West Greenland, the Melville Bay holds only a few breeding colonies and low numbers of breeding seabirds. The most widespread and numerous species is the black guillemot followed by the glaucous gull. However, one colony is of national significance – Sabine Øer, with high numbers of breeding Arctic terns and Sabine's gulls. This colony has recently been proposed as a breeding bird reserve (Egevang & Boertmann 2012).

Other noteworthy observations were the puffins on Thom Ø and the many new Iceland gull colonies that extended the known northern breeding limit in Greenland by approx. 240 km. This could be an actual increase in breeding range, but could just as well be a result of surveying unknown areas. Also the Thayer's/Kumlien's gulls near Nuussuaq are noteworthy, because Thayer's gulls have not been recorded at breeding sites in Greenland since 1936 (Boertmann 1994).

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SEABIRD COLONIES IN THE MELVILLE BAY, NORTHWEST GREENLAND

This report describes the results of a survey for breeding and colonial seabirds in a hitherto un-surveyed area of Northwest Greenland - the Melville Bay. The results shall be included as background data for oil spill sensitivity mapping, preparation of environmental impact assessments of petroleum activities in Baffin Bay and for the regulation (by the Greenland government) of petroleum activities. The survey showed, that compared to other coasts of West Greenland, the Melville Bay holds only few breeding colonies and low numbers of breeding seabirds. The most widespread and numerous species is the black guillemot followed by the glaucous gull. However, one colony is of national significance - Sabine Øer, with high numbers of breeding Arctic terns and Sabine's gulls. Other noteworthy observations were puffins on Thom Ø and many new Iceland gull colonies that extended the known northern breeding limit in Greenland by approx. 240 km.