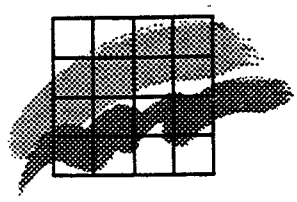


Seabird colonies in western Greenland

(60° - 79° 30′ N. lat.)

NERI Technical Report No. 170

David Boertmann
Anders Mosbech
Department of Arctic Environment
Knud Falk
Ornis Consult Ltd.
Kaj Kampp
Zoological Museum, Copenhagen

Ministry of Environment and Energy
National Environmental Research Institute
September 1996

Data sheet

Title:	Seabird colonies in western Greenland, (60 ° - 79 ° 30′ N. lat.)
Authors:	David Boertmann, Anders Mosbech, Knud Falk and Kaj Kampp
Kalaallisut imaqarnersiorlugu naalisarnera:	Finn Olsen
Linguistic improvements:	Mark White
Department:	Department of Arctic Environment
Serial title and number:	NERI Technical Report No. 170
Publisher:	Ministry of Environment and Energy National Environmental Research Institute ©
Year of publication:	September 1996
Please quote:	Boertmann, D., A. Mosbech, K. Falk & K. Kampp (1996): Seabird colonies in western Greenland, (60 ° - 79 ° 30′ N. lat.). National Environmental Research Institute, Denmark. 148 pp. - NERI Technical Report No. 170.
	Reproduction permitted only when quoting is evident.
Keywords:	Colonial seabirds, distribution, population size, population trends, conservation, Greenland.
ISBN:	87-7772-281-7
ISSN	0905 - 815X
Printed by:	Scanprint as
Number of pages:	148
Impression:	250
Price	DKK 100,- (incl. 25 % VAT, excl. freight)
For sale at:	National Environmental Research Institute P.O. Box 358 DK-4000 Roskilde Denmark Tel: +45 46 30 12 00 Fax: +45 46 30 12 14 or Miljøbutikken, Information & Books Læderstræde 1 1201 Copenhagen K Denmark Tel: +45 33 92 76 92 (info) +45 33 93 92 92 (books)

Contents

Preface

This report is a catalogue over seabird colonies in western Greenland. It has been produced as background information for impact assessment, mitigation and regulation of oil exploration and exploitation activities in western Greenland. Most of the material included in this report was collected and worked up before Greenland Environmental Research Institute (GERI) became the Department of Arctic Environment of the National Environmental Research Institute (NERI-AE) in June 1995. We therefore mainly use the acronym GERI, however, the acronym NERI-AE also appears.

Acknowledgements

We acknowledge with gratitude the help to the preparation of this report from the following colleagues: Jose Nymand, Ib K. Petersen, Frank Riget and Peter Aastrup gave valuable comments and support, Mark White corrected the English. Alex Sand Frich gave valuable comments to a draft of the manuscript. Ævar Petersen, Vidar Bakken, John Drury and Pierre Brousseau provided information on great cormorant populations. Thanks also to the crew of the vessel "Sila" which we used during our surveys in 1992 and 1994: Jens Kjeldsen, Dorthe Hegelund, Carl Johan Simonÿ, Ella Brandt and Johannes.

Summary

About 1 million seabirds (indvs) breed in 1032 colonies distributed along the coasts of western Greenland (Fig. 1). However, this figure does not include the little auk colonies in Avanersuaq. These colonies are roughly estimated to hold about 20 mill. pairs.

All the basic information on seabird colonies in Greenland is compiled in a database maintained by NERI-AE.

This report presents data on distribution, population numbers and population trends of 19 species of breeding colonial seabirds in western Greenland.

Distributions are depicted on maps in Fig. 18-39. It is apparent that the major colonies are found in the northern part of the region, viz. Upernavik and Avanersuaq.

The numbers of birds recorded in the database for each species are presented in Tab. 4, and on the basis of these figures estimates of the populations in western Greenland are given (Tab. 5).

The most numerous species in western Greenland are little auk (in Avanersuaq), Brünnich's guillemot, northern fulmar and kittiwake. Common eider is also numerous. However, the present material is inadequate for estimating the population size of this species.

It is generally very difficult to interpret trends in population size and range on the basis of the present material, due to too few and

incomparable surveys. Only the Brünnich's guillemot is adequately studied to make conclusions on population trends (Kampp et al. 1994). However, our impressions of trends are given in Tab. 5. Species with decreasing populations are common eider, Brünnich's guillemot and Arctic tern, while at least great cormorant and great black-backed gull have shown range expansions and probably also population increases in recent years.

The most important areas to breeding colonial seabirds are indicated on Fig. 40.

Fig. 41 shows coastlines where surveys of seabird colonies are needed, due to a lack of information or because the present information probably is outdated.

The most immediate threats to the colonial seabirds in western Greenland during the breeding time is hunting and egging. Oil pollution is a minor threat to-day, but will increase if offshore areas with oil potential are explored and developed.

Tab. 6 gives an overview of each species sensitivity to oil spills and the capacity to recover, as well as a comparison of the western Greenland population numbers to the North Atlantic population numbers. The most significant western Greenland populations in an international context are the populations of northern fulmar, great cormorant, common eider, Iceland gull, kittiwake, arctic tern, Brünnich's guillemot, black guillemot and little auk. Furthermore, populations of great cormorant and great black-backed gull are probably isolated from other North Atlantic populations. The Iceland gull population is referred to an endemic Greenland subspecies. The population of little auks in Avanersuaq probably makes up more than 99 % of the Baffin Bay population and perhaps 80 % of the global population (Nettleship & Evans 1985). Of particular Greenland conservation concern are the populations of great cormorant, Iceland gull, great black-backed gull and little auk.

Following species of European conservation concern (Tucker & Heath 1994) breed in western Greenland: lesser black-backed gull, great black-backed gull, razorbill, black guillemot and atlantic puffin.

Dansk resumé

Denne rapport giver en oversigt over vores nuværende viden om yngleudbredelse, antal og bestandsændringer hos de kolonirugende havfugle i det vestlige Grønland.

Det vestlige Grønland er her defineret som værende området fra Kap Farvel i syd til Humboldt Gletscheren i nord. Dette område er inddelt i tolv regioner (Fig. 1), svarende nogenlunde til de nuværende kommune grænser. Dog er en række mindre kommuner sammenlagt.

Materialet stammer fra en database over alle grønlandske havfuglekolonier. Denne database er udarbejdet i et samarbejde mellem Ornis Consult A/S og det daværende Grønlands Miljøundersøgelser, og den

vedligeholdes af Danmarks Miljøundersøgelsers afdeling for Arktisk Miljø.

Formålet med denne database er at have den nuværende viden om de grønlandske havfuglekolonier let tilgængelig, med henblik på kortlægning af oliespildsfølsomme kystområder, på oliespilds-beredskabsplanlægning og på længere sigt med henblik på miljøvurdering af olieefterforskning og -udvindings aktiviteter i det vestlige Grønland.

I tilfælde af et oliespild er det desuden vigtigt at have den nuværende viden samlet. Dels for at kunne vurdere, hvor der skal sættes ind med et beredskab, dels for at kunne vurdere virkningerne. I det sidste tilfælde er det vigtigt at optællingerne er så nye som muligt.

Vi har kendskab til 1032 kolonier i området, og vi skønner at omkring 1 million fugle (individer) yngler i disse kolonier. Heri er ikke medregnet de store mængder af søkonger fra Avanersuaq, da antallet af disse er så godt som ukendt. Vi skønner dog at der yngler i størrelsesordnen 20 millioner par søkonger i Avanersuaq.

Femten arter behandles grundigt, dertil omtales yderligere fire arter, som er fåtallige eller under indvandring.

Udbredelsen af de omtalte arter ses på figurerne 18-39.

Tab. 4 viser en oversigt over hvor mange fugle databasen har registreret i regionerne. Det er tydeligt at det er de to nordlige regioner Avanersuaq og Upernavik, som har de største mængder ynglende havfugle, og det er især søkonger og polarlomvier. Tallene giver anledning til et forsøg på at anslå bestandenes samlede størrelse (Tab. 5).

De talrigeste arter er søkonge, polarlomvie, mallemuk og ride. Ederfugl er også talrig, men det foreliggende materiale giver kun anledning til et meget usikkert skøn over bestanden.

De vigtigste fuglearter for den grønlandske jagt er alle kolonirugende: Ederfugl, polarlomvie og ride. Søkonge er lokalt meget vigtig for befolkningen i Avanersuaq. Ederfugl og polarlomvie har vist betydelig bestandstilbagegang igennem dette århundrede (se bl.a. Kampp et al. 1994), mens ridens bestandsændringer er vanskeligere at tolke. Også havternebestanden ser ud til at være i stærk tilbagegang, men der mangler egentlig dokumentation for denne antagelse.

Skarven og svartbagen ser ud til at være i bestandsfremgang, i det mindste er deres yngleområder udvidet betydeligt i de senere år.

Formodede bestandsændringer fremgår af Tab. 5.

De kolonirugende havfugle i det vestlige Grønland er stærkt påvirket af jagt og ægsamling. Oliespild i Grønland har indtil nu ikke påvirket bestandene, men oliespild fra fremtidig olieefterforskning og evt. -udnyttelse kan i uheldige tilfælde få negativ indflydelse på fuglebestandene.

Havfuglearternes følsomhed over for oliespild på havet samt deres evne til at regenerere er resúmeret i Tab. 6. Desuden er bestandene i

det vestlige Grønland sammenlignet med de nordatlantiske. Følgende bestande i det vestlige Grønland er af væsentlig størrelse (Tab. 6): Mallemuk, skarv, hvidvinget måge, ride, havterne, polarlomvie, tejst og søkonge, samt sandsynligvis ederfugl og gråmåge. Følgende bestande har særlige behov for beskyttelse i Grønland: Skarv og svartbag, fordi begge bestande er ret små og sandsynligvis isolerede fra de andre bestande i Nordatlanten; hvidvinget måge, fordi den grønlandske bestand udgør en endemisk underart; samt søkongerne i Avanersuaq, fordi mere end 99 % af den samlede Baffin Bugt bestand og måske 80 % af verdensbestanden yngler her langs en begrænset kyststrækning.

I det vestlige Grønland findes følgende havfuglearter som generelt regnes for at have særlige beskyttelsesbehov i Europa (Tucker & Heath 1994): Sildemåge, svartbag, alk, tejst og lunde.

Fig. 40 angiver vores bud på vigtige områder for kolonirugende havfugle i det vestlige Grønland.

Fig. 42 viser områder, hvorfra den nuværende viden om havfuglekolonier er mangelfuld som "baseline information", og hvor vi vil anbefale at der snarest sættes ind med eftersøgning og optælling af kolonier.

Vi kender ikke forklaringen på at de kolonirugende havfugle er så meget mere talrige i de nordlige regioner end i de sydlige. Der kan være tale om forskelle i udbudet af føde, men en sammenhæng med antallet af personer bosiddende i regionen og dermed jagttrykket kan bestemt ikke udelukkes (Fig. 41).

I appendix gives en oversigt over alle de kendte kolonier i området, med angivelse af de seneste optællinger, samt en liste over fuglenes navne på engelsk, dansk og grønlandsk.

Kalaallisut imaqarnersiorlugu naalisarnera

Allakkiaq una timmissat imarmiut Kitaani timmiaqarfinni piaqqisartut piaqqisarfiisa siammarsimassusaannik, amerlassusaannik taakkualu allanngorarnerinik qulangiiniarnerusumik nassuiaaneruvoq.

Matumuuna Kitaatut nassuiarneqartoq tassaavoq kujataani Nunap isuaniit avannamut Humboldt Gletscheri tikillugu. Tamanna immikkoortunut aqqaneq marlunngorlugu aggorneqarsimavoq (Ass. 1), maannakkut kommunit killigisaat naapertukannerlugu. Kisiannili kommunit minnerusut imminnut katinneqarsimapput.

Paasissutissat atorneqartut Kalaallit Nunaani timmissat qarasaasiakkut allattorsimaffiinnit tigusaapput. Qarasaasiakkut allattorsimaffik taanna Ornis Consult A/S-ip taamanikkullu Kalaallit Nunanni Avatangiisinik misissuisoqarfiusup suleqatiinnerisigut pilersinneqarsimavoq, maannakkullu DMU-p issittut avatangiisaannut immikkoortortaqarfianit ingerlanneqarluni.

Allattorsimaffiup siunertarai Kalaallit Nunaanni timmiaqarfiit pillugit paasissutissat pissarsiariuminarninngornissaat, sinerissami uuliakoornernut sunnertiasut sumiissusilersornissaat, uuliakoornernut sillimaniarnissap piareersarneqarnissaa ungasinnerusorlu eqqarsaatigalugu Kalaallit Nunaata eqqaani uuliasiornerit maqiterinerillu avatangiisinut sunniutigisinnaasaat nalilissallugit.

Uuliakoortoqassagaluarput aammattaaq pingaaruteqarpoq maannakkumut ilisimasat ataatsimut katersorsimanissaat. Ilaatigut nalilersinnaaniassallugu sumi sillimaniarnissamik piareersimasoqassasoq, ilaatigullu sunniutaasinnaasut nalilerniassallugit. Kingullermilu taaneqartumi pingaaruteqarpoq kisitsisarnerit nutaajulluinnarnissaat.

Timmiaqarfiit tamaani 1032-t nalunngisaqarfigaagut, naatsorsuutigaarpullu timmissat million-ip ataatsip missaaniittut taakkunani piaqqisartut. Naatsorsuutini taakkunani ilaanngillat Avanersuarmi appaliarsuppassuit, taakkuami amerlassusaat ilisimaneqanngilluinnarmat. Ilimagaarpulli Avanersuarmi appaliarsuit piaqqisartut 40 million-it pallillugit amerlassuseqartut.

Assigiinngitsut 15-it sukumiisumik eqqartorneqarput, saniatigullu assigiinngitsut sisamat eqqaallatsiarneqarput, taakkua ikitsuaraannaammata imaluunnit atsaat nunatsinnut isertertuullutik.

Assigiinngitsut eqqartorneqartut qanoq siammarsimanerat assilissani 18-39 takuneqarsinnaapput.

Tab. 4-ip qulangiisumik takutippai qarasaasiatigut allattorsimaffimmi timmissat qassit immikkoortuni nalunaarsorsimanersut. Ersaripporlu immikkoortut avannarliusut marluk Avanersuaq Upernavillu piaqqisartunik timmiaqarnersaammata, taakulu tassaanerupput appaliarsuit appallu. Kisitsisaasut atorneqarput timmissat ataatsimut amerlassusaat eqqoriassallugu (Tab. 5).

Assigiinngitsuni amerlanerpaajusut tassaapput appaliarsuk, appa, qaqulluk taateraarlu. Meqqit aamma amerlaqaat, kisianni paasissutissat pigineqartut tutsuiginarpallaanngitsunuk amerlassusaannut eqqoriaanerinnarnut atorneqarsinnaapput.

Timmissat Kalaallit Nunaanni piniakkatut pingaarnerpaajusut tamarmik ataatsimoorrallutik piaqqisartuupput: miteq, appa taateraarlu. Appaliarsuit avanersuarmiunut pingaaruteqartorujussuupput. Meqqit appallu 1900-kkut ingerlanerani ikileriarujussuarsimapput (takuuk Kampp all. 1994), kisiannili taateraat amerlassusaasa allanngorarnerat naatsorsuutigiuminaannerulluni. Imeqqutaallat aamma ikiliartortorujussuartut ipput, kisianni taama isumaqarnermut uppernarsaatissat suli amingaataapput.

Oqaatsut naajarluillu amerliartorpasipput, tassami piaqqisarfii ukiuni kingullerni annertusingaatsiarsimapput.

Timmissat amerlassusaasa allanngorarneri Tab. 5-mi takuneqarsinnaapput.

Kitaani timmiarussat timmiaqarfinni piaqqisartut piniarneqarnermikkut mannissarfigineqartarnermikkullu annertuumik sunnerneqarsim. Ullumikkumut uuliaarluernerninik suli sunnerneqarsimanngillat, siunissamili uuliasiornernit kingornatigullu maqitsisinnaanerit kingunerisinnaavaat uuliaarluernersuaq, tamannalu timmissat amerlassusaannut annertuumik sunniuteqassaaq.

Timmissat imarmiut timmiaqarfinni piaqqisartut ataatsimut isigalugu uuliaarluernernut ilaat sunnertiaorujussuupput allallu sunnertianerullutik (Tab. 6).

Timmissat Kitaani piaqqisartuusut arlallit nunani tamalaani pingaaruteqartuupput amerlassusertik pissutigalugu. Timmissat uku nunani tamalaani pingaaruteqartutut nalilerneqarput: Qaqulluk, oqaatsoq, naajaannaq, taateraaq, imeqqutaalaq, appa, serfaq appaliarsullu, kiisalu ilimanartumik miteq naajarujussuarlu. Kalaallit Nunaanni timmissat uku sernissorniagassatut soqutiginaateqarput: Oqaatsoq naajarlullu, taakkua ikitsuaraannaammata kiisalu ilimanartumik Atlantikup avannaani allaninngaanniit avinngarusimasuullutik; naajaannaq, taanna Kalaallit Nunaannit nikinneq ajormat; Avanersuarmi appaliarsuit, tamaaniimmata Baffin Bugt-ip appaliarsuisa 99 %-ii kiisalu immaqa nunarsuup appaliarsuisa 80 %-ii tamaani sineriammi annikitsuinnarmi katersuussimammata.

Timmissani imarmiuni Europami sernissorniagassatut isigineqartuni Kalaallit Nunaanniittut ukuupput: sildemage, naajarluk, apparluk, serfaq qilanngarlu.

Ass. 40-p takutippai timmisanut imarmiunut piaqqisarfittut pingaaaruteqartut isigisagut.

Ass. 42-p sumiiffiit takutippai maannakkumut timmiaqarfinnik ilisimasaqarfigisatsinnik amingaateqarfigisagut tunngaviusumik passissutaasinnaasutut, tamannalu timmiaqarfinnik ujaarlerfissatut kisitsivissatullu pingaarnerpaamik iliuseqarfigineqarnissaa tikkuarumallugu.

Nassuiaatissaqartinngilarput sooq avannaani kujataanut naleqqiullugu sooq taama imarmiunik timmiaqarfeqartiginerunera. Qanoq nerisassaqartiginera sunniuteqarsinnaavoq, kisiannili immikkoortut qanoq inuttutiginerat taamatullu piniagaanerisa qanoq annertutiginerat pingitsuutinneqavissinnaanngilaq (Ass. 41).

Ilassutini tamaani timmiaqarfiit ilisimaneqartut qulangiisumik ersersinneqarput, tassani ilaatinneqarput qanga kingullermik kisinneqarsimanerat, kiisalu timmissat tuluttut, qallunaatut kalaallisullu aqqi.

1 Introduction

Today there is a political commitment to oil exploration in Greenland, and oil exploration activities are increasing. During the 1980's a large scale land based seismic programme was carried out in Jameson Land in East Greenland. And in recent years offshore seismic programmes (e.g. "West Seiss" and "KANUMAS" = Kalaallit Nunaat Marine Seismic Programme) have been performed both in West and East Greenland. These activities and a reevaluation of older seismic data have led to the discovery of large areas with hydrocarbon potential off the west coast of Greenland (Melville Bugt and waters off Nuuk), and exploratory drillings are expected in the future. Land based small scale exploration drilling has been carried out on the Nuussuaq Peninsula in the summers of 1994 and 1995, and this programme continues with a full scale exploration drilling in 1996.

Seabirds are very vulnerable to marine oil spills, and large spills have the potential to reduce populations severely. Adequate background information is important during planning of oil exploration and exploitation activities in order to mitigate and minimise possible environmental impacts. Moreover, it is important to have up to date baseline information, in case of an oil spill, in order to quantify the consequences. Since 1992, GERI has been working with oil spill sensitivity mapping in western Greenland, and colonial seabirds were appointed as a primary subject from the beginning. A database over all seabird colonies was prepared (GM & OC 1993) and during 1992 and 1994, GERI surveyed seabird colonies along the outer coast from Paamiut in the south to northern Upernavik in the north.

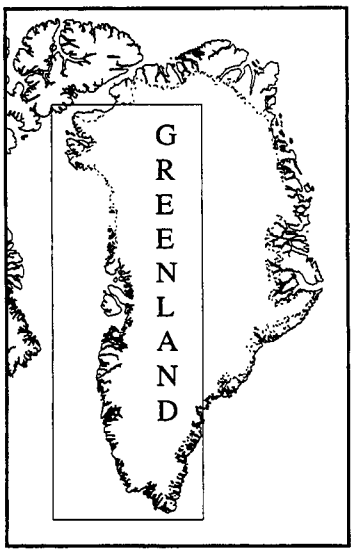
The purpose of this report is to present base material on colonial seabirds in Greenland for oil spill sensitivity mapping and environmental impact assessments (EIA) of oil activities. EIA's involve many other informations and will not be described here. Only, the general oil spill sensitivity of colonial seabirds in Greenland will be described briefly. Seabirds and oil in the West Greenland area is discussed in detail in a recent assessment of the impacts of offshore oil exploration in waters off Nuuk (Mosbech et al. 1996).

The report summarises the current knowledge on the distribution and sizes of the seabird colonies in Greenland from Nunap Isua/Kap Farvel to the Sermersuaq/Humboldt Gletcher or, in other words, the entire west coast of Greenland (Fig. 1).

2 Material and methods

the database

The information presented in this report is mainly derived from the Greenland Seabird Colony Database (GM & OC 1993), usually referred to as "the database". The database was initiated and prepared by Ornis Consult Ltd. and GERI. It contains all traceable information, published and unpublished, on Greenland seabird colonies, a. o. the late F. Salomonsens field notes kept in Zoological Museum of Copenhagen. The database is currently revised and updated by NERI-AE, and today contains information on 1032 seabird colonies in western Greenland and 1228 in entire Greenland.



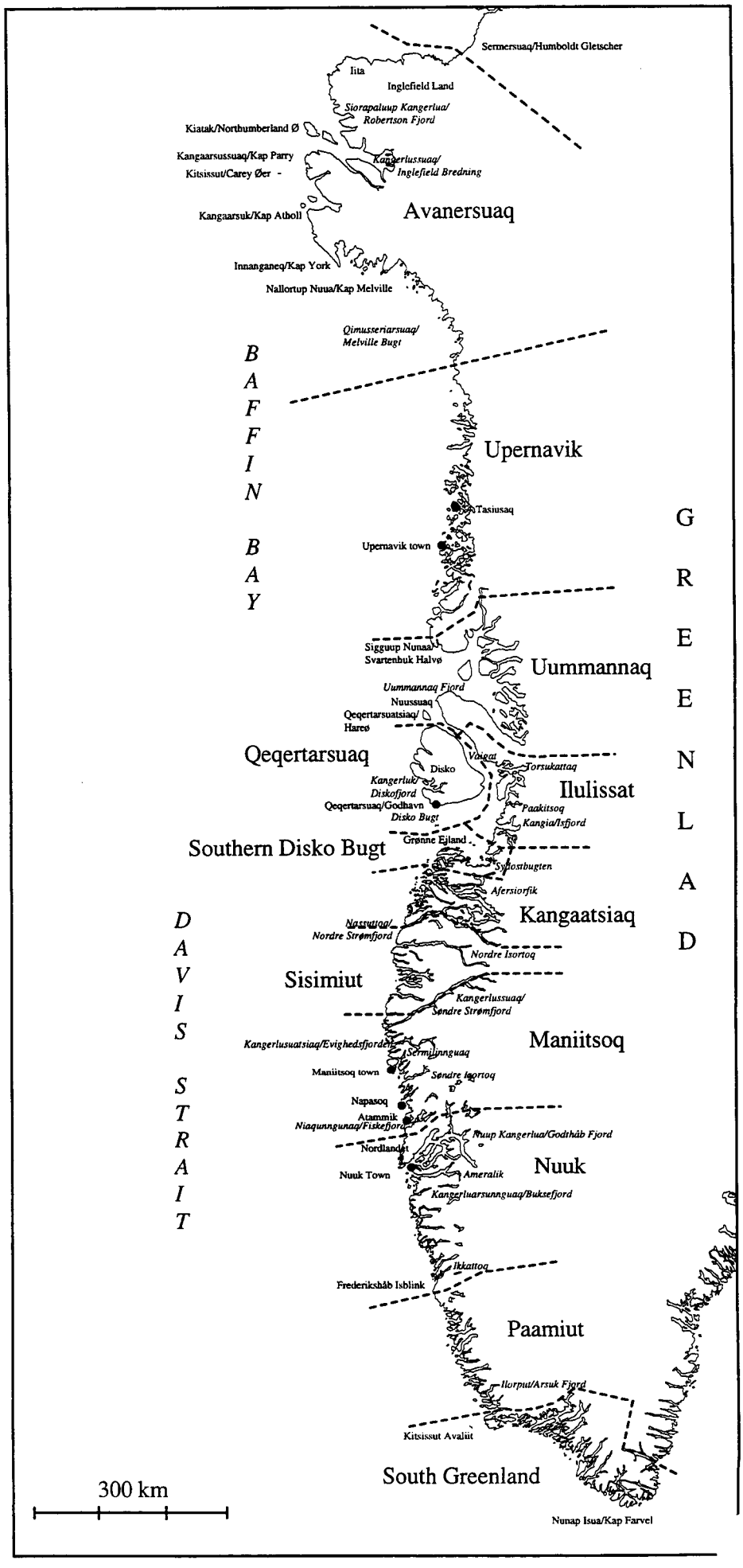


Fig. 1. Area covered by this report. Regions and major sites mentioned in the text are indicated.

recent surveys

Much of the most recent information in this database was obtained during two colony surveys performed by GERI in 1992 and 1994. The first of these surveys covered the outer coast from Disko Bugt southwards to Paamiut, and the second covered the outer coast from the inner parts of Disko Bugt to the northern part of Upernavik. The birds (pairs, apparently occupied nests or individuals) in the colonies were counted and as many of the colonies as possible were photographed. These surveys were carried out from a 36 feet boat "Sila", which served as a base as well as an observation platform in combination with an inflatable. Furthermore, GERI performed aerial surveys of birds along the coasts of most of the region in 1993, 1994 and 1995, mainly in late August/early September. Some information on seabird colonies was obtained during these surveys. The data collected in 1995 are only partly included in this report.

local knowledge

Local knowledge is an integral part of the information on the seabird colonies filed in the database. The inhabitants of Greenland know the seabird colonies in their vicinity and a significant part of the information in relation to the position of colonies and which species breed there were initially obtained from interviews and talks with local residents.

western Greenland

The region covered by this report is called western Greenland, because it includes all West Greenland as well as the western part of North Greenland. The term "West Greenland" refers to the area south of Qimusseriarsuaq/Melville Bugt. All names on geographical sites and localities are written in Greenlandic and/or Danish, as on the official maps from the Danish Survey and Cadastre. However, all Greenlandic names are in this report written in the new orthography, while they on most maps still are in the old.

Only colonial seabird species will be dealt with here. Species such as grey phalarope, Arctic skua, long-tailed duck and king eider are not included.

We adopt Gochfeld's (1980) definition: A seabird colony is a breeding assemblage of birds in a single location, where the individuals are close enough to interact socially. However, some of the large archipelagoes with several small colonies dispersed among the islands are treated as a single colony, because the database records no information in relation to the numbers of birds or exact position of the separate colonies. Examples are Kitsissut Avalliit (60012) in South Greenland, Kitsissut/Kook Øerne (64030) in Nuuk and Sassat (66205) in Sisimiut. Small colonies with less than 5 pairs are usually omitted from the database, and single pairs of colonial species are only included is they occur in colonies of other species.

colony account

This report is divided in a colony account and a species account. The colony account gives an overview of the colonies in 12 regions of the coast. Ten of these regions are identical to the administrative districts (municipalities) and are named after the largest settlement. Two regions cover more than one municipality. The colony account is divided into several paragraphs under headlines such as DESCRIPTION, COLONIES etc. The paragraph REGULATIONS ETC. gives a short overview of which colonies are protected in accordance with the Greenland hunting regulations, as well as colonies within Ramsar-

areas designated by the Greenland Home Rule authorities (according to the Ramsar Convention on wetlands of international importance especially as waterfowl habitats) and colonies designated as international Important Bird Areas (IBA's) by ICBP/BirdLife International (see Grimmett & Jones 1989). Finally, we identify the most important areas for breeding colonial seabirds in western Greenland based on the data presented in this report. Areas considered to be important are those which have large colonies, those which include important species such as Brünnich's guillemot or those areas where there are many colonies assembled.

species account

The species account gives an overview of colonial seabird species breeding in western Greenland. The distribution, status of populations and population trends in western Greenland are described in several paragraphs.

population size

An attempt is made to estimate the breeding populations of colonial species in western Greenland in the paragraph POPULATION SIZE. These estimates are based on the summation of the most recent counts or estimates for each species in every recorded colony. Where a count is given as a range, the minimum number is used. However, many counts are very inaccurate, and some of the estimates presented are more like qualified guesswork than rough estimates.

population status

Under the heading POPULATION STATUS we discuss the status of each of the colonial seabird species in international and conservational context. The principal conservation objective is avoidance of global extinction of a species. However, none of the seabirds breeding in Greenland are globally threatened (Collar et al. 1994). The next conservation objective is the maintenance of existing populations and distributions, or in other words species diversity. To achieve this, nationally threatened populations must be given a higher protection priority if they are of international conservation concern, and particularly if the national population comprises a high proportion of the global population.

conservation status

BirdLife International has recently undertaken a comprehensive review of the conservation status of all European (Greenland included) bird species (Tucker & Heath 1994). They analyse the current knowledge on population size and trends of all the species, and these are classified after their conservation status.

While Tucker & Heath (1994) include Greenland bird populations in their review, they do not include Atlantic US and Canadian populations. Seabird populations are more conveniently seen in a North Atlantic conservation context rather than an European or a North American context alone. But as most of the Greenland seabird species have their main distribution on the European side of the North Atlantic, the European criteria and categories may apply to the entire North Atlantic populations. There is, of course, exceptions to this general assumption, as for example Sabine's gull which is very scarce in the European part and Thayer's gull which does not occur in Europe at all. Although an endemic breeder in Greenland, Iceland gull is included in Tucker & Heath (1994) because it winters in Europe.

conservation value

Anker-Nilssen (1987) set up conservation value criteria for bird populations occurring in oil spill risk areas in Norway, viz. areas which may be hit from a single oil spill source. If populations of species with a low reproductive capacity (such as auks) occurring within the risk area constitute of more than 2.5 % of the total population they are considered to be of international importance. For species with moderate reproductive capacity (such as cormorants, eiders, gulls and terns) risk area populations which make up more than 5 % of the total population are considered of international importance. Western Greenland is too large to be regarded as a single oil spill risk area. A specific risk area has recently been described in an oil spill impact assessment of the Fylla-area off Nuuk (Mosbech et al. 1996).

Another matter of concern is the biological value of the western Greenland population of each species: Do they form the core of the populations?, are they endemic?, are they isolated from other populations (= constitute separate flyway populations)? or are they minor or marginal segments of larger widespread populations? Isolated populations, endemic populations and populations which make up more than 50 % of the global population are *a priori* regarded as being of particular Greenland conservation concern.

oil spill sensitivity

The sensitivity to oil spills of a Greenlandic colonial seabird population depends of course on the status of the population: a population which is already decreasing are more likely to suffer longterm damage than a stable or increasing population. But the species behaviour and life strategy are other important factors when assessing the sensitivity of a seabird population to oil spills. The behaviour is important because the more time birds spend on the water the more likely they are to be fouled with oil in the case of an oil spill. The auks which spend most of their time on the water and dive rather than fly when disturbed are for example very vulnerable. Also birds which aggregate in small areas on the sea are more vulnerable than birds which are dispersed. Colonial seabirds are highly concentrated around their breeding colonies, but are often rather dispersed when feeding, during migration and during winter.

In short, basic parameters for evaluation of oil spill sensitivity are two area specific parameters and two general parameters for the species (Mosbech et al. 1996):

1) area specific sensitivity due to the populations status and distribution, that is the data which is described in this report
2) specific sensitivity due to special cultural or economic value of the population
3) general sensitivity due to the species behaviour
4) general sensitivity due to the species life strategy/biologic population dynamic parameters

bag record

The Greenland Home Rule authorities started a bag record system in 1993. The results from 1993 have been published (Namminersornerullutik Oqartussat/Grønlands Hjemmestyre 1995). However, only common eider, kittiwake, Brünnich's guillemot, black guillemot and little auk are comprised by the bag record.

abbreviations

a.s.l.	=	above sea level
GERI	=	Greenland Environmental Research Institute
IBA	=	Important Bird Area (Grimmett & Jones 1989)
NERI-AE	=	National Environmental Research Institute - dep. of Arctic Environment
ssp.	=	subspecies

3 Colony account

3.1 South Greenland region

DESCRIPTION: South Greenland includes in this context the three southernmost municipalities of West Greenland, i.e. Nanortalik, Narsaq and Qaqortoq/Julianehåb. The area is dominated by several long and narrow fiords (up to c. 100 km long) between the inland ice and the outer coast, and by extensive archipelagoes along and off the outer coast.

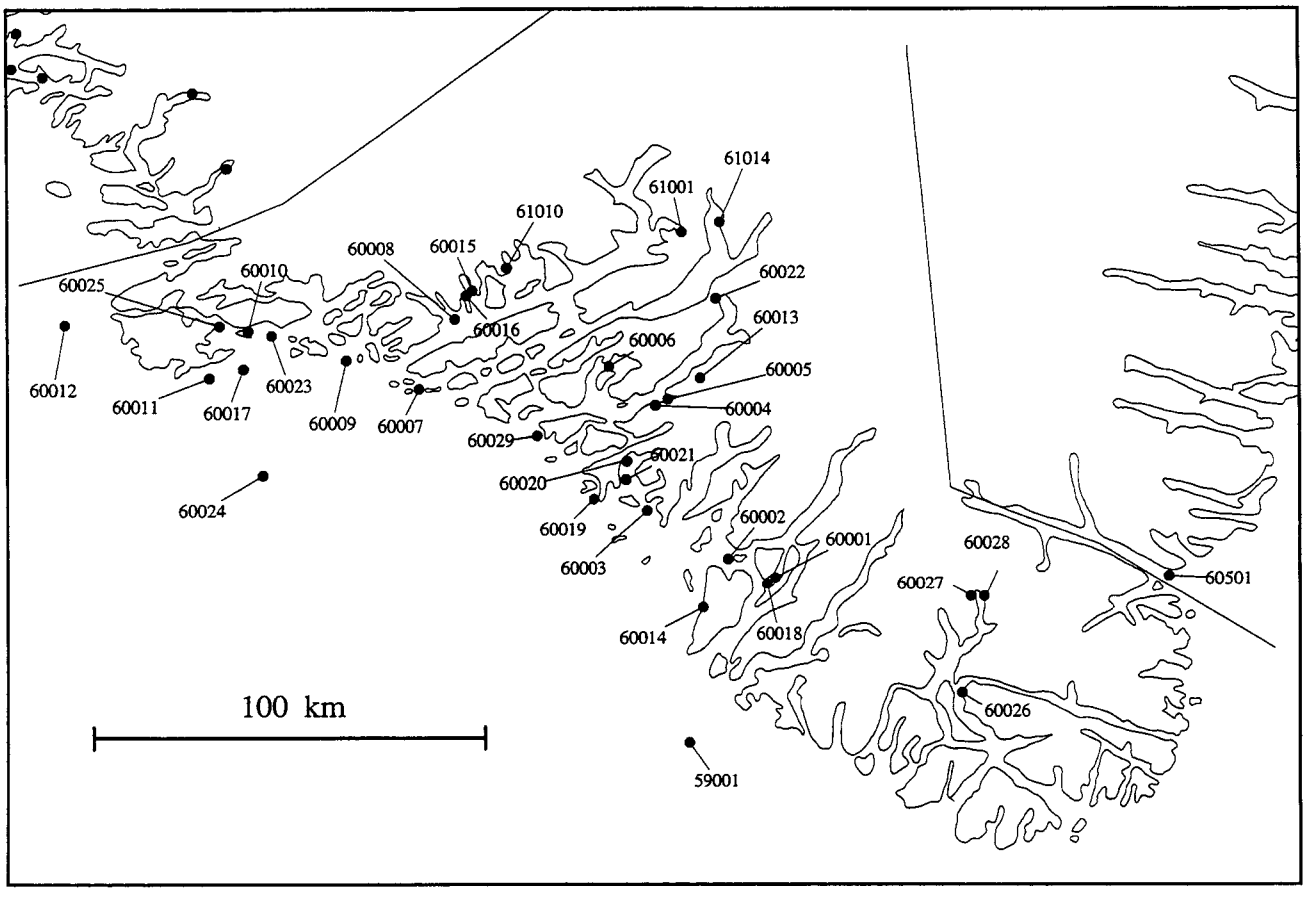


Fig. 2. Seabird colonies in South Greenland Region. The numbers refer to the code numbers in the database and Appendix I Tab. 1.

SURVEYS: Most of the seabird information from this region is derived from the Greenland white-tailed eagle surveys carried out 1972 - c.1990, first by the Danish Ornithological Society and later by F. Wille (Boertmann 1979, F. Wille unpubl.), from the peregrine falcon surveys carried out since 1981 (K. Falk unpubl.) and from several

visits to the islands Kitsissut Avalliit (Kampp & Falk 1994). Finn Salomonsen also visited this region at least in 1949 and 1971, and his unpublished and published (Salomonsen 1979a) information is included in the database. GERI has not surveyed seabird colonies in this region.

Surveys in South Greenland are recommended, particularly in the southern part, east of Nanortalik town and in the archipelagoes off Nanortalik.

COLONIES: The database records 34 seabird colonies from this region (Fig. 2, Appendix I Tab. 1). Ten of these have not been surveyed since 1975. There are no data on numbers of birds in some of the colonies.

The most significant colony in the region occurs in the Kitsissut Avalliit (60012) archipelago, and this is probably the most diverse and largest breeding seabird assemblage in the southern West Greenland area (Kampp & Falk 1994). It is, in fact, not a single colony, but several lesser colonies scattered over a group of small islands. At least ten species of colonial seabirds breed here, and it is the only site in the region where Brünnich's guillemots (and common guillemots) breed. About 9600 Brünnich's guillemots were counted in 1992 (Kampp & Falk 1994). Another guillemot colony was previously present on Qiioqit (60011) island. However, it was abandoned before 1981 (Kampp et al. 1994). A small population of fulmars is present on Kitsissut Avalliit and, except for a few pairs in Paamiut region (perhaps now extinct), the nearest breeding sites for fulmars in Greenland are in Disko Bugt.

The colonies Portussoq (60001), Eqaluit (60005) and Qaqortuup Imaa (60006) have rather large gull colonies. The colony in Eqaluit (60005), in particular, is worth mentioning, because six gull species breed here. These include herring gull and lesser black-backed gull, two species recently immigrated to Greenland (Boertmann 1992).

Only four Arctic tern colonies are known in South Greenland: one south of Qassimiut (60009), two close to the abandoned settlement Sarqarmiut (60010, 60023) and one SW of Qaqortoq town (60029).

It is apparent from Fig. 2 that very few colonies are known from the southern part of the region. This is most likely due to lack of ornithological activity. However, the frequent and unpredictable occurrence of drift ice during spring and early summer probably has a negative influence on the density of seabird colonies (Nørrevang 1973).

IMPORTANT AREAS FOR BREEDING SEABIRDS: In conclusion, the colonies in South Greenland are few and small, with one exception: the remote islands of Kitsissut Avalliit (60012) in the western part of the region. These islands and surrounding waters support significant numbers of seabirds, particularly Brünnich's guillemots, during the breeding season from May through August.

REGULATIONS ETC.: The Kitsissut Avalliit (60012) archipelago has been designated as Ramsar-area as well as IBA. The archipelago is moreover a breeding bird sanctuary where admission is prohibited from June 1 to August 31.

3.2 Paamiut region

DESCRIPTION: This region includes the municipality of Paamiut/Frederikshåb and the small municipality of Ivittuut. Many narrow fiords (up to c. 50 km long) intersect the land between the inland ice and the outer coast, and archipelagoes are found in several areas along the outer coast.

SURVEYS: Salomonsen (1979a, unpubl. notes) visited the region in 1971. The Greenland white-tailed eagle surveys carried out 1974 - c. 1990 first by the Danish Ornithological Society and later by F. Wille (Boertmann 1979, unpubl., Wille unpubl.) provided much information on colonial seabirds. Kampp (1986) surveyed Ilorput/Arsuk Fjord in 1986, and a local resident, Birger Knudsen, have contributed valuable information (unpubl.) during the recent years. GERI surveyed the northernmost part of the region in 1992. Paamiut region is generally well surveyed.

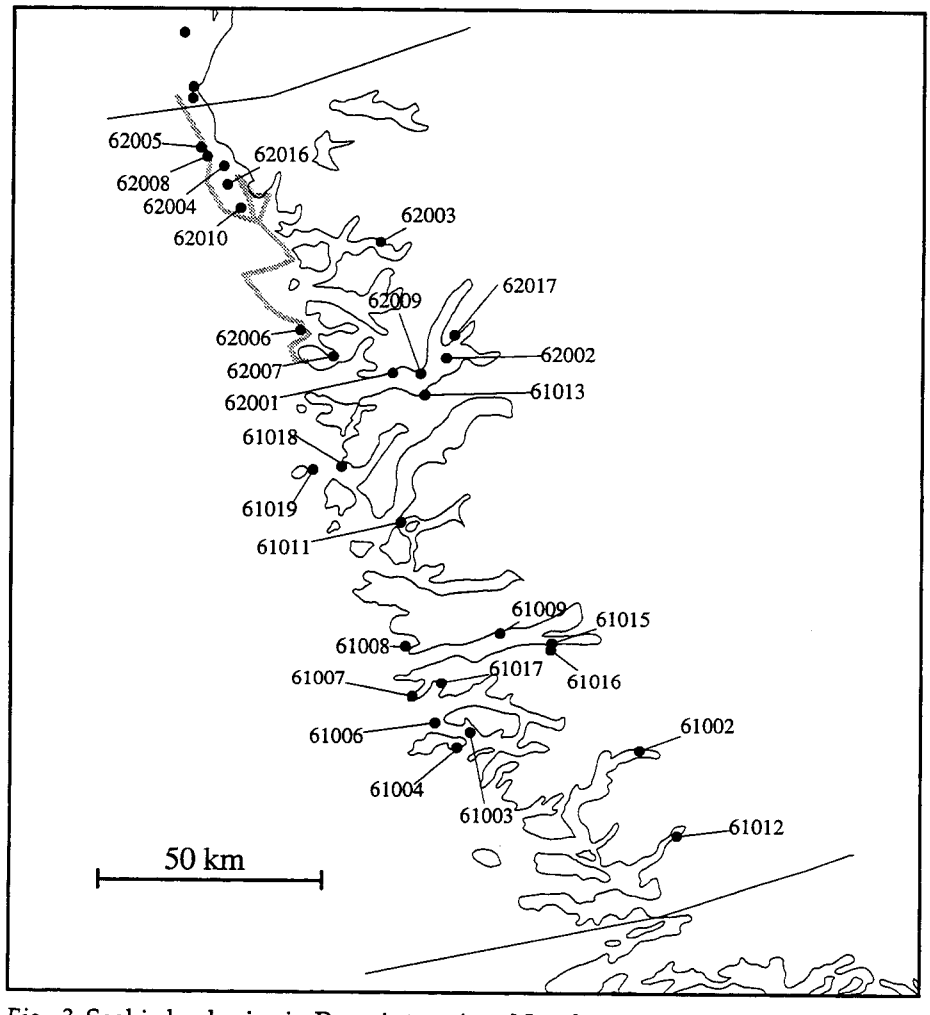


Fig. 3. Seabird colonies in Paamiut region. Numbers refer to the code numbers in the database and Appendix I Tab. 2. Grey line indicate route sailed by GERI in 1992.

COLONIES: The database records 28 colonies in the region (Fig. 3, Appendix I Tab. 2). Of these, seven have not been surveyed during the past 20 years.

The most significant colony is the large Tateraarunnerit birdcliff in Ilorput/Arsuk Fjord (61002). Seven species are known to breed here, and it is the only site in the region where Brünnich's guillemots are still present today (Kampp 1986, Kampp et al. 1994). This is also the most numerous species with about 2300 indvs counted in 1986. The guillemots apparently immigrated to this site early in the 1970's (Salomonsen 1979a) and the population grew rapidly between 1973 and 1976. Since then it has decreased until the last survey in 1986 (Kampp et al. 1994). Brünnich's guillemot previously bred on the Søndre (or perhaps Nordre) Kangeq peninsula and on the small Appat (61005) island (Salomonsen 1950), but both were abandoned before 1971.

Other rather large colonies occur in the Sermiligaarsuk fiord (61009), in Kvanefjord (62001) and in Qassit fiord (62003).

Several small colonies are found on many of the small islands south of Frederikshåb Isblink (62004, 62005, 62008, 62010, 62016). These hold common eiders, numerous black guillemots, some small colonies of Iceland gulls and kittiwakes and, most remarkable, a few pairs of fulmars (Salomonsen 1979a). The population of fulmars has been decreasing through the recent years, from 20 indvs in 1971 to 0 in 1993 and 1995. Five or six kittiwake colonies are found in Paamiut region, and there are no Arctic tern colonies.

IMPORTANT AREAS FOR BREEDING SEABIRDS: In summary, Paamiut region support rather few and mainly small seabird colonies, with one exception: the large birdcliff in Ilorput/Arsuk Fjord (61002). This fiord, and the waters adjacent to the mouth where the guillemots often assemble to feed supports significant numbers of colonial seabirds during the breeding season (early May until early August).

REGULATIONS ETC.: The colony with Brünnich's guillemots in Ilorput/Arsuk Fjord (61002) has been designated as IBA.

3.3 Nuuk region

DESCRIPTION: This region is dominated by the large fiord system Nuup Kangerlua/Godthåb Fjord (more than 130 km long) and by extensive archipelagoes in shallow waters along the outer coast. There are several fiords in the southern part traversing from the inland ice to the outer coast more or less perpendicular to the outer coastline.

SURVEYS: The majority of the information from Nuuk region is from F. Salomonsens field notes (visits in 1949, 1970, 1977 and 1978), from the Greenland white-tailed eagle surveys carried out 1974 - c.1990 (Boertmann 1979, unpubl., F. Wille unpubl.) and from the GERI 1992 survey along the outer coast (Boertmann & Mosbech 1992).

In general, has the region been adequately surveyed for colonies. However, judging from the map (Fig. 4) colonies seem to be scarce in the fiords in the southern half of the region, and a survey to confirm this is recommended.

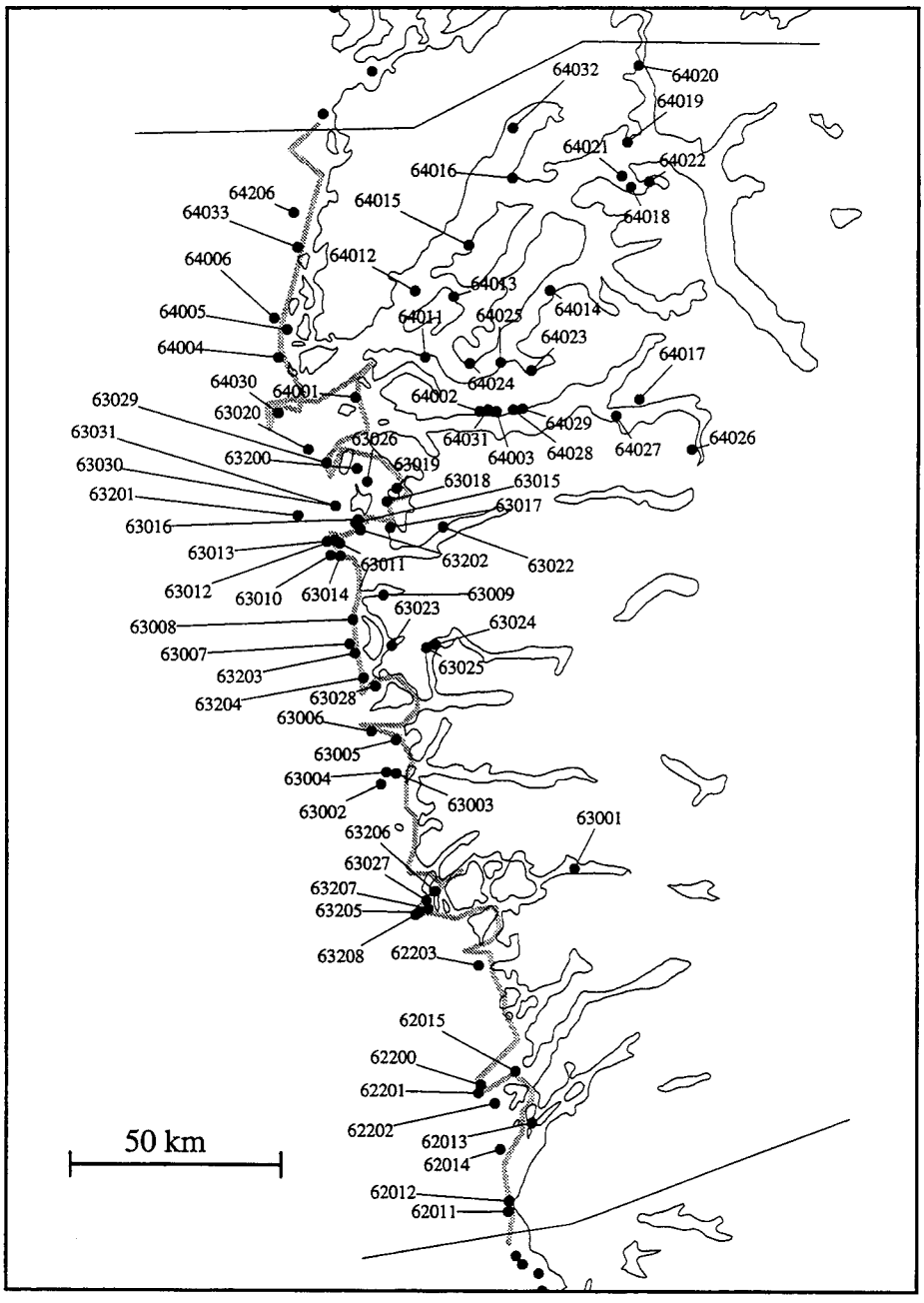


Fig. 4. Seabird colonies in Nuuk region. Numbers refer to the code numbers in the database and Appendix I Tab. 3. Grey line indicate route sailed by GERI in 1992.

COLONIES: The database records 78 seabird colonies in Nuuk region (Fig. 4, Appendix I Tab. 3). Of these three were abandoned before 1970. GERI found 15 "new" colonies during 1992 and 1993, when a total of 46 colonies were visited. 34 colonies were previously recorded in the surveyed area (three were not visited). Only 13 of the colonies not surveyed in 1992 and 1993 have not been visited since 1975. These are mainly situated in the fiord lands.

The most significant colonies are located in the extensive archipelagoes along the outer coast. Several puffin colonies are found here. The largest of these, for example those on two small islands SW of

Nuuk (63015, 63020) and Satsissunnguit (64006) NW of Nuuk, support some hundreds of individuals. The area around the mouth of Nuup Kangerlua/Godthåb Fjord holds the largest concentration of puffins south of Disko Bugt. Razorbills usually occur alongside the puffins, although in smaller numbers, as well as in colonies without puffins. Arctic terns occur on several island along the outer coast. There is only one colony of Brünnich's guillemot, present on the islet Nunngarsuit (63010) SW of Nuuk. There was previously another colony in the same area. However, it became extinct about 1990 (Kampp et al. 1994). There are several rather small gull colonies (most with a few hundred pairs or lower) present in the fiords. The most notable of these is Innajaatoq (64019) in inner Nuup Kangerlua /Godthåb Fjord. The number of gulls (500 pairs in 1974) in this colony, seems to have decreased seriously during the early 1980's. This colony is the only site in the region where great cormorant breed.

IMPORTANT AREAS FOR BREEDING SEABIRDS: Nuuk region support several seabird colonies. However, the majority are rather small with less than 500 pairs of birds. Small colonies are concentrated in some areas: the most important are between the mouths of Nuup Kangerlua/Godthåb Fjord and Kangerluarsunnguaq/Buksefjord and the waters along the western coast of Nordlandet where significant numbers of colonial seabirds are found during the breeding season (May-August).

REGULATIONS ETC.: Ikkattoq fiord and several islands at the mouth of the fiord, have been designated as Ramsar-area as well as IBA. This area includes some seabird colonies: 62011, 62012, 62013 and 62014.

3.4 Maniitsoq region

DESCRIPTION: This region is dominated by several long and narrow fiords (up to 100 km long). The northern border is the even longer Kangerlussuaq/Søndre Strømfjord fiord (170 km). Many islands and islets are found along the outer coast.

SURVEYS: The majority of the information from this region is derived from F. Salomonsen's visits in 1960, 1970, 1975, 1977 (unpubl. notes), from K. Kampp and F. Wille's guillemot colony survey in 1986-90 (unpubl. notes) and from GERI's survey of the outer coast and Sermilinnguaq fiord in 1992 (Boertmann & Mosbech 1992).

Most of the region has been surveyed rather well in recent years. However, data are missing from the fiords in the southern part: the fiords between Søndre Isortoq and Napasoq and in the Niaqunngunaq/Fiskefjord complex. Surveys are recommended for these areas.

COLONIES: The database records 82 seabird colonies in this region (Fig. 5, Appendix I Tab. 4). GERI visited all 36 colonies along the outer coast and in the area east of Sermersut/Hamborgerland during 1992. Of these 19 were new to the database. Most of the colonies of the region have been surveyed or visited during the past 20 years. Only two colonies have not been visited since 1975, and 14 not since 1980.

The most significant colonies, all containing several thousands of birds, are found in the fiords Søndre Isortoq (65003, 65004), Sermilinnguaq (65009, 65013, 65015) and Kangerlussuatsiaq/Evighedsfjorden (65019). Several much lesser colonies are found along the outer coast. There are many in the area around the settlements Napasoq and Atammik in particular. These included, in 1992, breeding lesser black-backed gulls and probably breeding herring gulls.

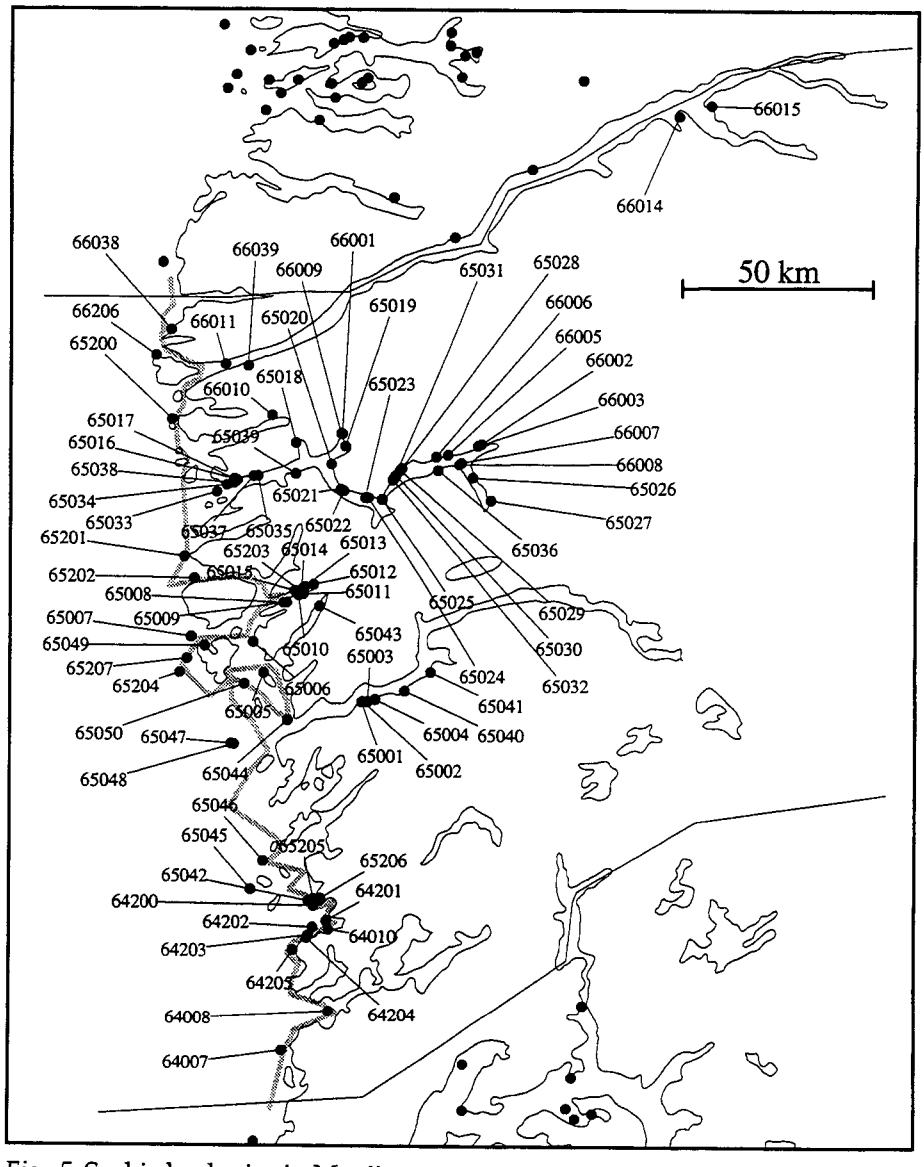


Fig. 5. Seabird colonies in Maniitsoq region. Numbers refer to the code numbers in the database and Appendix I Tab. 4. Grey line indicate route sailed by GERI in 1992.

Brünnich's guillemot (and common guillemot as well) breeds in four colonies (65003, 65013, 65015, 65019), all situated in fiords far from the outer coast. The guillemots often feed at the mouth of these fiords, for example in the area south and east of Maniitsoq town. Kittiwakes are very numerous and razorbills are widespread and breed in several colonies, both in the fiords and along the outer coast. Great cormorant is found in 13 colonies all in Kangerlussuatsiaq/Evighedsfjorden and Kangerlussuaq/Søndre Strømfjord. Arctic tern is found in ten colonies along the outer coast or in the fiord east

of Maniitsoq town. All these tern colonies are rather small with numbers not exceeding 500 indvs. Puffin is known from two sites west of Maniitsoq town. The number of puffins in these two colonies is apparently small. Unfortunately, they were not visited during the GERI 1992 survey due to fog.

IMPORTANT AREAS FOR BREEDING SEABIRDS: In conclusion, there are many colonies in Maniitsoq region, although the majority are small. A few large colonies are situated in the fiords far from the outer coast. The most important waters are the fiords with guillemot colonies (Søndre Isortoq, Sermilinnguaq and Kangerlussuatsiaq/Evighedsfjorden), the feeding areas for these guillemots(mainly the mouths of the fiords) and the waters around Napasoq and Atammik.

REGULATIONS ETC.: All the colonies with breeding Brünnich's guillemot (65003, 65013, 65015, 65019) have been designated as IBA's.

3.5 Sisimiut region

DESCRIPTION: This region is dominated by three long and narrow fiords (up to 170 km long). In the southern part there are several lesser fiords and an extensive archipelago off the outer coast where numerous small islands and skerries are scattered over a large shallow water area.

SURVEYS: The majority of the information is from F. Salomonsens unpublished notes (visits in 1954, 1960, 1975 and 1980) and from the GERI 1992 survey along the outer coast (Boertmann & Mosbech 1992). In Aug./Sept. 1993, GERI carried out an aerial survey for moulting eiders and recorded a few colonies.

In recent years, only the outer coast excluding the coastline between Nassuttooq/Nordre Strømfjord and Nordre Isortoq, have been surveyed for seabird colonies. Most of the information from the fiords are more than 20 years old, and a survey there is recommended.

COLONIES: The database records 48 seabird colonies in the region (Fig. 6, Appendix I Tab. 5). Three of these, at least, were without birds during the most recent visit and other three were virtually abandoned except for a few black guillemots. Twelve colonies were visited by GERI in 1992 and 1993. Nine of these were new to the database.

The colonies are mainly small and the dominating species are black guillemot and gulls (Iceland and glaucous). There are three occupied kittiwake colonies: on an island south of Sisimiut (66201) and in the head of Kangerlussuaq/Søndre Strømfjord (67014 and 67015). At least five more kittiwake colonies were without birds during the most recent visit. There are two or three small puffin sites, and several razorbill colonies are known to occur in the area. The four (67014, 67015, 67017 and 67023) known sites with great cormorant are all situated in Nassuttooq/Nordre Strømfjord. One of these (67017) was without birds during the latest visit. Only two Arctic tern colonies (66018, 66201) are known from the region. Great black-backed gull is numerous along the outer coast. Almost every islet supports a pair.

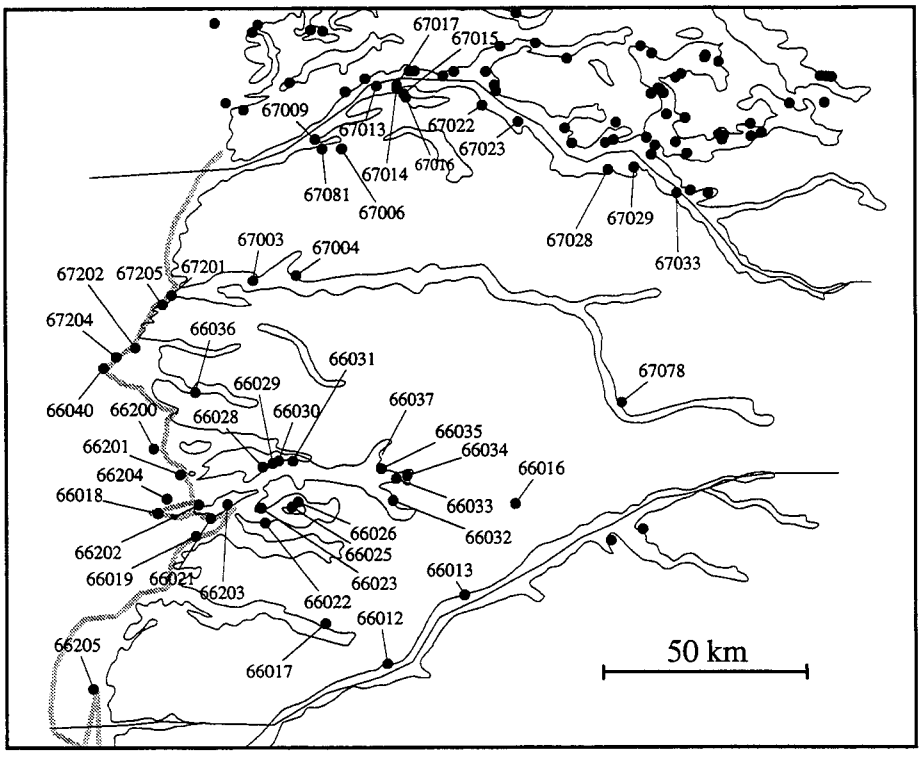


Fig. 6. Seabird colonies in Sisimiut region. Numbers refer to the code numbers in the database and Appendix I Tab. 5. Grey line indicate route sailed by GERI in 1992.

The seabird colonies in Sisimiut region are generally small, probably none reach 1000 pairs. The area most rich in seabirds is the large Sassat (66205) archipelago where common eider (at least 100 pairs), black guillemot and great black-backed gull (at least 200 pairs) are numerous.

REGULATIONS ETC.: The colonies 67028, 67029 and 67033 are within the Nassuttuup Nunaa Ramsar-area.

IMPORTANT AREAS FOR BREEDING SEABIRDS: The waters around the extensive Sassat archipelago supports significant numbers of colonial seabirds during the breeding season.

3.6 Kangaatsiaq region

DESCRIPTION: This region is dominated by two large fiord systems: Nassuttooq/Nordre Strømfjord and Afersiorfik (up to c. 140 km long). There are numerous islands along the outer coast.

SURVEYS: The majority of the information on seabird colonies is derived from F. Salomonsens unpublished notes. He visited the area at least in 1954, 1960, 1970, 1975 and 1980. In 1992, GERI surveyed the outer coast for seabird colonies (Boertmann & Mosbech 1992). In 1993 and 1995, GERI carried out a survey of moulting eiders from aircraft and a few additional seabird colonies were recorded.

The area is well surveyed, although the majority of the information from the fiords is more than 20 years old and probably outdated. A survey of the two large fiords is highly recommended.

COLONIES: The database records 125 seabird colonies in Kangaatsiaq region (Fig. 7, Appendix I Tab. 6). GERI visited 13 colonies along the outer coast in 1992/93, of which five were new to the database.

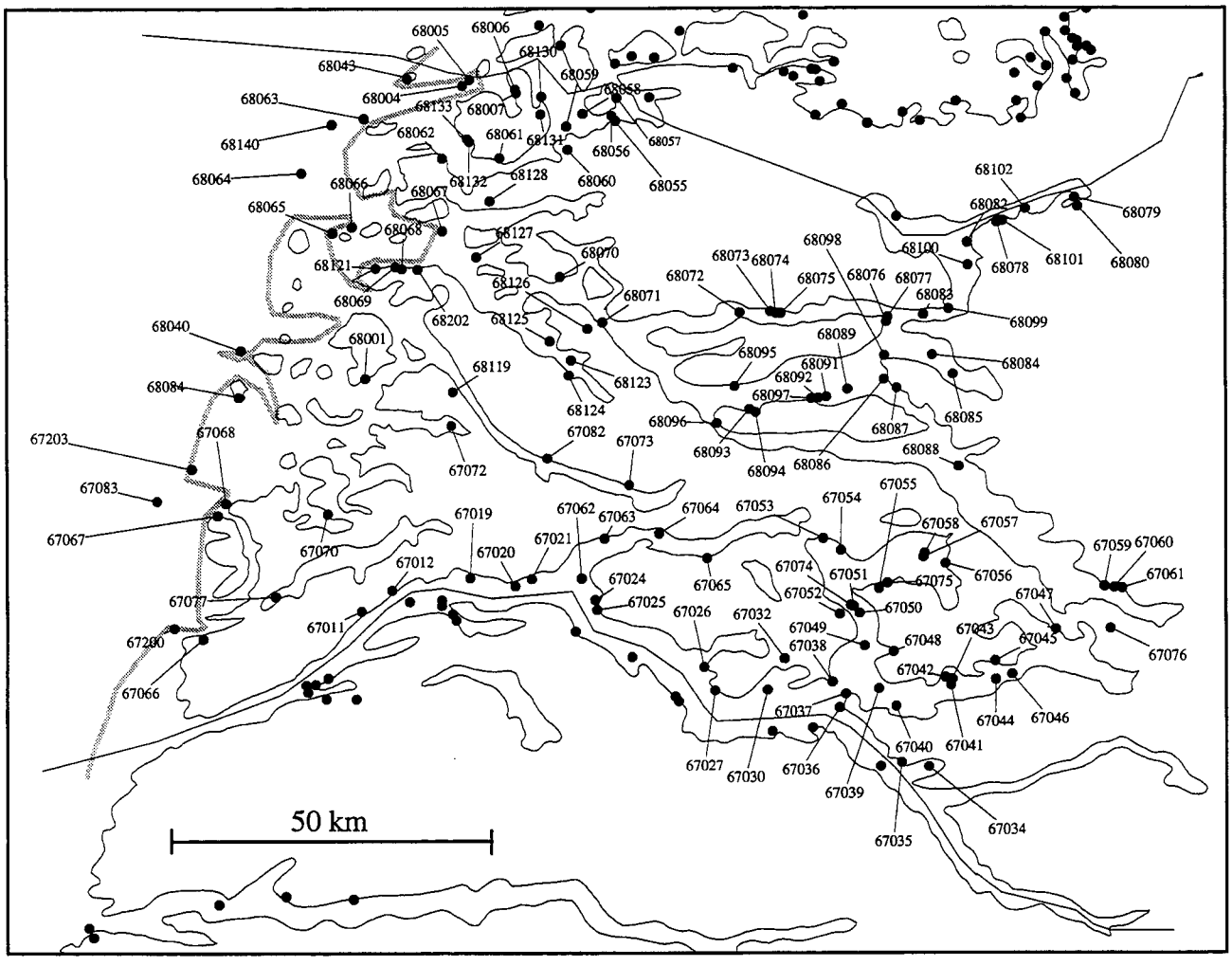


Fig. 7. Seabird colonies in Kangaatsiaq region. Numbers refer to the code numbers in the database and Appendix I Tab. 6. Grey line indicate route sailed by GERI in 1992.

The majority of the colonies are small with up to a few hundred pairs of birds. Only few exceed or exceeded 1000 pairs: 67046, 67061, 67064, 68079 and 68100. Of these 67061, 68079 and 68100 have not been visited since 1954 and their status may have changed considerably.

Iceland gull is the dominating colonial species in Kangaatsiaq region, and kittiwake is also frequent. There are 27 kittiwake colonies of which at least seven were without birds during the most recent visit. Razorbill is widespread and great cormorant colonies are known from at least 19 sites. Two of these were without birds when surveyed in 1992. In Sept. 1995, several new sites with great cormorants (probably breeding) were seen during aerial surveys in Afersiorfik. Only four or five Arctic terneries are known. Puffin breeds on two or three islands off the outer coast, although in few numbers. A fourth puffin colony was without birds during the most recent visit in 1992. Some of the largest colonies of common eider in central West Greenland are found in the interior part of Afersiorfik fiord: more

than a thousand pairs were recorded on some very small islands in 1954. This area was surveyed from aircraft in Sept. 1995. Several females with chicks were recorded, indicating that these islands still hold considerable numbers of breeding eiders.

IMPORTANT AREAS FOR BREEDING SEABIRDS: In conclusion, the colonies in Kangaatsiaq region are small, and the majority is found in the fiords far from the outer coast.

The head of Afersiorfik, Tasiussarsuaq, supports significant numbers of breeding eiders, and is probably the most important colonial seabird area in the region.

REGULATIONS ETC.: At the innermost part of Afersiorfik: Tasiussarsuaq, a breeding bird sanctuary has been established. It is prohibited to go ashore on the bird islands June 1 to August 31. The Naternaq Ramsar-area includes the colonies 68072, 68073, 68074, 68075, 68077, 68083 and 68099. Another Ramsar-area, Eqalummiut Nunaat, includes the colonies 67034, 67035, 67036, 67037, 67040, 67041, 67044 and 67046. These two Ramsar-areas as well as the island Uummannaq/Rifkol (67084) are designated as IBA's.

3.7 Southern Disko Bugt region

DESCRIPTION: This region includes the two small municipalities of Aasiaat/Egedesminde and Qasigiannguit/Christianshåb. The area is dominated by numerous islands and islets, and by the wide and shallow bay of Sydostbugten.

SURVEYS: The majority of the information is derived from the unpublished notes of F. Salomonsen. He visited this region in 1946, 1949, 1954, 1960, 1970, 1975, 1976 and 1980. The GERI 1992 outer coast survey covered only the westernmost part of this region (Boertmann & Mosbech 1992). Some colonies were recorded during aerial surveys of moulting eiders in 1993, 1994 and 1995.

Except for Grønne Ejland (68029, 68030) and some other islands, the information available on colonial seabirds is more than 20 years old. A survey for seabird colonies in the entire region is strongly recommended.

COLONIES: The database records 69 colonies from this region (Fig. 8, Appendix I Tab. 7). Of these, 34 have not been visited since 1975. In 1992, GERI only visited three colonies. During the aerial survey in August 1993, 16 colonies, mainly with Arctic terns were overflown and eight of these had not been recorded previously.

The most significant colonies in this region are: Grønne Ejland (68029 and 68030) and Nunatsiaq/Rotten (68010). One of the worlds largest colonies of Arctic tern is found at Grønne Ejland, with estimated 25,000 pairs in 1980. There has, however, been much fewer tern on these islands in recent years (Génsbøl 1996, K. Kampp unpubl., F. Wille pers. comm., own obs.). In 1979, breeding Ross's gull were found on Grønne Ejland (Kampp & Kristensen 1980a).

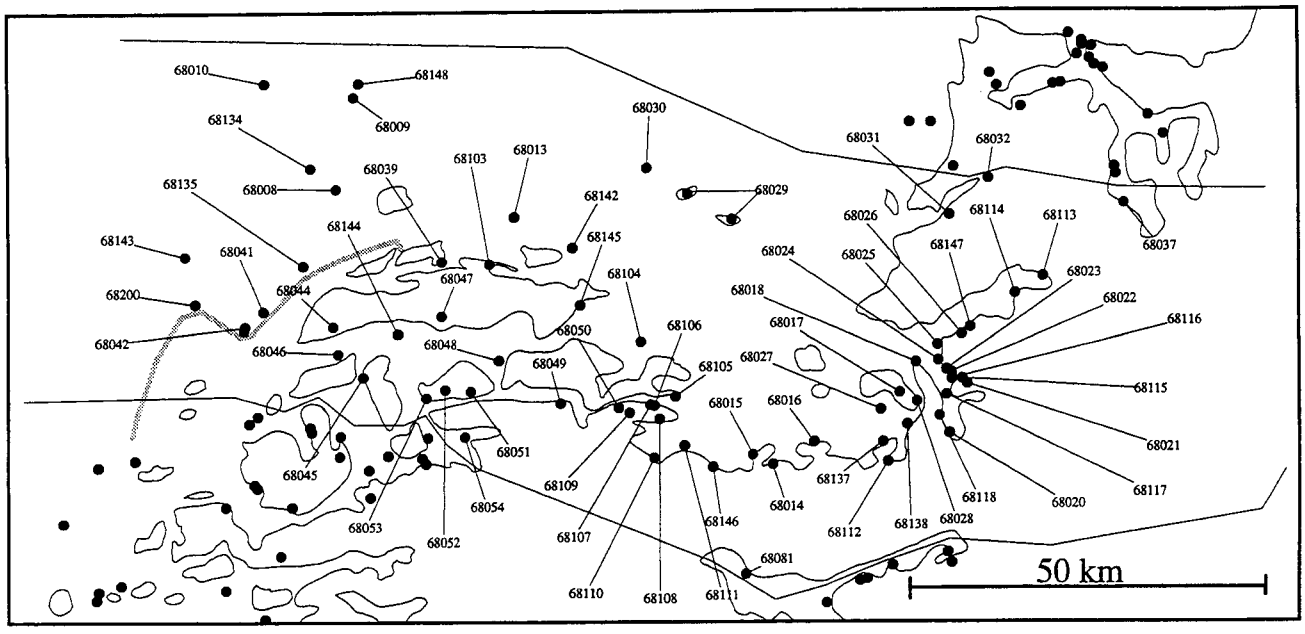


Fig. 3. Seabird colonies in Southern Disko Bugt region. Numbers refer to the code numbers in the database and Appendix I Tab. 7. Grey line indicate route sailed by GERI in 1992.

Nunatsiaq/Rotten is a small island with a large puffin colony: about 1000 pairs were estimated in 1976, making this the largest puffin colony in Greenland. Puffins breed elsewhere in two small colonies on Grønne Ejland and additionally two seem to be deserted now.

Iceland gull and black guillemot are common colonial breeding species: several small colonies with less than 100 pairs of both species are found throughout the region, and only a few reach 200 pairs. Arctic tern is a characteristic species. Colonies have been recorded at 16 sites at least, and many more are probably present on the numerous islands in Sydostbugten. Great cormorant is found in five sites, all situated in the southeast corner of Sydostbugten and in Kangersuneq fiord. Little auk is known to breed on three islands in the western and central part of the region. Razorbill is widespread and breeds at ten sites at least. Two small fulmar colonies (68022, 68023) are situated in the southeastern part of the region.

IMPORTANT AREAS FOR BREEDING SEABIRDS: In summary, the colonies in this region are small, except for a few island colonies. One of these, Grønne Ejland, has a great diversity of seabirds and one of the largest Arctic tern colonies recorded.

The waters around Grønne Ejland and Nunatsiaq/Rotten support significant numbers of seabirds, particularly puffins and Arctic terns during the breeding season (June-August).

REGULATIONS ETC.: Both Nunatsiaq/Rotten and Grønne Ejland are breeding bird sanctuaries with admission prohibited during June 1 - August 31. They are also designated as IBA's. Furthermore Grønne Ejland has been designated as Ramsar-area.

3.8 Ilulissat region

DESCRIPTION: This region covers the eastern side of Disko Bugt and the northeastern coast of Vaigat. The eastern part is dominated by several fiords and straits, while the northern part has a low more or less straight coast line.

SURVEYS: The information from this region is derived mainly from the unpublished notes of F. Salomonsen. He visited the region in 1946, 1954, 1960, 1975 and 1980. In 1984, GERI surveyed Paakitsoq fiord (Riget 1985), and Kampp (1984, unpubl.) surveyed the large colony at Ritenbenk. GERI surveyed the outer coast from Ilulissat town and northwards in 1994. In 1993, 1994 and 1995, some colonies were observed from the air during surveys of moulting eiders.

A survey of the entire region, excluding the northern coast of Vaigat, which GERI surveyed in 1994, is strongly recommended. Although Paakitsoq was surveyed in 1984, a new survey is recommended in this area, since the aerial survey in 1994 revealed some probably significant changes in the status of great cormorant.

COLONIES: The database records 99 seabird colonies in Ilulissat region (Fig. 9, Appendix I Tab. 8). GERI visited 19 of these in 1994, and observed 13 from aeroplane in 1993, 1994 and 1995. During the 1994 colony survey four new colonies were found in an area where 17 were known of in advance. Colonies not visited since 1975 numbers 34, most of them were surveyed in 1946 and 1960. Eighteen were visited for the last time in 1975 and 1976.

The most significant seabird colonies are found in the northeastern corner of Disko Bugt around Torsukattak fiord. The most important is the Innaq colony (also known as Ritenbenk, 69049), the only site where Brünnich's guillemot still occur. Previously, Brünnich's guillemot bred at three other sites at least, in the same general area as Innaq (Kampp et al. 1994). The database records 41 kittiwake colonies in Ilulissat, 19 of which were without kittiwakes during the most recent visit. The Torsukattak area hold the highest concentration of breeding kittiwakes in Greenland: the colonies 69033, 69034, 69035, 69036, 69037 and 69038 probably support more than a total of 25,000 pairs. Great cormorant is widespread, breeding in at least 19 sites and probably at five more observed from the air in late August 1994. Razorbill is known from nine sites, however, two of these were without razorbills during the most recent visit. Only three islands (68034, 70002, 70010) are known to support breeding Arctic terns. There are several small colonies mainly with Iceland gulls and great cormorants in the fiords, as is the case in Paakitsoq. Tasiusaq fiord, south of Kangia/Isfjord where admission by boat often is prevented by the huge amounts of glacier ice in Kangia, also supports many fine colonies. Common eider colonies occur on six small island in the interior part of Ataa Sund and Paakitsoq. Today there are much fewer eiders than during the visits in 1960 (Fig. 21).

IMPORTANT AREAS FOR BREEDING SEABIRDS: The northeastern part of Ilulissat region is very important in relation to colonial seabirds. Several very large kittiwake colonies and the only Brünnich's guillemot colony between Maniitsoq and southern Upernavik is situated here.

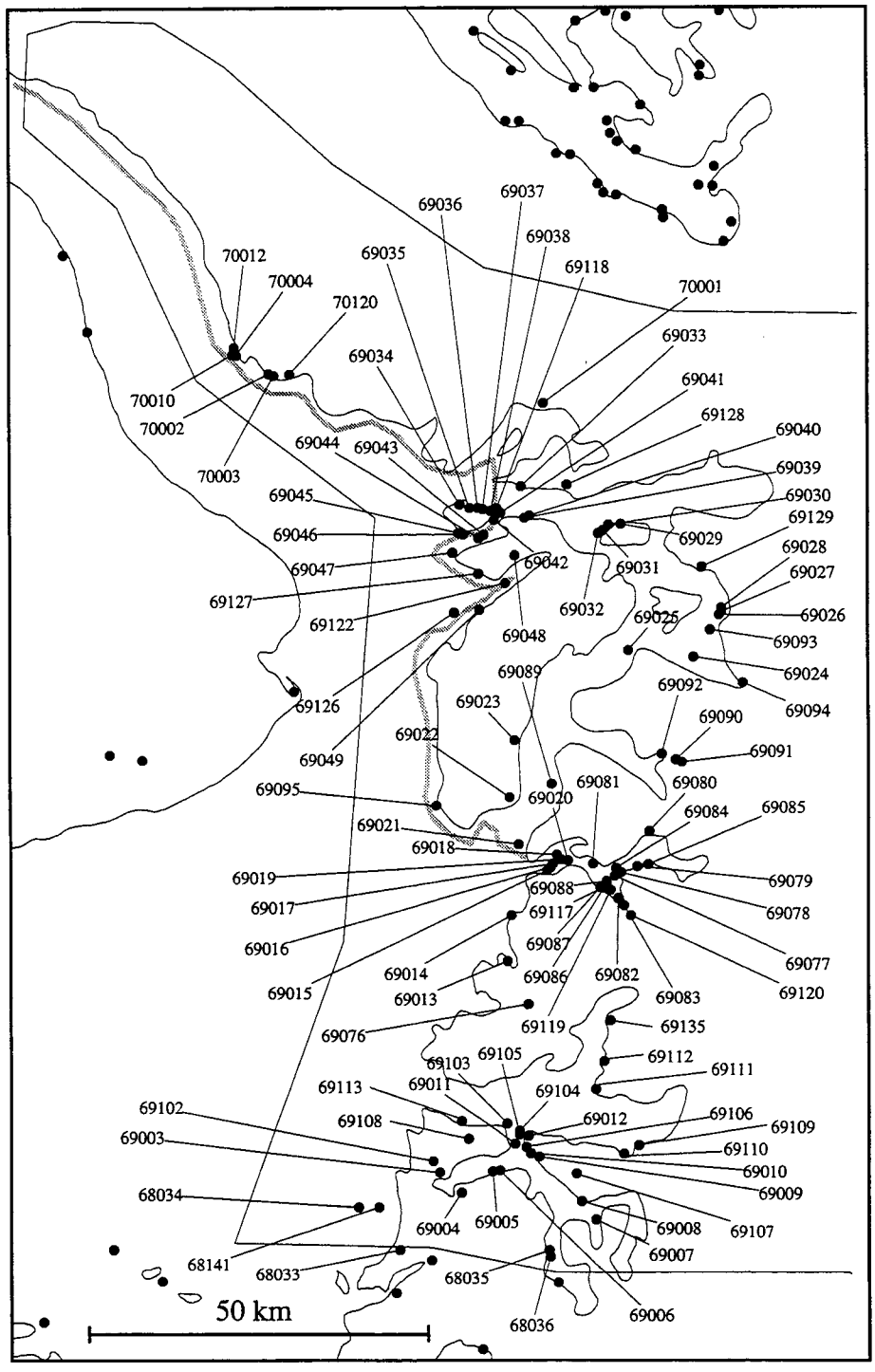


Fig. 9. Seabird colonies in Ilulissat region. Numbers refer to the code numbers in the database and Appendix I Tab. 8. Grey line indicate route sailed by GERI in 1992.

REGULATIONS ETC.: The colony at Innaq/Ritenbenk (69049) has been designated as IBA as well as a breeding bird sanctuary with prohibited admission from June 1 to August 31.

3.9 Qeqertarsuaq region

DESCRIPTION: This region covers Disko island and includes Kitsissut/Kronprinsens Ejland archipelago south of Qeqertarsuaq/Godhavn. The northeast and southeast coasts are

more or less straight, without fiords and inlets. On the western side, three fiords cut into the island.

SURVEYS: The information from Qeqertarsuaq is obtained from many sources. F. Salomonsen (unpubl.) has visited this region several times since 1946. Staff at the Arctic Station in Qeqertarsuaq/Godhavn and students joining the Copenhagen University course in Arctic Biology have contributed with important information (Bennike 1990, O. Frimer unpubl.). K. Kampp (unpubl.) has counted some colonies in 1979 and 1990, and M.K. Petersen and J. Nymand (Petersen 1996) surveyed the island of Qeqertaq in 1992 and 1993 as a part of their fulmar studies. GERI has not surveyed this region. Some colonies were observed during aerial moulting eider surveys in 1993, 1994 and 1995.

The available information is in general adequate, and surveys in the near future are not considered necessary.

COLONIES: The database records 57 known colonies in the region (Fig. 10, Appendix I Tab. 9). Eight have not been surveyed since 1975 and another 24 not since 1980. The majority of the colonies are small gull and black guillemot colonies with less than 200 pairs. A few colonies are rather large as for example a gull colony in Kangerluk/Diskofjord (69060). The largest colony in the region is the fulmar colony on Qeqertaq island (69062) at the mouth of Kangerluk/Diskofjord. 66,000-84,000 indvs were estimated to be present along the 10 km long and south facing vertical cliff in 1993 (Petersen 1996). There are two somewhat smaller fulmar colonies (69070, 69071) on the Disko mainland close to Qeqertaq. Great cormorants are known from 14 sites, of which at least one close to the city of Qeqertarsuaq/Godhavn now has been abandoned. Kittiwake breeds in three colonies, an additional colony was abandoned prior to 1954. In the southern part of the region there are seven Arctic tern colonies. Razorbill is known from at least four sites, one of which was abandoned prior to 1975. Puffin occurs at two sites south of Qeqertarsuaq/Godhavn (69001, 69002): one of these seems to be significant, with 800 indvs recorded in 1988. Little auk breeds in small numbers on the same two islands.

IMPORTANT AREAS FOR BREEDING SEABIRDS: The largest concentrations of breeding seabirds are found in the mouth of Kangerluk/Diskofjord and on the southwestern coast of Disko. These areas and the waters around the northern islands of Kitsissut/Kronprinsens Ejland are the most important during the breeding season.

REGULATIONS ETC.: Three areas on Disko are designated as Ramsar-areas. They were selected due to the occurrence of Greenland white-fronted geese. Only two seabird colonies are situated within these Ramsar-areas: 69125 and 69130. The Assissut/Brændevinsskær island (69001) is designated as IBA and as a breeding bird sanctuary with prohibited admission from June 1 to August 31.

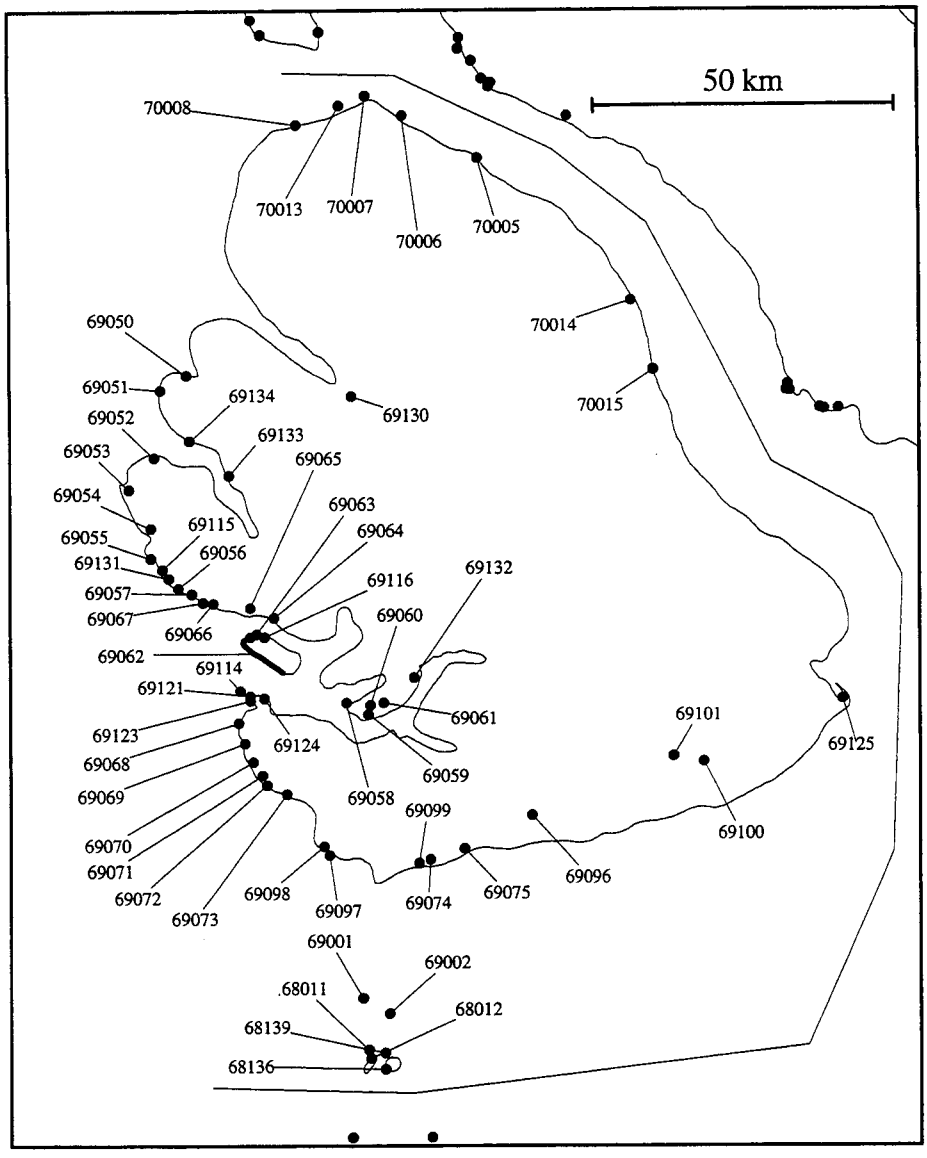


Fig. 10. Seabird colonies in Qeqertarsuaq region. Numbers refer to the code numbers in the database and Appendix I Tab. 9.

3.10 Uummannaq region

DESCRIPTION: This region is dominated by a large fiord system between the two peninsulas of Nuussuaq and Sigguup Nunaa/Svartenhuk. Small and low islands are found scattered in the area. The coasts of the interior part are usually steep and very high.

SURVEYS: Bertelsen (1921) described the seabird colonies of the region early in this century. F. Salomonsen (unpubl.) visited some seabird colonies in 1949 and 1975, and in 1984 Kampp (1984, unpubl.) surveyed all the former Brünnich's guillemot colonies. Bennike (1990) described some colonies in the southwestern part of the region. In 1994, GERI surveyed the outer coast and the outer parts of some of the fiords. A few colonies were also observed from aircraft in 1993, 1994 and 1995 during surveys for moulting eiders.

The majority of the information from the eastern part of Uummannaq region is outdated or inadequate, and a survey is highly recommended.

COLONIES: The database records 170 seabird colonies in Uummannaq region (Fig. 11, 12, Appendix I Tab. 10). However, 104 have not been visited since 1920, and many of these are probably deserted or greatly reduced today. Of the remaining 66 colonies, two have not been visited since 1975, and the rest (64) have all been surveyed later than 1983.

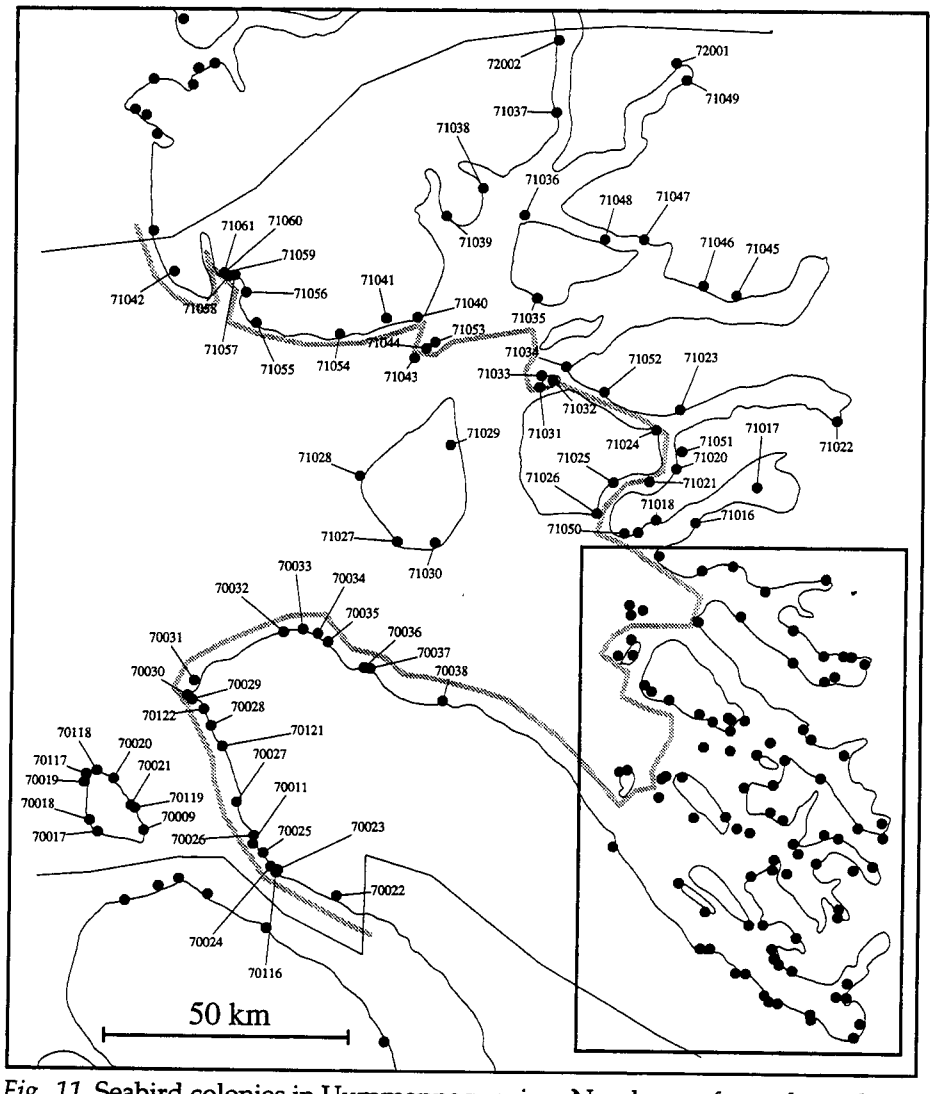


Fig. 11. Seabird colonies in Uummannaq region. Numbers refer to the code numbers in the database and Appendix I Tab. 10. Grey line indicate route sailed by GERI in 1994. The interior part (framed area) is enlarged on Fig. 12.

In 1994, GERI recorded 54 colonies, of which 15 were new. Of the 39 colonies previously visited (mainly before 1920) two were totally extinct, and in several, the number of species present were reduced: kittiwake had disappeared from ten colonies, Arctic tern from one, razorbill from twelve, Brünnich's guillemot from six (see also Kampp et al. 1994) and puffin from one. However, a few colonies had a greater number of species than reported in 1921: great black-backed gull was recorded as new in four sites, great cormorant in two, razorbill in two and kittiwake in one.

The most predominant seabird species in Uummannaq is the fulmar. Four large breeding colonies are present in the area, all in the southern

central part of the region (70065, 70088, 70101, 71015), and all with at least 10,000 pairs. They are extremely difficult to monitor, due the huge dimensions of the colonies (up to 4 km long and 1000 m a.s.l.). Other seabird species breeding in Uummannaq are few in numbers and their colonies are in general small and scattered. Arctic tern occurs in fair numbers only on some of the islands as for example Qeqertat/Schades Øer (71043, 71044, 71053).

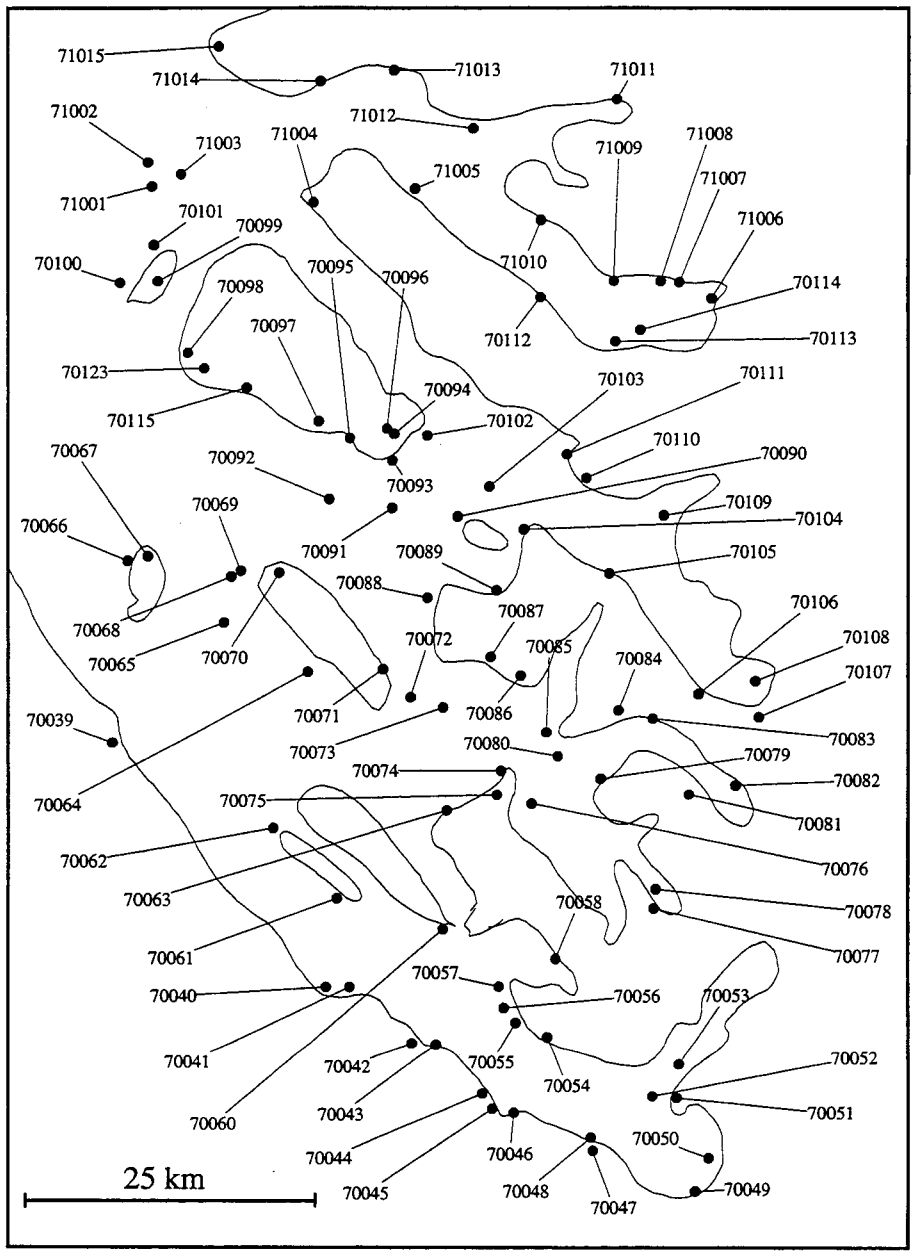


Fig. 12. Seabird colonies in the interior part of Uummannaq region. Numbers refer to the code numbers in the database and Appendix I Tab. 10.

Beside fulmar colonies, there are (or more correct were) some other very large colonies in Uummannaq: 70064, 70095, 70097 and 70098, all in the southern central part of the region and all with Brünnich's guillemots and razorbills. These colonies are now exterminated or nearly so. We fear that many of the colonies not visited since 1920 have shared the same fate.

Great cormorant is found in six sites, all on the tip of Nuussuaq peninsula and on Qeqertarsuatsiaq/Hareø. Common eiders are known to breed in 20 sites, all only with a few (less than 35) pairs. Most of these sites have not been visited since 1920, and are probably without eiders today. Six eider colonies have been revisited in recent years and in three of these no eiders were seen. Kittiwakes have been reported from 30 sites. However, ten were without kittiwakes during the most recent visit. Auks, except for black guillemot, are very scarce in Uummannaq. Brünnich's guillemot bred at eight sites, at least, in 1920, of which Salleq (70101) was by far the largest (>100,000 indvs in 1949, Kampp et al. 1994). All now are abandoned, mainly due to overexploitation during the breeding season (Evans & Kampp 1991, Kampp et al. 1994). Razorbills are known from 19 sites, but among the 16 which have been revisited in recent years razorbills were only seen at four sites. Puffins have been reported from three sites, of which one or two have a few birds today. Arctic terns are known to occur at 14 sites, and of the ten colonies revisited in recent years eight still had breeding terns.

IMPORTANT AREAS FOR BREEDING SEABIRDS: Uummannaq has many seabird colonies. The majority are small, except for the very large fulmar colonies and a few large Arctic tern colonies.

The most important areas are during the breeding season found around the fulmar colonies and around Qeqertat/Schades Øer.

REGULATIONS ETC.: Only the area around Qeqertat/Schades Øer (71043, 71044, 71053) has been designated as IBA. The large birdcliff Salleq (70101), which earlier supported a large Brünnich's guillemot colony, is a breeding bird sanctuary with admission prohibited during the period from June 1 until August 31.

3.11 Upernavik region

DESCRIPTION: This region covers 3,5 degrees of latitude. The land between the inland ice and the open sea is rather narrow: about 100 km in the southern part and only a few km in the northern part. There are many fiords and straits between the islands, and offshore archipelagoes are numerous.

SURVEYS: Salomonsen visited the area in 1936 and in 1949 (Salomonsen 1943, unpubl. notes). In 1965, Joensen & Preuss (1972) surveyed a large part of the region. In 1974, P.G.H. Evans studied little auks (Evans 1981) on Appalersalik/Horse Head and he later published some information on colonial seabirds (Evans 1984a). He also prepared a report of his expedition (Evans 1974), but it was unavailable and has not been used in this review. During the 1980's many colonies were surveyed as part of the "Greenland Guillemot Project" (Evans & Kampp 1991, Kampp et al. 1994). In 1993, G. Gillchrist studied glaucous gull predation on Brünnich's guillemot in southern Upernavik and also surveyed some seabird colonies (Gillchrist pers. comm.). In 1994, GERI performed a survey along the outer coast of the region as far north as Nuussuaq/Kraulshavn. During aerial surveys of moulting eiders in 1994 and 1995 GERI also collected some information on seabird colonies.

Upernavik has been very well surveyed in recent years. However, there is a lack of recent information from the innermost parts of the area south of Tasiusaq settlement, where the land is rather wide. Taking account of the fact that many new colonies were found in 1994 (Tab. 7), it is likely that there are many more colonies in this region that still remain unrecorded.

COLONIES: The database records 165 seabird colonies in Upernavik region (Fig. 13, 14, Appendix I Tab. 11). Of these, GERI either visited or collected information from 126 in 1994. The guillemot project carried out in the 1980's provided information from a further 13 colonies. This leaves 26 colonies for which the available information probably is outdated (1965 or earlier). GERI found 88 new colonies in 1994, of which 26 only were observed from aircraft.

The most significant colonies are Apparsuit/Kap Schackleton (73010) with more than 150,000 Brünnich's guillemots; Kipakku (73009) and Apparsuit (72014) with several thousands guillemots; Timmiakulussuit (72011) with thousands of fulmars and Appalersalik/Horse Head (73013) with many little auks. Some islands or groups of islands are also noteworthy supporting several species and large numbers of birds. The most significant in this regard is Uigorluk/Lille Fladø (72040), which has a large ternery and a colony of little auks. Kitsissorsuit/Ederfugleøer (74001, 74002, 74003) off Nuussuaq/Kraulshavn is also very important. Here we find the northernmost breeding cormorants in Greenland, common eiders (although severely reduced since 1965), gulls, three species of auks and breeding snow geese.

The most widespread colonial species in Upernavik region are the glaucous gull and the black guillemot. There are small colonies of these species almost everywhere. The size of the black guillemot colonies range from a few pairs to several hundred pairs. There are many colonies with hundreds of black guillemot, a size which is rarely seen in other parts of West Greenland.

At least 25 cormorant colonies are scattered over most of the region. This is in contrast to the findings of Joensen & Preuss (1972), who found the cormorant colonies concentrated around the island of Nutaarmiut in the central part. The distribution of cormorants in Upernavik has definitely expanded since then. Of the 18 known breeding islands for common eider, GERI visited 15 in 1994, all of which had very few pairs. The population on Kitsissorsuit/Ederfugleøer (74001, 74002, 74003) had been greatly reduced (see p. 48-50). There are 27 kittiwake colonies, some with several thousand pairs, but most with a few hundreds or less. Seventeen were surveyed in 1994. Two had been deserted since 1965, but on the other hand, two kittiwake colonies had been established in gull colonies which were without kittiwakes in 1965.

The Iceland gull is widespread in the region. At least 15 colonies are registered in the database. In 1965, Joensen & Preuss (1972) found the northernmost breeding sites at 73° 30′ N. We found colonies as far north as 74° 12′ N in 1994.

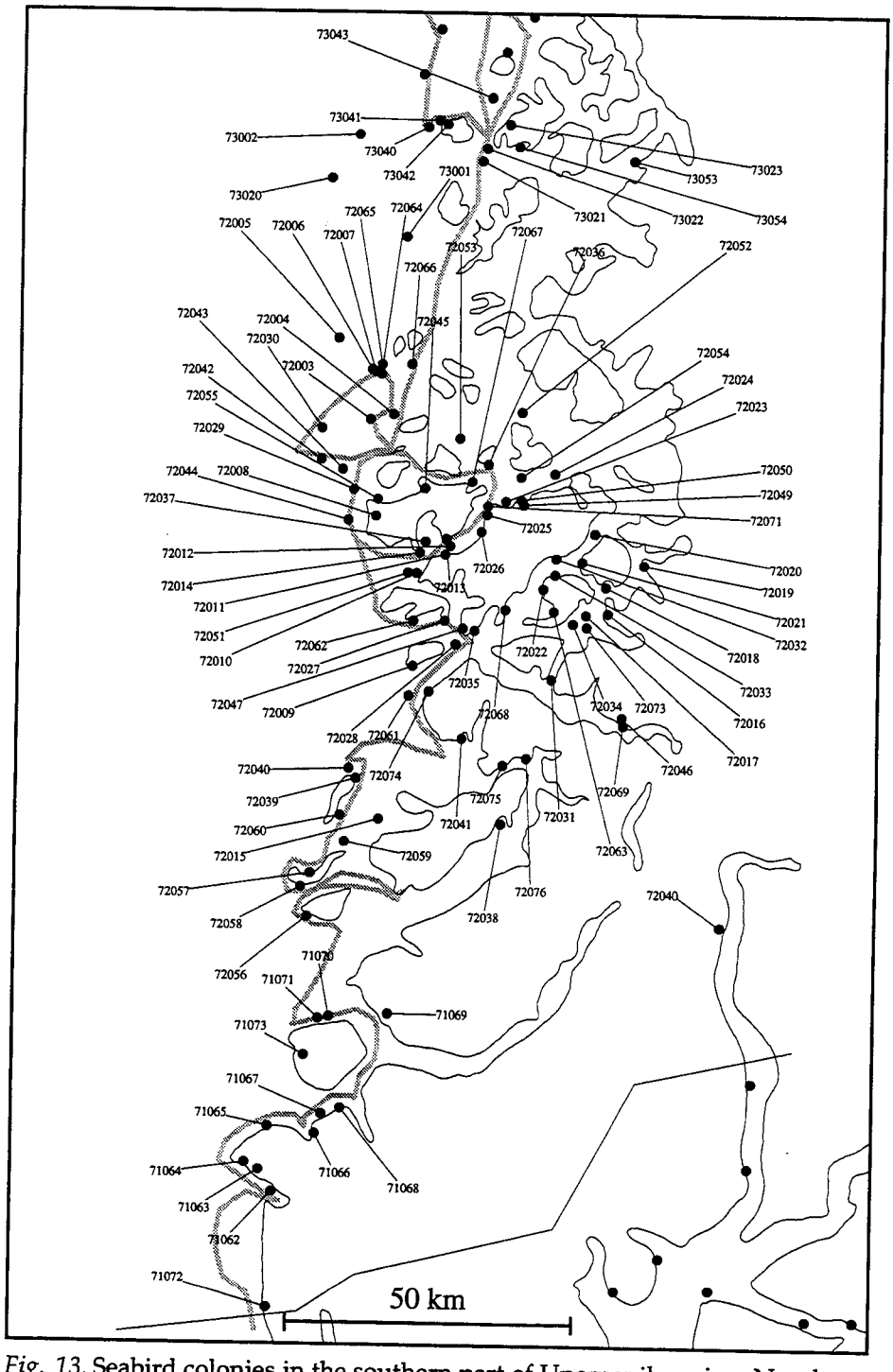


Fig. 13. Seabird colonies in the southern part of Upernavik region. Numbers refer to the code numbers in the database and Appendix I Tab. 11. Grey line indicate route sailed by GERI in 1994.

The breeding range of great black-backed gull has expanded since 1965 and the 1980s and it is now a common and widespread breeder in Upernavik region. We recorded 26 breeding sites in 1994, of which 17 are included in the database. The northernmost breeding pairs was found on Kitsissorsuit/Ederfugleøer (74001, 74002, 74003).

Razorbills and puffins are widespread. The database records 44 razorbill colonies and 17 puffin colonies. The puffin colonies are found on islands off the outer coasts or on steep cliffs facing the open sea. The razorbills are found in the same sites as well as in the fiords.

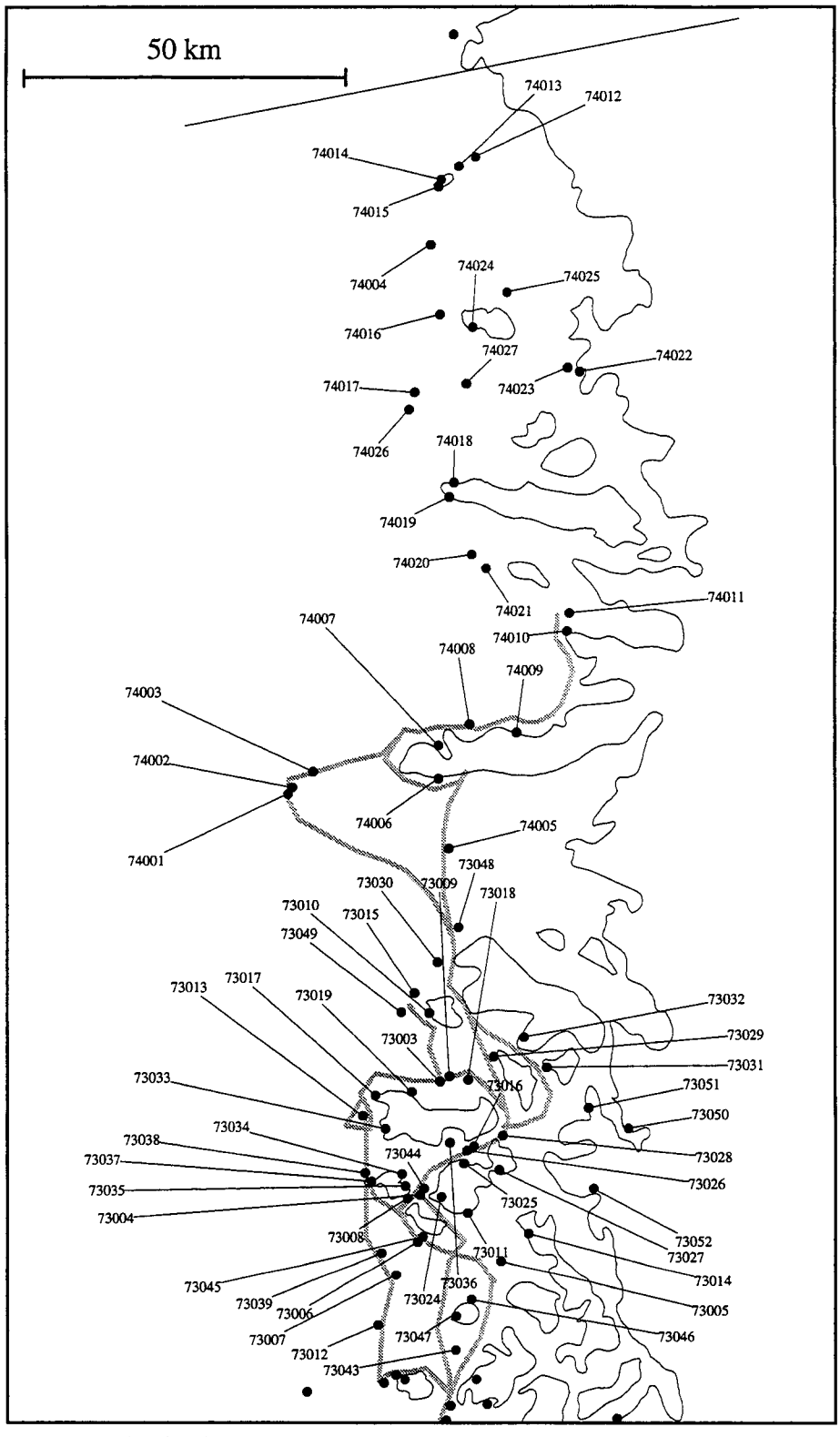


Fig. 14. Seabird colonies in the northern part of Upernavik region. Numbers refer to the code numbers in the database and Appendix I Tab. 11. Grey line indicate route sailed by GERI in 1994.

IMPORTANT AREAS FOR BREEDING SEABIRDS: Upernavik is very rich in seabirds compared to the regions further south in Greenland. There are several large colonies and numerous small colonies scattered all over the region. Species diversity is high, with 13 colonial species breeding in the region.

The most important areas during the breeding season are the waters to the west and south of Upernavik town, the waters around

Fladøerne and around Kitsissorsuit/Ederfugleøer and the waters from Apparsuit/Kap Schackleton southwards to 73°15' N.

REGULATIONS ETC.: Several colonies have been designated as IBA's: 72005, 72008, 72011, 72013, 72014, 72015, 72039, 72040, 72043, 72044, 73002, 73007, 73010, 73012, 73013, 73019, 74001, 74002 and 74003. Some of these are also breeding bird sanctuaries with prohibited admission from June 1 until August 31: 72005, 72008, 73007 and 73010.

3.12 Avanersuaq region

DESCRIPTION: This region extends from Qimusseriarsuaq/Melville Bugt in the south to Sermersuaq/Humboldt Gletscher in the north, and includes Inglefield Land. The southern part is dominated by large glaciers which meet the sea in Qimusseriarsuaq/Melville Bugt for over more than 250 km of the coastline. The central and northern parts have large land areas with two long and wide fiords (up to c. 150 km long) and several lesser fiords. There are many islands, particularly in Qimusseriarsuaq/Melville Bugt and off Inglefield Land. There is also a small group of islands (Kitsissut/Carey Øerne) far off the mainland.

SURVEYS: The knowledge of seabird colonies is fragmentary. Salomonsen visited the area several times, most recently in 1978. Some of his early information has been published (Salomonsen 1950). Thing (1976) published some data on seabirds from a visit in 1975. Vaughan (1988) has published some (rather misleading) information from a brief visit in 1985. Kampp (1990) surveyed the breeding colonies of Brünnich's guillemot in 1987. In 1994 and 1995 GERI made an aerial survey of moulting eiders, and obtained some information on seabird colonies a.o. the distribution of the little auk colonies.

A survey of seabird colonies is necessary for the entire region. Particularly is a common eider colony survey needed as well as an estimate of the huge little auk population size.

COLONIES: The database records 77 seabird colonies in this region (Fig. 15, Appendix I Tab. 12). There are probably many more colonies not yet recorded, particularly glaucous gull, black guillemot and Arctic tern colonies. For example in August 1994 and August 1995 GERI found 18 and 23 new colonies respectively, during aerial surveys for moulting eiders.

There is almost no information from the north coast of Inglefield Land in the database. This is mainly caused by lack of ornithological activity. A few tern colonies were observed during aerial surveys in 1995. There are probably more colonies of seabirds along this coast. For example of black guillemot, which is recorded as breeder further north in Washington Land (Salomonsen 1950).

The most significant colonial seabird in Avanersuaq region is the little auk. In 1994 and 1995 colonies were recorded (Boertmann & Mos - bech unpubl.) on the coast of northern Qimusseriarsuaq/Melville Bugt from Nallortup Nuua/Kap Melville to Innaanganeq/Kap York

and further westwards to Kangaarsuk/Kap Atholl (c. 95 km coast with colonies), at Kiatak/Northumberland Ø and Apparsuit/Hakluyt Ø (c. 35 km coast with colonies), and along the coast from Siorapaluup Kangerlua/Robertson Fjord northwards to Iita on westernmost Inglefield Land (c. 65 km coast with colonies).

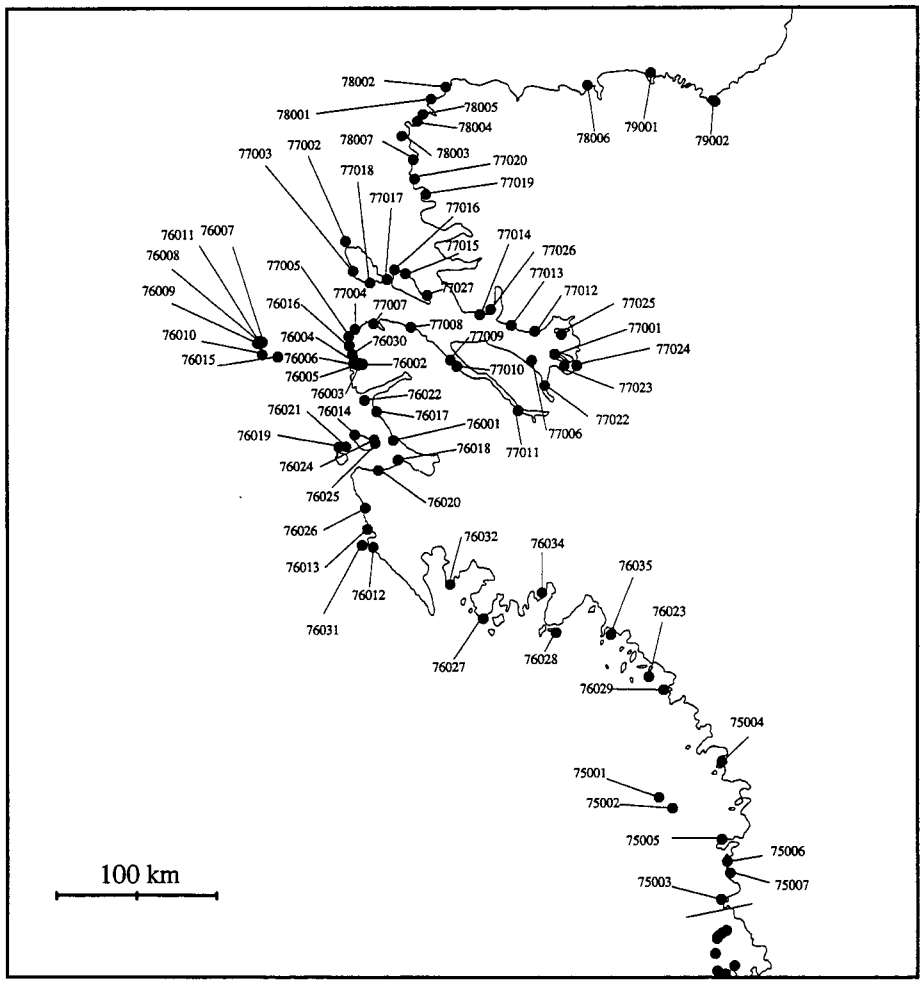


Fig. 15. Seabird colonies in Avanersuaq region. Numbers refer to the code numbers in the database and Appendix I Tab. 12. Little auk colonies are not included, see Fig. 38.

The most significant seabird colonies in Avanersuaq region apart form the little auk colonies are at Appat Appai (76012), Issuvigsuup Paava/Parker Snow Bugt (76013), Appat/Saunders Ø (76014) and Apparsuit/Hakluyt Ø (77002). All are large and mixed colonies with several tens of thousands of Brünnich's guillemots and thousands of kittiwakes. Other species are present in lower numbers. The islands Kitsissut/Carey Øerne (76009, 76010, 76011 and 76015) also support some Brünnich's guillemot colonies. Common eiders are abundant, and many large colonies up to 10,000 pairs (Salomonsen 1950) have previously been observed on small islands. Their present status is largely unknown. Thousands of eggs were still collected during the 1970's on islands off western Inglefield Land (Thing 1976, Born 1987).

IMPORTANT AREAS FOR BREEDING SEABIRDS: In summary, the central Avanersuaq region is very rich in colonial seabirds, while the northern part (most of Inglefield Land) and the southern part (Qimusseriar-

suaq/Melville Bugt) have very few colonies, which mainly are small colonies of black guillemots and glaucous gulls.

The waters along the entire outer coats from Nallortup Nuua/Kap Melville in the south to Foulke Fjord in the north, including the waters around Kitsissut/Carey Øerne, support huge numbers of colonial seabirds during the breeding season. This area supports more than 99 % of the Baffin Bay population of little auks, as well as 53 % of the breeding Brünnich's guillemots in Greenland.

REGULATIONS ETC.: The colonies on Sabine Øer (75001), Balgoni Øer (76023 and 76029) and Sorte Fjeldvæg (76028) fall within the Qimusseriarsuaq/Melville Bugt nature reserve, where admission and hunting in general is prohibited. Lion Øer (77001) is a breeding bird sanctuary with prohibited admission from June 1 until August 31. Appat Appai (76012), Issuvigsuup Paava/Parker Snow Bugt (76013), Appat/Saunders Ø (76014), Kitsissut/Carey Øer (76008, 76009, 76010, 76011 and 76015), Apparsuit/Hakluyt Ø (77002), Lion Øer (77001), Sabine Øer (75001), the Booth Sund area (76002, 76003, 76004, 76005, 76006 and 76030), Igannaq/Dalrymple Rock (76019) and Qeqertaarsuit (76021) are all designated as IBA's.

3.13 Description of colonies

This section gives a summary of some characteristics of the seabird colonies in Greenland. Tab. 1 and Figs. 16 and 17 are based on material from all over Greenland, rather than just the region covered by this report. Although colonies outside the region comprise only about 16 %. The information presented is derived from the database.

Type	Number
Steep seafacing cliff	857
Steep lakefacing cliff	6
Canyon	6
Scree	8
Small island	297
Small island in lake or river	3
Low coast	14
Low coast at lake	1
Total	1192

Table 1. Short description of seabird colonies from all of Greenland.

The majority of the colonies are described as placed on steep more or less vertical cliffs (Tab. 1). Only six colonies have been reported as being situated above a lake, and all of these are colonies of Iceland gull and/or glaucous gull. There are probably more unrecorded colonies present above lakes, because these are easily missed during shipborne surveys. The colonies described as being in canyons are

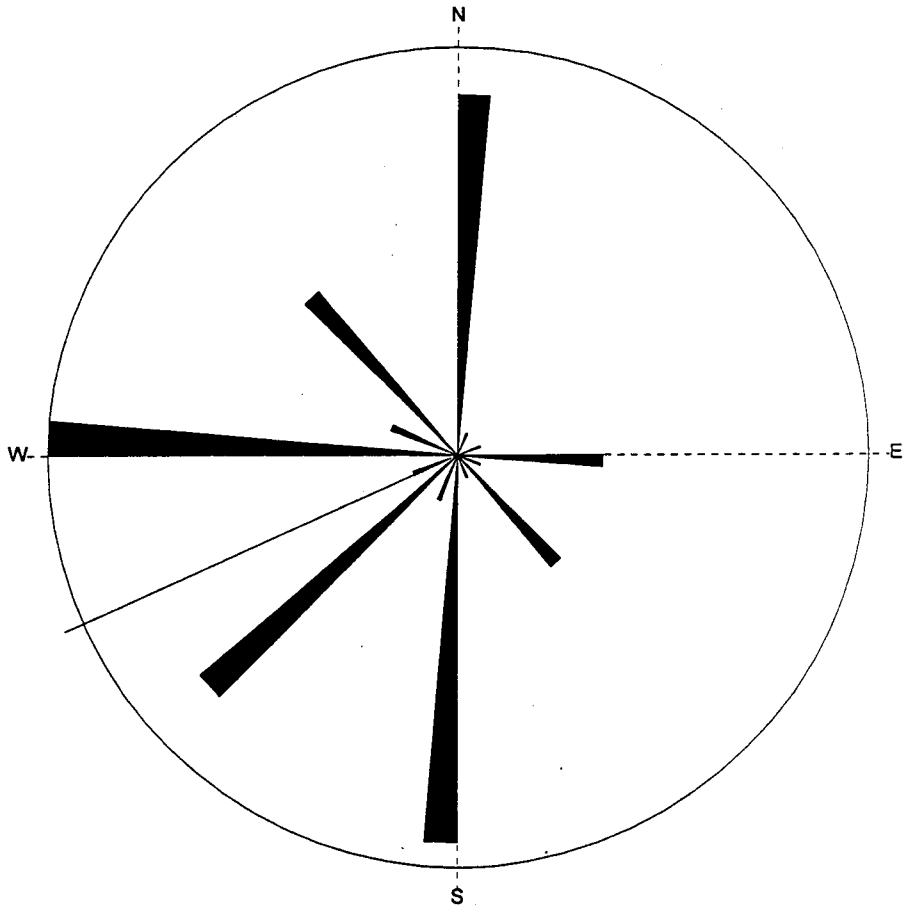


Fig. 16. Orientation of 182 Greenland seabird colonies placed on more or less vertical cliffs. Mean orientation is shown by a thin line (approx. WSW).

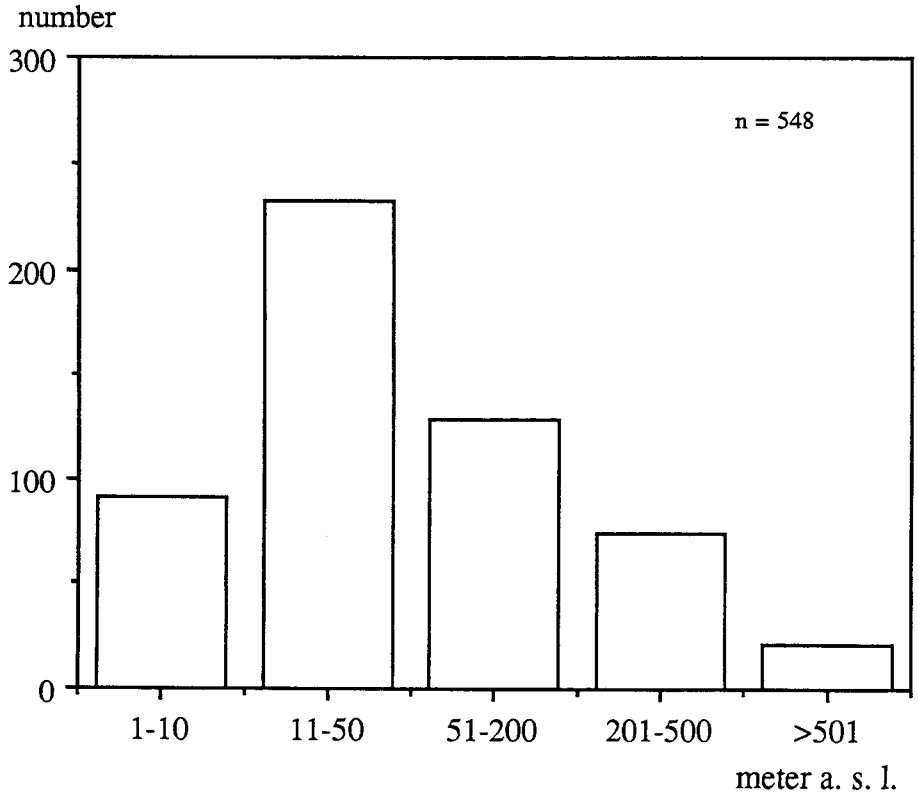


Fig. 17. Height distribution of 548 Greenland seabird colonies.

also placed on steep cliffs. Only eight colonies are placed in screes or

sloping talus. The large little auk colonies in Avanersuaq region, mainly in screes, are not included in this figure.

Only 182 of the colonies placed on more or less vertical cliffs or screes (total n = 887) are annotated with their respective orientations (Fig. 16).

The height of 548 colonies on steep cliffs or screes are classified into 5 ranges (Fig. 17). These figures only refer to the height of the topmost nests of any species in the colony, and the database gives no information with respect to the height of nests of individual species within colonies. The very high colonies (> 500 m a.s.l.) are usually fulmar colonies or gull (Iceland, glaucous or ivory) colonies.

4 Species account

4. 1 Northern fulmar *Fulmarus glacialis*

DISTRIBUTION: The fulmar is widespread and very numerous in the North Atlantic. Breeding colonies are found in Franz Josef Land, Svalbard, Norway, Iceland, the British Isles, Jan Mayen, Greenland and Canada. There is also a population in the northern Pacific. The North Atlantic fulmars are often divided in two populations: an arctic and a boreal which sometimes are regarded as subspecies (e.g. Carboneras 1992). The boreal population has undergone a considerable population increase and range extension during recent centuries (Fisher 1952). The colonisation of southern West Greenland in the middle of this century is interpreted as a result of this increase by Salomonsen (1979a).

Fig. 18 shows the distribution of colonies in western Greenland.

In East Greenland, colonies are found in the mouth of Kangertittivaq /Scoresby Sund (a few colonies with a total of less than 1000 pairs (Meltofte 1976)), on the coast close to the Northeast Water Polynya (six colonies with in total c. 2550 occupied nest sites (Falk & Møller 1995) in eastern North Greenland, and at a single site on the Northeast Greenland coast (Hvalros Ø, 150 birds (Stemmerik 1990)).

POPULATION SIZE: It is very difficult to count or estimate the number of breeding pairs in the very large colonies in western Greenland. Nests are scattered over long coast lines and at a considerable height above the sea level. For example, the largest colony in Greenland is more than 10 km long. Some of the colonies in Uummannaq reach a height of about 1000 m a.s.l. Another factor contributing to confusion is the fact that many non-breeders attend the colonies. The numbers presented in the appendix Tabs. 9 and 11 for the large colonies, except 69062, are crude estimates (most likely underestimates) which probably only indicate orders of magnitude. The population size (66,000-84,000 indvs corresponding to at least 21,000 pairs) of the largest colony in Greenland (69062) is based on counts of the daily feeding migration to and from the colony (Petersen 1996), and it is

Fig. 18. Breeding distribution of northern fulmar in western Greenland. ? indicate a site where a few fulmars have been observed on land, although without proof of breeding.

probably fairly accurate. The total population in western Greenland is estimated to be at least 80,000 pairs, although it is probably much larger (Tab. 5). Our estimate is much lower than Salomonsens (1967) estimate of >200,000 pairs. This does not necessarily indicate a population decline, but rather different methods of estimating.

There are several colonies in the Canadian arctic, mainly on Baffin Island and around Lancaster Sound, with an estimated 350,000 pairs (Brown 1986). Tucker & Heath (1994) estimated the European population (Greenland included) to be > 1 million pairs.

POPULATION CHANGES: It is not possible to draw any conclusion regarding population changes in the large colonies north of 68°N due to incomparable estimates and counts.

The small colonies in southern Greenland, on Kitsissut Avalliit (60012) and in the northern Paamiut region (62004, 62005), were established around 1945 and 1966 respectively (Salomonsen 1979a). The Paamiut colony (62004) reached a maximum of about 50 pairs in 1975 (Salomonsen 1979a), and since then have declined to 11 indvs in 1992 and none in 1993 and 1995 (B. Knudsen unpubl.). The counts on Kitsissut Avalliit (60012) do not conclusively indicate any changes in population size (Kampp & Falk 1994).

POPULATION STATUS : Based on the population numbers mentioned above, the western Greenland population comprises about 6 % of the entire North Atlantic population.

HUMAN EXPLOITATION : The fulmar is only hunted locally in Greenland and at a very small scale. Hunting, which usually is aimed at newly fledged juveniles, takes place in the regions with large colonies: Uummannaq and Qeqertarsuaq (Salomonsen 1950, Kampp & Kristensen 1980b). The fulmar is regarded as inedible in most other parts of Greenland. In Avanersuaq region fulmars are hunted outside the summer period (Dietz 1986).

4.2 Great cormorant *Phalacrocorax carbo*

DISTRIBUTION: The great cormorant is widely distributed in Europe, Asia, Africa and Australia. There are only two small populations in the Nearctic region: one in West Greenland and one in the Gulf of St. Lawrence and Maine in western North America. Several subspecies have been described. The Nearctic population is referred to subspecies *carbo*, which breeds elsewhere in Iceland, the British Isles, Northwestern France, Norway and the Kola Peninsula of Russia (Cramp & Simmons 1977).

Today, cormorants only occur on the west coast of Greenland. However, at least a single colony was known to be present in the southern part of the east coast last century (Helms 1926). The majority of the population is found in Nassuttooq/Nordre Strømfjord, in the Disko Bugt area and in Upernavik region (Fig. 19). There are no colonies in the large Uummannaq Fjord complex. The Greenland population stays within Greenland year round (Salomonsen 1967), and is probably isolated from the neighbouring

Fig. 19. Breeding distribution of great cormorant in western Greenland. ? indicate some probable breeding colonies. Colonies not surveyed during the past 25 years are shown as with unknown numbers.

populations in Iceland and Canada. This, and the fact that it is comparatively small, makes the Greenland population vulnerable.

POPULATION SIZE: Cormorant colonies are generally easy to survey, because the individual nests are readily seen and the number of pairs (apparently occupied nests) are small, rarely exceeding 50. The number of pairs recorded in the database is about 1970 pairs in 106 colonies (Tab. 4). This number is most likely lower than the current number of breeding pairs, because several probable cormorant colonies were observed from the air in Upernavik region and the interior Kangaatsiaq region; colonies which are not recorded in the database. We estimate the breeding population to be between 2000 and 3000 pairs.

The Norwegian population was estimated at 24,000 pairs in 1992 (Debout et al. 1995), and has been increasing since the 1980's (Røv & Strann 1986). The Icelandic population is now estimated at 2200 pairs and is declining (Æ. Petersen pers. comm.). The British and Irish population was estimated at 11,700 pairs in the 1980's, with some subpopulations decreasing and some increasing (Lloyd et al. 1991). The Russian population on the Kola peninsula was recently estimated at 1300 pairs (J. Krasnov & T. Paneva via V. Bakken pers. comm). The southernmost population in the palearctic region, which is located in northwestern France, was estimated at about 1600 pairs in 1988 (Debout et al. 1995). The most recent account of the Canadian colonies makes up to a total of about 6300 pairs, and it appears to be increasing (Erskine 1992, Lock et al. 1994). The U.S. population in Maine counted 165 pairs in 1994 (J. Drury pers. comm.). The total population of subspecies *carbo* comprises about 50,000 pairs.

POPULATION CHANGES: We assume that the different surveys of the colonies recorded in the database are rather accurate, and that comparisons between counts in different years can be made. The development in colonies, surveyed more than once, seem to be slightly positive (Fig. 20). However, this trend is not statistical significant (Wilcoxon matched-pairs signed-rank test, $p > 0{,}025$).

In recent times only four colonies have been abandoned (or were at least without birds during the most recent survey). All were close to towns or the main inshore sailing routes.

Cormorants were exterminated in the southern part of western Greenland (Nuuk and southwards) in the beginning of this century (Salomonsen 1967). This part of Greenland seems now to be recolonised: in Nuup Kangerlua/Godthåb Fjord (64019) cormorants had started (1986) to breed in a colony which was abandoned early this century (Nicholson 1930, Oldenow 1935, Boertmann unpubl.). Further to the south two adults in company with two juveniles were observed on Kitsissut Avalliit (60012) in 1992, suggesting a local breeding pair (Kampp & Falk 1994).

The colonies on the south coast of the tip of Nuussuaq and on Qeqertarsuatsiaq/Hareø (Uummannaq region) are probably new. They were not depicted on distribution maps presented by Salomonsen (1974, 1979b), and were not discovered until 1989 (Bennike 1990).

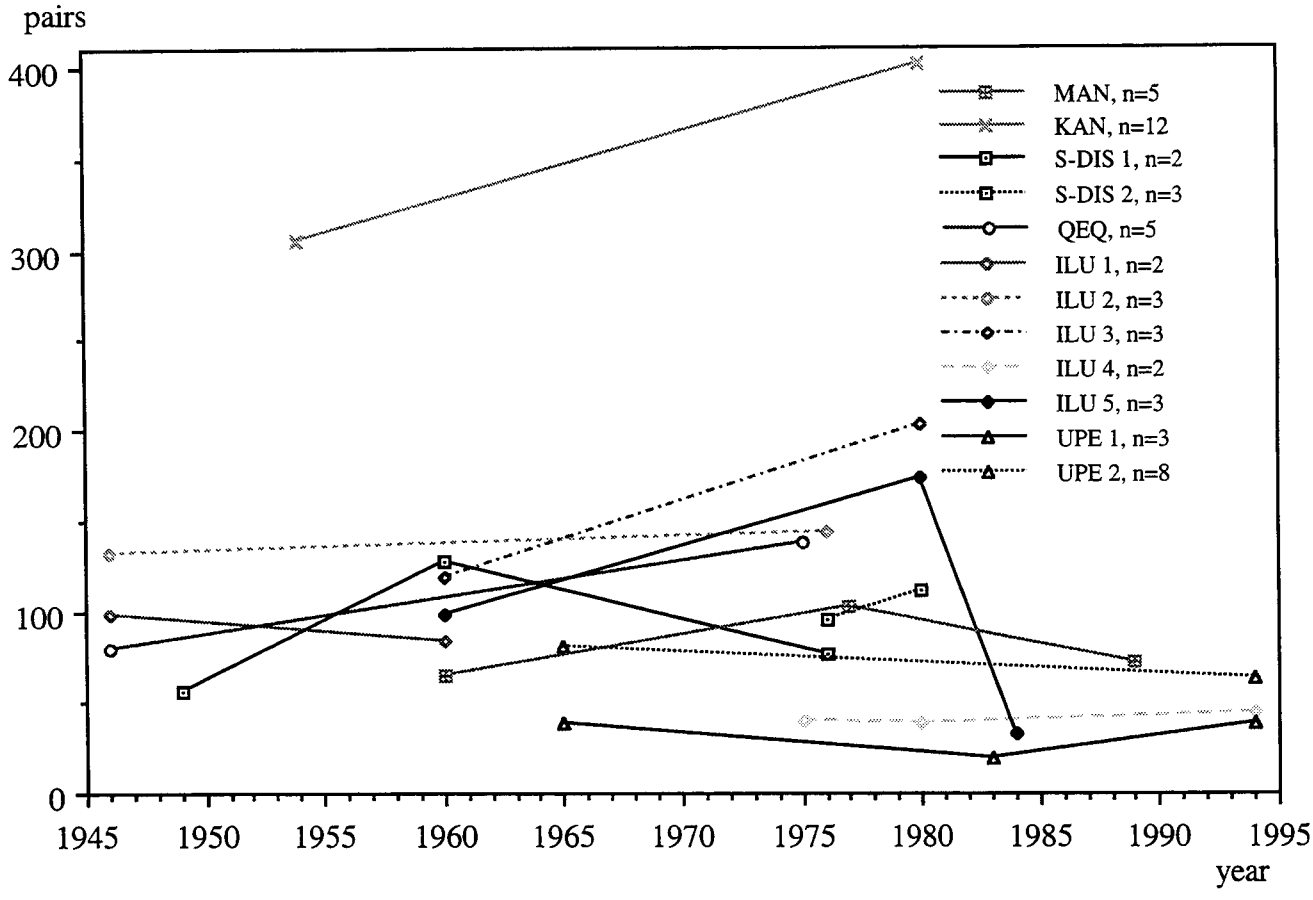


Fig. 20. Trends in numbers of breeding pairs of great cormorant in the regions of Maniitsoq (MAN), Kangaatsiaq (KAN), Southern Disko Bugt (S-DIS) and Ilulissat (ILU). Colonies from the same region and surveyed the same years are pooled.

Further north, in Upernavik, the northernmost great cormorant population in the world is found. Many colonies in Upernavik were surveyed in 1965 (Joensen & Preuss 1972). During the GERI survey in 1994, seven new colonies were found on coasts which were previously surveyed in 1965, mainly to the north of the previously known breeding range. Additional four colonies were found on coasts, which were not surveyed previously, and twelve probable breeding colonies were identified during aerial surveys in late august 1994 and 1995.

In summary, the cormorant population in Greenland has extended its breeding range considerably and this fact indicates a general population increase.

POPULATION STATUS : Based on the above mentioned figures, the western Greenland population represents 4-6 % of the total North Atlantic population. The Greenland population is of conservation concern, because it is small and probably isolated from the other North Atlantic populations.

HUMAN EXPLOITATION : Although cormorants were a popular hunting target in the past (Salomonsen 1967), it is our impression that the hunting pressure has decreased in recent decades. A reduced hunting

pressure could very well explain the population increase indicated above.

4.3 Common eider *Somateria mollissima*

DISTRIBUTION: The common eider has a holarctic distribution, and breeds along most of the arctic coasts. Its distribution extends southward into the temperate region. Several subspecies have been described. The Greenland population is referred to subspecies *borealis*, which is found in most of the arctic part of the northern Atlantic: Eastern Canada, Iceland, Svalbard and Franz Josef land (Cramp & Simmons 1977). All eiders breeding in western Greenland probably winter in the open water area off southern West Greenland (Salomonsen 1967).

The distribution of breeding colonies in western Greenland is depicted on Fig. 21. However, eiders are also solitary breeders, and as such usually not recorded in the database, unless they occur in colonies of other seabirds.

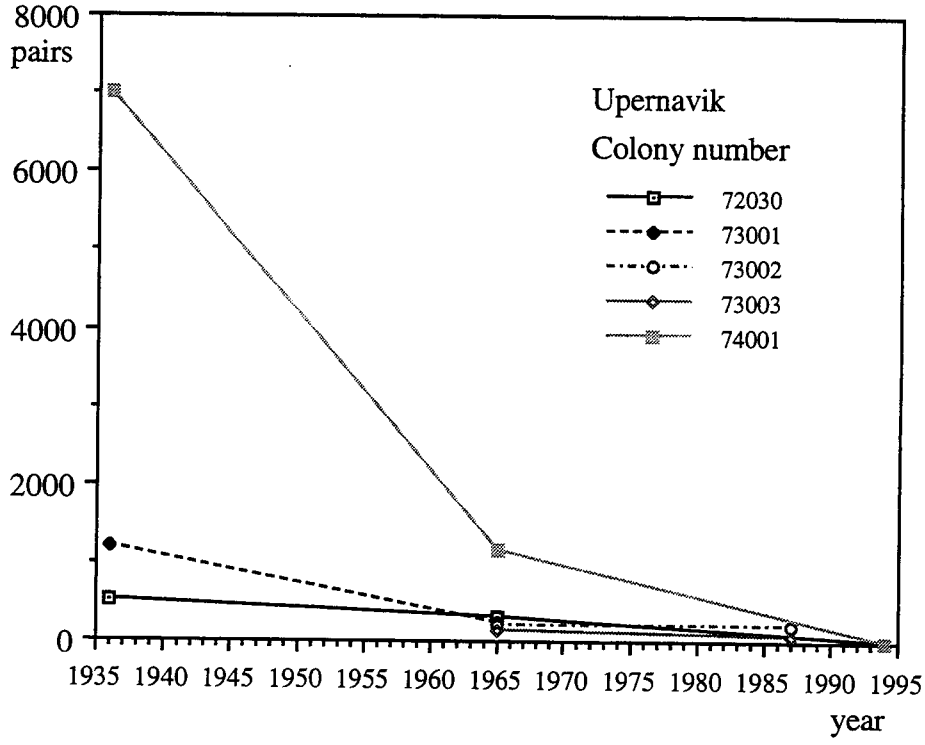
POPULATION SIZE: It is not possible to estimate the breeding population in western Greenland with the information available. The numbers recorded in the database, are not adequate or are out of date, and the total number of the most recent counts is less than 10,000 pairs (Tab. 4), which probably is far below the real numbers. The current population size is probably in the magnitude order of 10,000 - 100,000 pairs, with the majority breeding in Avanersuaq region.

The recorded colonies in Northeast Greenland support a few thousand pairs (Meltofte 1978, Forchhammer 1990, Falk et al. in press). In early June, more than 10,000 common eiders were observed near Kangikajik/Kap Brewster in the mouth of Kangertittivaq /Scoresby Sund (Kampp et al. 1986). These were probably birds on spring migration to breeding areas in Northeast Greenland, indicating larger population than mentioned above.

Abraham & Finney (1986) estimated the Canadian population of subspecies *borealis* at a minimum of 92,150 pairs. The population on Svalbard is estimated at 13,500-27,500 pairs (Prestrud & Mehlum 1991). In Iceland, the number of breeding pairs was estimated at 253,000 in 1990 (Skarphedinsson in prep.). There are probably three more or less discrete Arctic Atlantic populations: a Baffin Bay population (western Greenland, eastern Arctic Canada), a Northeast Greenland and Iceland population (once considered as a separate subspecies, see Meltofte 1978) and a Svalbard population.

POPULATION CHANGES: The common eider was formerly a very abundant breeder in western Greenland. Salomonsen (1950) and Vibe (1967) described a drastic decline in the breeding population at the turn of the century. The main reason for this decline was ascribed to human persecution (Salomonsen 1950), but Vibe (1967) argued that there was a strong climatic/oceanographic component as well.

Fig. 21. Distribution of common eider breeding colonies in western Greenland. Colonies not surveyed during the past 25 years are shown as with unknown numbers.



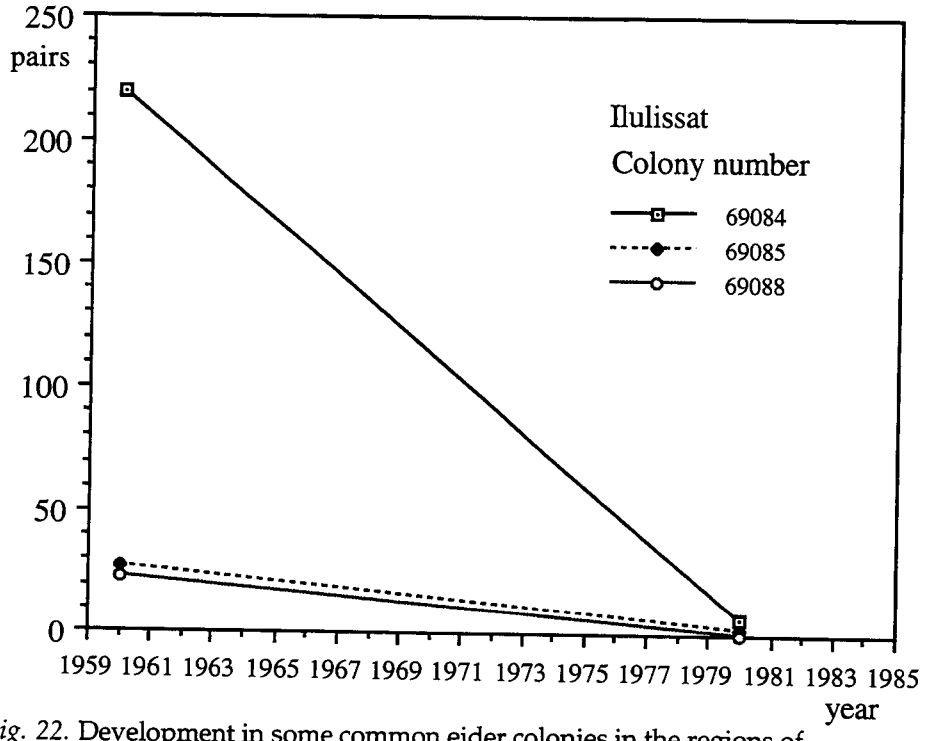


Fig. 22. Development in some common eider colonies in the regions of Upernavik and Ilulissat. Note that the horisontal axes have different scales.

There is only very little quantitative information available from common eider colonies to elucidate population trends: Three colonies in Ilulissat (69084, 69085, 69088) were counted in 1960 by F. Salomonsen. He revisited the same colonies in 1980 on approx. the same date as in 1960. The total population had declined from 266 nests to 8 nests in 1980 (Fig. 22). However, two counts are not conclusive. Nevertheless, a population decline is been supported by a third survey of the same fiord in 1984 (Riget 1985), where only a few eiders were recorded and the breeding population in the whole fiord area was estimated at 40 pairs.

In Upernavik five colonies have been surveyed on two or more occasions (Fig. 22): F. Salomonsen visited or got information on breeding numbers in several colonies in 1936. Three of these (72030, 73001, 74001) were recounted in 1965 (Joensen & Preuss 1972), and some again in 1994 by us (72030, 74001): Two colonies were surveyed by Joensen & Preuss (1972) in 1965 and again in 1987 during the "Greenland Guillemot Project". Population changes are best documented on Kitsissut/Ederfugleøer (74001) in the northern Upernavik region: In 1936, the colony was estimated at 7000 pairs. When Joensen & Preuss (1972) surveyed the islands in 1965 they found 1153 nests and estimated that there were 1425-1650 pairs breeding on the islands. In 1994, we visited the islands. Although we did not survey the islands completely, we could conclude that the eiders were nearly exterminated. We observed about 10 brooding females or females with newly hatched chicks. Moreover, there were hundreds of empty nest scrapes, which had not been used for many years. Koch (1945) described how eider colonies were heavily exploited in Upernavik during 1916-23.

Today, common eider is known to breed rather abundantly in archipelagoes off the outer coast in Nuuk (64006, 64030), in Sisimiut (66205) and Upernavik (73002). These sites are extensive archipelagoes where the eiders breed dispersed on the islands. These rather loose colonies may each hold some hundred pairs as a maximum. Large colonies are also found in Avanersuaq, particularly in the northern part on the small islands off Inglefield Land (Rasmussen 1921, Thing 1976, Born 1987). However, these colonies have never been surveyed thoroughly. Large colonies were previously found in the northern head of Afersiorfik in Kangaatsiaq region (68100-68102, 2000-3000 nests in 1954), in Qeqertanguaq (70009, 300 pairs in 1920) and Itsakuarsuk (100 pairs in 1920), both in Uummannaq as well as on Kitssissut (73001, 229 pairs in 1965) and Kingittortallit (73020, 700 pairs in 1936) both in Upernavik. The status of most of these formerly large colonies is unknown to day. During surveys for moulting eiders in early September 1995, numerous females with pulli were seen in the interior parts of Upernavik as well as in the northern head of Afersiorfik Fiord. These observations indicate that there are unknown colonies (or many scattered breeders) in Upernavik, and that the population in the large colonies in Afersiorfik might be more or less intact.

A survey of all known colonies in western Greenland is strongly needed mainly to get an overview of the current population size, but also as baseline information for future management and monitoring programmes.

POPULATION STATUS : It is not possible with the available information to assess the western Greenland proportion of the Baffin Bay common eider population, but it is obviously significant.

HUMAN EXPLOITATION : Eiders (both common and king) and Brünnich's guillemot are the most exploited bird species in Greenland (Kapel & Petersen 1982). The reported bag record for 1993 was 81,756 eiders (Namminersornerullutik Oqartussat/Grønlands Hjemmestyre 1995). However, an unknown and probably large proportion of the eiders

shot in Greenland are not reported. The annual catch of eiders (both species combined) was estimated at 150,000 in the beginning of the century, and at 144,000 in the period 1948-1951 (Kapel & Petersen 1982). The West Greenland waters are winter quarters for eiders of Canadian origin, and their contribution to the harvest is unknown.

Eggs and down are collected in the large colonies in Avanersuaq region during late June. Born (1987) estimated that 2000-2500 eggs were collected on a trip to the islands off Foulke Fjord in Inglefield Land, while Thing (1976) estimated that 3500-4000 eggs were collected on the same island some years earlier.

Egg and down collecting was previously widespread in the colonies south of Melville Bugt (Salomonsen 1950). But due to the reduced size of the colonies there, egging now are performed only on an opportunistic basis and down collecting has probably ceased completely.

Common eiders have been legally protected from hunting during the summer period since 1924. However, this regulation is, in general, not observed, and eiders are still shot in many areas during the breeding season.

4.4 Sabine's gull *Larus sabini*

DISTRIBUTION: Sabine's gull has a disjunct circumpolar arctic distribution. In Greenland, the breeding distribution is restricted to the high-arctic region (Forchhammer & Maagaard 1990). Although it may have bred in Disko Bugt region during last century (Salomonsen 1967).

In the region covered by this report, Sabine's gull is known from five small islands in Avanersuaq region (Fig. 23). The Sabine Øer in Qimusseriarsuaq /Melville Bugt (75001) support a colony with 20-30 pairs in 1979 (Forchhammer & Maagaard 1990), and at least 5 adults were seen there in late August 1994 during an aerial survey (GERI unpubl.). During the same survey, at least 3 adult Sabine's gulls were seen on an unnamed island 10 km southeast of Sabine Øer. Two colonies are found in the head of Kangerlussuaq/Inglefield Bredning: 3-4 pairs were recorded in 1978 on Lion Øer (77001) and 10 pairs on Qimmiuneqarfik (77006) off the abandoned settlement Killiit in 1939 (Forchhammer & Maagaard 1990). Lion Øer were overflown during the eider survey in 1994 (GERI unpubl.), but no Sabine's gulls were seen. There were, however, many Arctic terns and Sabine's gulls could easily have been missed. Forchhammer & Maagaard (1990) report another breeding site in Marshall Bugt at Inglefield Land, where C. Vibe saw at least one breeding pair in 1941. No Sabine's gulls were seen at this site when it was overflown in August 1995. However, terns were abundant, and a few Sabine's gulls may easily have been overlooked.

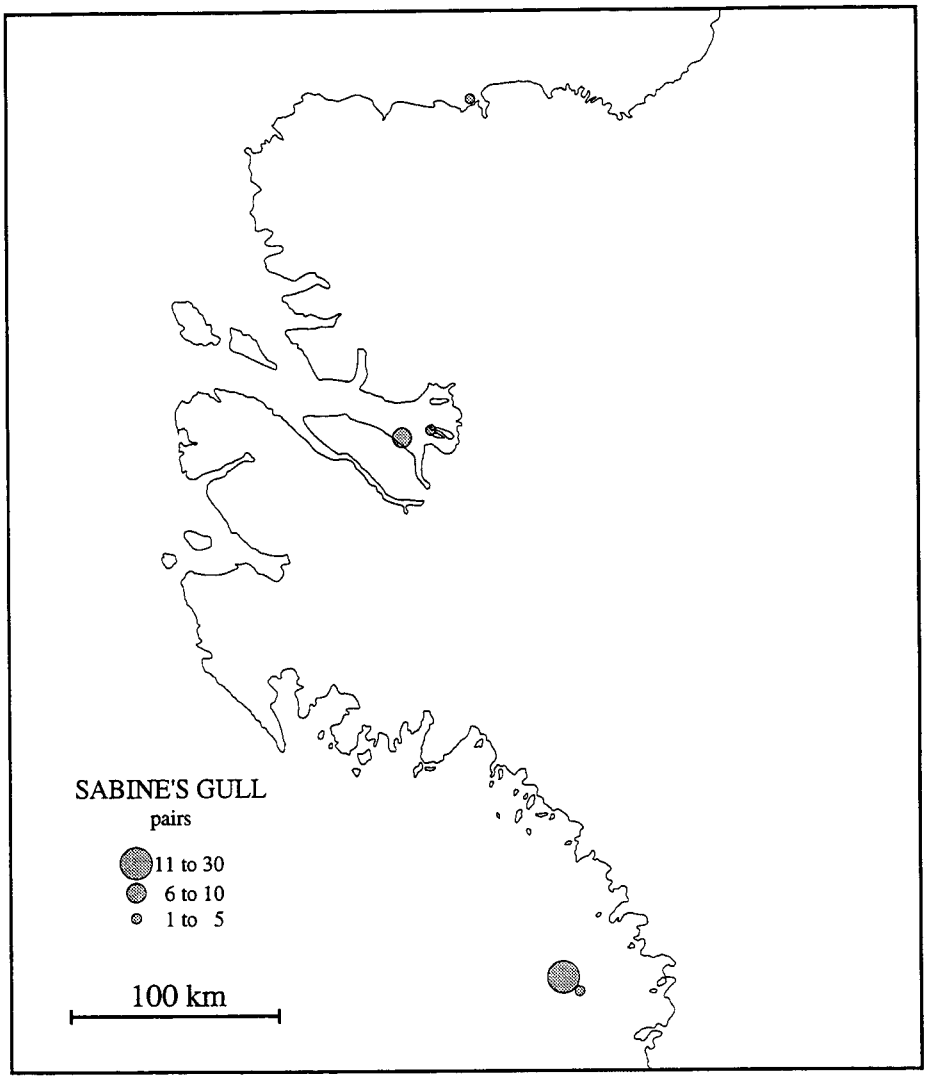


Fig. 23. The breeding distribution of Sabine's gull in western Greenland

POPULATION SIZE: The total number of breeding pairs in western Greenland is about 65 pairs, according to the most recent surveys recorded in the database (Tab. 4). We estimate the population at 75-100 pairs in good breeding years. We have no information on population changes. However, the population size probably fluctuates like in Northeast Greenland.

The Northeast Greenland population is in good breeding years larger than the population in western Greenland, and it may number a few hundred pairs (Forchhammer & Maagaard 1990).

POPULATION STATUS : The western Greenland population is small and marginal compared to the population in Canada and Alaska.

HUMAN EXPLOITATION : The Sabine's gull is fully protected in Greenland. However, some are shot occasionally, and eggs may be collected.

4.5 Black-headed gull *Larus ridibundus*

DISTRIBUTION: The Black-headed gull is distributed from Greenland, in the west, through Europe and northern Asia to Kamtjatka peninsula, in the east. Its breeding range has increased towards the north and west during this century. The immigration of the black-headed gull to Greenland has been described in detail by Salomonsen (1979a). Breeding has been recorded in South Greenland since the mid-1960's. Single pairs or small colonies have been found on islets and islands in lakes and protected fiords. Single breeding pairs have occasionally been recorded as far north as Nuuk.

POPULATION SIZE: The Greenland population fluctuates in size from year to year. In some years it is likely that no black-headed gulls breed, while in other years up to 20 pairs may breed. The largest number of pairs in a colony was 10-12 recorded in 1970 in Tasiusaq north of Qassiarsuk in Qaqortoq region (Salomonsen 1979a).

POPULATION STATUS : The western Greenland population is very small and marginal compared to the Palearctic population.

HUMAN EXPLOITATION : Fully protected. However, occasionally some are shot and eggs may be collected.

4.6 Lesser black-backed gull *Larus fuscus*

DISTRIBUTION: The main breeding distribution of the lesser black-backed gull is in Iceland, northwestern and northern Europe, and in the northern part of Asia as far east as the Taimyr peninsula. Several subspecies are recognised. The British and Icelandic subspecies (*graellsii*) is the most frequent subspecies occurring in Greenland. It has been recorded with increasing frequency during the recent decades, and breeding was proved for the first time in 1990 (Boertmann 1992).

During GERI's seabird colony survey in 1992, lesser black-backed gulls were recorded in several sites where they probably bred. A nest with four eggs (presumably laid by two different females) was found near the settlement Atammik. Fig. 24 shows the present distribution of breeding or probable breeding sites in western Greenland.

POPULATION SIZE: The population in western Greenland probably does not exceed 20 pairs.

POPULATION STATUS : The European population of lesser black-backed gull (all subspecies) is classified as of European conservation concern category 4 (species whose global population are concentrated in Europe, but which have an favourable conservation status) (Tucker & Heath 1994). The western Greenland population is very small and marginal compared to the British and Icelandic population.

HUMAN EXPLOITATION : Fully protected. However, occasionally some are shot and eggs may be collected.

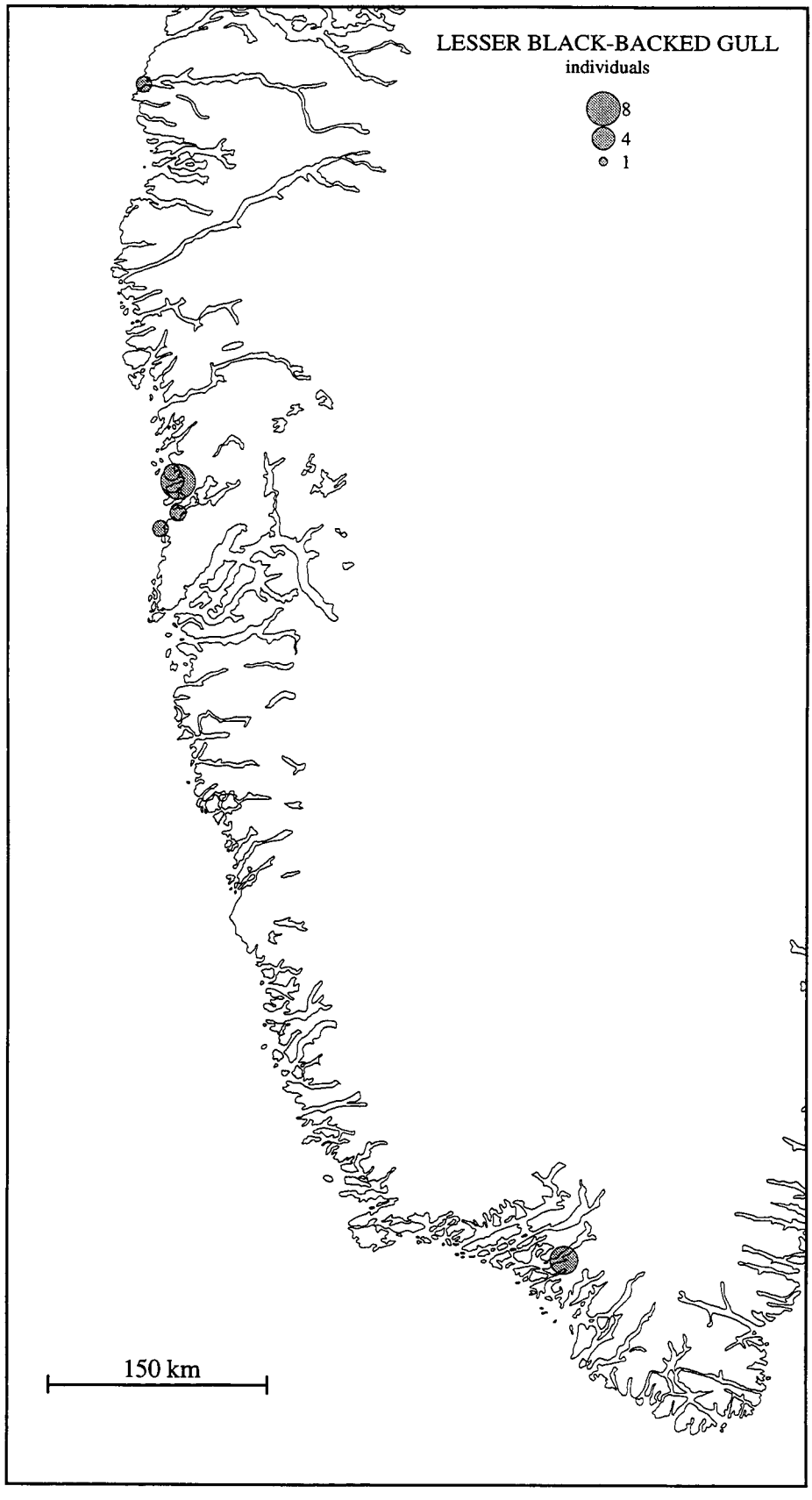


Fig. 24. The distribution of breeding and probably breeding lesser black-backed gulls in western Greenland

4.7 Herring gull *Larus argentatus*

DISTRIBUTION: The herring gull has a circumpolar distribution, and several subspecies are recognised. Two subspecies occur in Greenland: the North American *smithonianus* and the European *argentatus* (incl. *argenteus*). Both are visitors to Greenland, and in recent years herring gulls have bred there (Boertmann 1992). The origin of the breeding birds has not been determined. However, they are most likely from Europe, because this subspecies is the most frequent in Greenland (Boertmann 1994). The first proved breeding occurred in 1986 in South Greenland (Boertmann 1992). During the GERI colony survey 1992, herring gulls were recorded as probably breeding in two sites in Maniitsoq. Breeding has probably occurred in another site in South Greenland as well (K. Kampp pers. comm.).

POPULATION SIZE: Less than 10 pairs breed in West Greenland.

POPULATION STATUS : The western Greenland population is very small and marginal compared to the North Atlantic populations.

HUMAN EXPLOITATION : Fully protected. However, occasionally some are shot and eggs may be collected.

4.8 Iceland Gull *Larus glaucoides*

DISTRIBUTION: The breeding range of the Iceland gull is restricted to Greenland and the southern part of Baffin Island. The Greenland population is restricted to the low-arctic part and is referred to an endemic subspecies, *glaucoides*. The majority of the population is found in the region covered by this report. Fig. 25 shows the distribution and size of the colonies recorded in the database.

POPULATION SIZE: If the most recent counts for all western Greenland colonies recorded in the database are added, the result is about 20,000 pairs (Tab. 4). The majority of the birds in the colonies with undetermined large gulls (Iceland/glaucous gulls, Fig. 27) are most likely to be Iceland gulls, and the corresponding figure for this "taxon" is about 13,300 pairs (Tab. 4). There are probably several colonies not included in the database, and in some areas there may be as many, if not more unrecorded colonies than recorded. Many of the figures recorded in the database are probably not up-to-date, because colonies have changed status since the survey, and some of the figures may represent indvs and not pairs. However, there is no doubt that there are far more than 20,000 pairs in western Greenland at present, and perhaps as many as 100,000 pairs.

We have no information on the Southeast Greenland population.

POPULATION CHANGES: Only a few of the results from repeated surveys in different colonies are comparable. Fig. 26 shows the development in some colonies. There are no significant trends (Wilcoxon matched-pairs signed ranks test, $p >> 0.05$). However, the counts from Maniitsoq seem to be of fairly high quality, because different counts were performed by a few observers (F. Salomonsen,

Fig. 25. Breeding distribution of Iceland gull in western Greenland. Colonies not surveyed during the past 25 years are shown as with unknown numbers.

K. Kampp, GERI). The two samples of colonies in Maniitsoq (Fig. 26) increased strongly from 1960 to 1977, and from 1975 to 1992 respectively. A population increase in the sixties and and early seventies could be a result of the development of the fishery along the West Greenland coast, which increased the amount of available food to the gulls.

During the seabird colony survey in 1994, GERI found seven Iceland gull colonies to the north of the northernmost distribution limit stated by Salomonsen (1967) based on Joensen & Preuss's (1972) survey in 1965. These colonies were not recorded previously as glaucous gull colonies for example), and the northernmost were situated at 74° 12' N about 75 km north of the northernmost mentioned by Salomonsen. This could be an indication of a range extension, as seen for great black-backed gull. New colonies have also been recorded in South Greenland

According to Salomonsen (1967) the Iceland gull is merely a visitor to Avanersuaq. We have seen adults feeding newly fledged juveniles at the Pituffik/Thule Air Base in August 1994 and August 1995, indicating that the species breeds in Avanersuaq region.

POPULATION STATUS : The Iceland gull population in Greenland is referred to an endemic subspecies, *glaucoides*, and it is therefore of particular Greenland conservation concern.

HUMAN EXPLOITATION : Eggs are collected and juveniles in particular are shot, although mainly on an opportunistic basis.

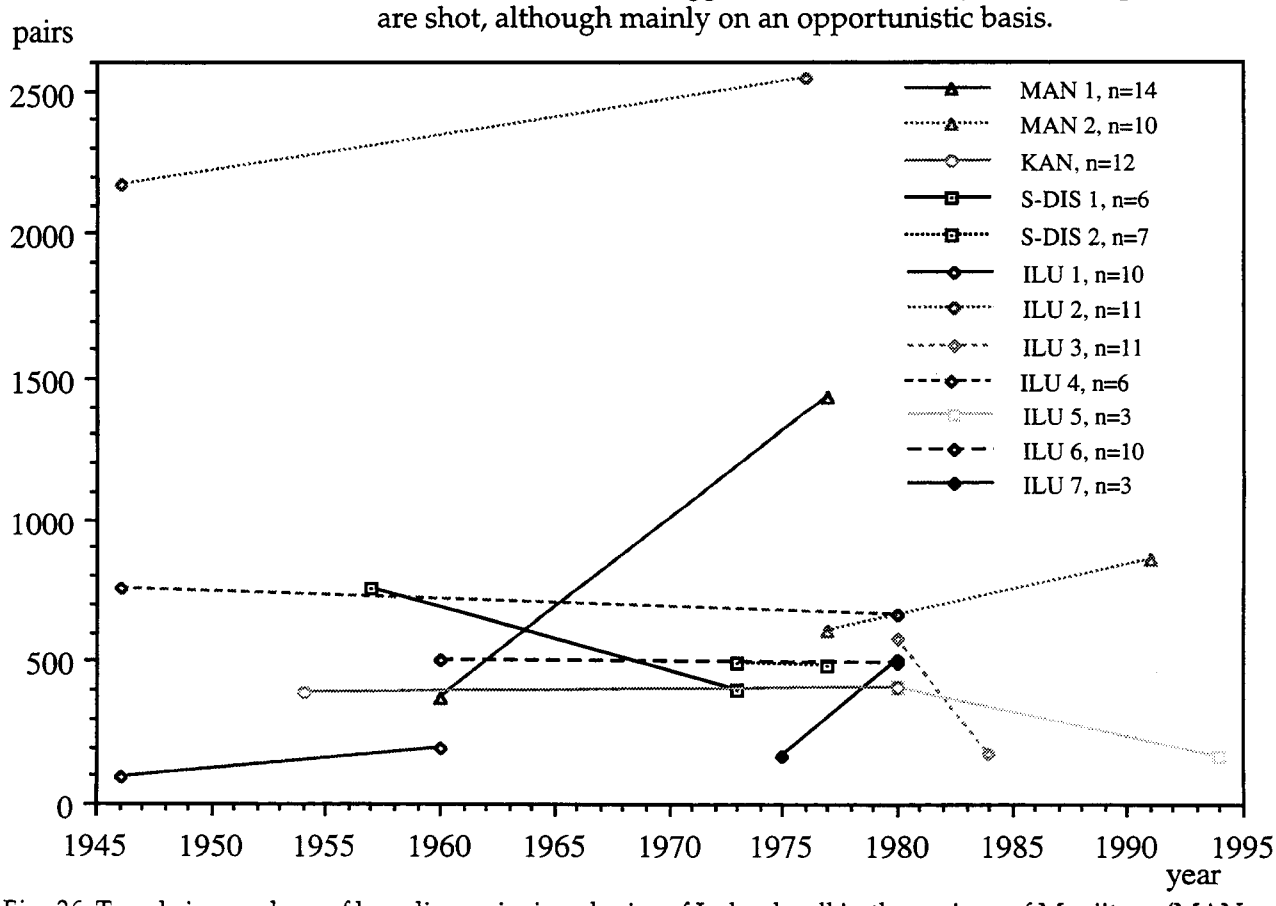


Fig. 26. Trends in numbers of breeding pairs in colonies of Iceland gull in the regions of Maniitsoq (MAN, two groups), Kangaatsiaq (KAN), South Disko Bugt (S-DIS, two groups) and Ilulissat (ILU, seven groups). Colonies from the same region surveyed the same years are pooled.

Fig. 27. Distribution of undetermined Iceland/glaucous gull colonies in western Greenland. Colonies not surveyed during the past 25 years are shown as with unknown numbers.

4.9 Thayer's gull *Larus thayeri*

DISTRIBUTION: Thayer's gull has a very restricted distribution in high-arctic Canada (Burger & Gochfeld 1996). Salomonsen (1950) mentioned a few breeding sites on the coast around Kangaarsussuaq/Kap Parry in Avanersuaq region. Information relating to these sites are from the 1920s and 1930s, and more recent information is not available. Thayer's gulls are regularly seen at the Pituffik/Thule Air Base (Olsen 1991, own observations) and on the southern coast of Kangerlussuaq/Inglefield Bredning (K. Thomsen pers. comm.). This information indicates that Thayer's gulls still breed in the area.

The three northernmost colonies of unidentified gulls (Iceland/glaucous gull) in Avanersuaq region (Fig. 27) are close to Kangaarsussuaq /Kap Parry. These colonies should be searched for Thayer's gulls.

POPULATION STATUS : The Thayer's gull population in Greenland is very small and marginal compared to the Canadian population.

HUMAN EXPLOITATION : Fully protected, but occasionally a few may be shot.

4.10 Glaucous gull *Larus hyperboreus*

DISTRIBUTION: The glaucous gull has a holarctic distribution, and breeds along the coast in nearly all parts of Greenland except the northernmost parts (Bennike & Kelly 1986). It is found almost every - where along the coasts of western Greenland (Fig. 28).

POPULATION SIZE: The total of all most recent counts in western Greenland included in the database add up to about 6100 pairs (Tab. 4). This is far below the current population size, partly because all solitary pairs are excluded. How large a segment of the overall population these pairs represent remains unknown. The majority (n = 39) of the 59 new colonies encountered in Upernavik during the GERI survey in 1994 (Tab. 7) were glaucous gull and/or black guillemot colonies, indicating that there are many colonies in the northern part of the range still to be included in the database. The overall glaucous gull population in western Greenland is "guesstimated" to more or less equal to the Iceland gull population (30,000-100,000 pairs), although the distribution is different. Glaucous gull is more numerous in the northern part than in the southern.

The Svalbard population of glaucous gull is roughly estimated at 1000-10,000 pairs (Mehlum & Bakken 1994). The Canadian popula - tion is unknown (Brown 1986). The Icelandic population is estimated at 10,000-15,000 pairs (Petersen 1994). The global population assessement of <100,000 pairs (Burger & Gochfeld 1996) seems to be too small.

POPULATION CHANGES: Impossible to evaluate, due to incomparable counts/estimates, confusion with Iceland gull, and a great deal of semiquantitative information. However, the population is likely to

Fig. 28. Distribution of glaucous gull colonies in western Greenland. Colonies not surveyed during the past 25 years are shown as with unknown numbers. Only colonies with ≥ 5 pairs or lesser if present in colonies of other species are shown.

have increased rather than decreased in recent decades, because the other two large gulls of the region (Iceland and great black-backed) seem to have increased.

POPULATION STATUS : Although data on population numbers in general are missing, the western Greenland population obviously comprises a very significant segment of the North Atlantic glaucous gull population.

HUMAN EXPLOITATION : Eggs are collected and juveniles in particular are shot, although mainly on an opportunistic basis. In Avanersuaq region glaucous gulls are not hunted during the summer period, because the meat has an unpleasant smell and taste, probably due to tainting from pelagic pteropods (Dietz 1986).

4.11 Great black-backed gull *Larus marinus*

DISTRIBUTION: The great black-backed gull is restricted to the coasts of the northern Atlantic. In Greenland, it breeds in the low-arctic part. In the region covered by this report, it breeds from Nunap Isua/Kap Farvel, in the south, to Qimusseriarsuaq/Melville Bugt, in the north (Fig. 29). It is most numerous in the extensive archipelagoes off the outer coast between 64° and 67° N. The population stays within Greenland during winter (Salomonsen 1967).

POPULATION SIZE: The population size is difficult to assess. The total of the most recent counts in all colonies included in the database is about 1200 pairs (Tab. 4). This is certainly far below the real number, because a large proportion of the population are solitary breeders. If the number of solitary breeders is equal to the number of pairs included in the database, a guess on the population size in western Greenland will be at 3000-5000 pairs. There is no information available on the population breeding in Southeast Greenland, but it is probably very small.

Tucker & Heath (1994) estimated the European population at 97,000 -160,000 pairs, and Brown (1986) mentioned, based on partial censuses, that 30,000 pairs breed in Canada and New England, and that these populations were increasing.

POPULATION CHANGES: During the past 20 years the great black-backed gull has extended its distribution in western Greenland considerably towards north. Salomonsen (1979b) mentions the tip of Nuussuaq (70° 40′ N) as the northernmost breeding area. During the "Greenland Guillemot Project" in 1986-1989, two or three pairs were recorded in Upernavik. In 1994, GERI found at least 26 breeding pairs in Upernavik, mainly on the small islands off the outer coast, but also a few in the fiords. The northernmost pairs were seen on Kitsissorsuit/Ederfugleøer (74001, 74002, 74003) at 74° 02′ N.

The figures in the database do not allow any conclusions in relation to population trends in western Greenland. Repeated counts have been carried out in several breeding colonies, but figures are generally not comparable. However, the great black-backed gull range extension over the past 20 years suggests a significant population increase.

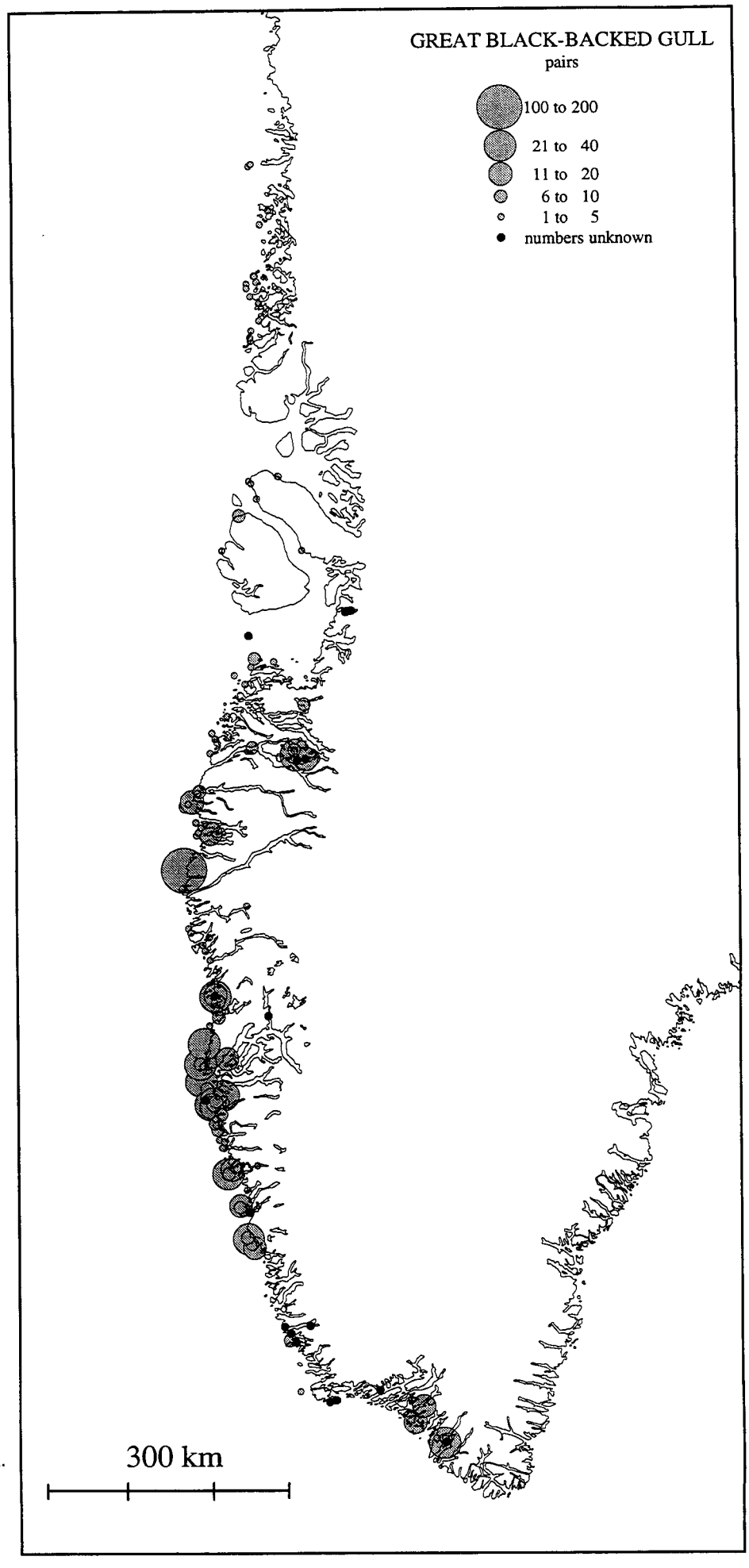


Fig. 29. Distribution of great black-backed gull colonies in western Greenland. Colonies not surveyed during the past 25 years are shown as with unknown numbers.

POPULATION STATUS : The Greenland population of great black-backed gulls is the northernmost in the world. No great black-backed gulls ringed in Greenland have been found abroad, although a few ringed in Iceland and Russia have been shot in Greenland (Salomonsen 1967). The population is perhaps isolated from other populations and therefore of Greenland conservation concern. The great black-backed gull is classified (Tucker & Heath 1994) as a species of European concern category 4 (species whose global population are concentrated in Europe, but which have an favourable conservation status).

HUMAN EXPLOITATION : Eggs are collected and juveniles in particular are shot, although mainly on an opportunistic basis.

4.12 Black-legged kittiwake *Rissa tridactyla*

Distribution. The distribution of this gull includes the northern parts of the Atlantic, the Pacific and a few sites along the north Siberian coast.

The Greenland population is concentrated in western Greenland, while colonies are scarce in East Greenland. The strongholds are in Maniitsoq and in the northeast corner of Disko Bugt (Fig. 30).

POPULATION SIZE: The added totals of all the most recent surveys of kittiwake colonies in western Greenland add up to about 102,000 pairs (Tab. 4), and we estimate that at least 100,000 pairs, and no more than 200,000 breed in the area. The European population (Greenland population included) is estimated at > 1 million pairs (Tucker & Heath 1994), while the eastern Canadian is estimated at about 300,000 pairs (Burger & Gochfeld 1996).

POPULATION CHANGES: The different counts and surveys recorded in the database are very heterogeneous in quality and as such are generally not comparable. However, it is possible to list the number of colonies which have either become abandoned or established since previous visits to the sites. The number of abandoned colonies in each district is shown in Tab. 2. Only very few newly established colonies have been found: One in Qaqortoq (found in 1983), one in Paamiut (found c. 1990), two in Uummannaq (found in 1994 in places where there were no kittiwakes in 1920 (Bertelsen 1921)) and five in Upernavik (all found in 1994 in places were there were no kittiwakes in 1965 (Joensen & Preuss 1972)). Furthermore, a colony in Upernavik which was abandoned about 1975 was occupied again in 1994. The colony in Qaqortoq (60001) increased nearly tenfold between 1983 and 1994, from 75 to about 650 nests.

The late Hannibal Fencker, settlement manager in Saqqaq in northern Ilulissat, states in some letters to F. Salomonsen in 1973, that a colony in Torsukattak increased during his time from a few tens of pairs to several thousand.

The general impression is, that the kittiwake population in western Greenland has decreased until the middle of this century. However, local increase has been recorded during the recent decades such as in Maniitsoq (Tab. 2).

Fig. 30. Breeding distribution of black-legged kittiwake in western Greenland. Colonies not surveyed during the past 25 years are shown as with unknown numbers.

Region	no. of abandoned colonies*	presumably decreased colonies	newly established colonies	presumably increased colonies	total no. of colonies
South Greenland	1 (1949-83)	1 (1949-74)	1 (c. 1980)	-	5
Paamiut	0	1 (1971-91)	1 (c. 1990)	-	7
Nuuk	3 (1940-74)	1 (1949-74)	-		5
Maniitsoq	0	7 (1975-90)	-	6 (1960-90)	26
Sisimiut	5 (before 1980)	1 (1954-80)	-	-	8
Kangaatsiaq	7 (before 1980)	1 (1954-80)	-	-	27
Southern Disko B.	4 (1954-80)	2 (1960-80)	-	1 (1976-80)	10
Ilulissat	19 (1946-94)	10 (1946-94)	-	1 (1946-75)	41
Qeqertarsuaq	1 (before 1954)	-	-	-	4
Uummannaq	10 (1920-94)	-	2 (1920-94)	1 (1975-94)	30
Upernavik	1 (1987-94)	6 (1965-94)	5 (1965-94)	1 (1983-94)	27
Avanersuaq	-	-	-	-	4

Table 2. Changes in black-legged kittiwake colonies in western Greenland. The years in brackets indicate when the change occurred. * without kittiwakes during the last visit.

POPULATION STATUS : The western Greenland population is a very significant segment of the North Atlantic population, it comprises 8 - 15 % based on the population numbers presented above. The large populations in the regions of Ilulissat and Maniitsoq are within areas which could be hit from a single oil spill, and may very well be of international conservation value as defined by Anker-Nilssen (1987).

HUMAN EXPLOITATION : The kittiwake is a popular game in western Greenland, and many eggs and chicks are collected as well, where nests are accessible. In 1993, 62,654 kittiwakes were reported shot to the bag record system (Namminersornerullutik Oqartussat/Grønlands Hjemmestyre 1995). The actual numbers shot were most likely much higher, probably 100,000-200,000.

4.13 Arctic tern *Sterna paradisaea*

DISTRIBUTION: The Arctic tern has a circumpolar distribution in temperate and arctic regions. It occurs both at salt and fresh water. It is found throughout Greenland, with major concentrations occurring in West Greenland. However, long stretches of coast are without tern colonies. There are, for example, only three small colonies in South Greenland and Paamiut. Besides breeding in colonies Arctic terns may also be solitary breeders, particularly at inland localities and in the high-arctic region.

POPULATION SIZE: The added results of the most recent counts in each colony in western Greenland is about 30,000 breeding indvs (Tab. 4). There are probably still many unrecorded colonies, and twice this number may possibly breed in western Greenland. We estimate the population at 30,000-60,000 indvs. This estimate does not include the large numbers of birds previously (1980) recorded on Grønne Ejland (68029) in Disko Bugt. This population, the largest colony in

Fig. 31. Distribution of Arctic tern colonies in western Greenland. Colonies not surveyed during the past 25 years are shown as with unknown numbers.

Greenland, was assessed at 25,000 pairs in 1980 (K. Kampp unpubl.). In 1989, there were almost no terns breeding on the islands (K. Falk unpubl.). In 1990, a few thousand pairs were present (K. Kampp unpubl.) and in August 1993 GERI observed about 5000 indvs. Génsbøl (1996) observed only a few pairs and all without eggs or chicks in July 1994.

The breeding population in Europe (Greenland included) is estimated at at least 430,000 pairs (Tucker & Heath 1994). The population numbers breeding in Canada remain unknown.

POPULATION CHANGES: Most of the figures from the western Greenland colonies are rough estimates, which makes comparison between years very difficult. However, the general impression is that the tern population in West Greenland has decreased severely over the last 25 years. The evidence for this is mostly anecdotical, and the impression can be biased by years when the terns do not breed, as was the case in 1992, when spring was extremely delayed. That year GERI visited 21 colonies south of Disko Bugt, and all except three were without birds. Three of these colonies without terns were occupied in 1993 when resighted from aircraft.

POPULATION STATUS : The western Greenland population is one of the most significant populations in the North Atlantic area (Tab. 6).

HUMAN EXPLOITATION : Arctic terns are protected, although occasionally shot as live targets etc. Egg collecting is a very popular (and perhaps increasing) occupation in areas with colonies. Egging is prohibited by law after July 1st. However, this regulation is rarely observed, and many colonies are raided for eggs during July (Génsbøl 1996, own observations).

4.14 Common guillemot *Uria aalge*

DISTRIBUTION: This auk is distributed in the northern parts of the Atlantic and Pacific, mainly in the boreal regions. Common guillemots are found in Brünnich's guillemot colonies in South Greenland, Paamiut, Nuuk and Maniitsoq. It has been recorded a few times further north in Disko Bugt (Kampp 1984) and breeding was attempted on Assissut/Brændevinsskær (69001) in 1967 (Génsbøl 1978). See Fig. 32.

POPULATION SIZE: The results of the most recent surveys add up to about 1000 indvs (Tab. 4). Although the populations in the Maniitsoq colonies have not been counted, they seem to be rather small. The largest colony is found at Kitsissut Avalliit (60012) in Qaqortoq, where the population was estimated at 630 pairs in 1992 (Kampp & Falk 1994). A total Greenland estimate will be 1500-2000 indvs.

Evans (1984b) estimated the European population at about 3 mill. pairs. The Canadian population has been estimated at 630,000 pairs (Brown 1986).

POPULATION CHANGES: No information is available for the Greenland population.

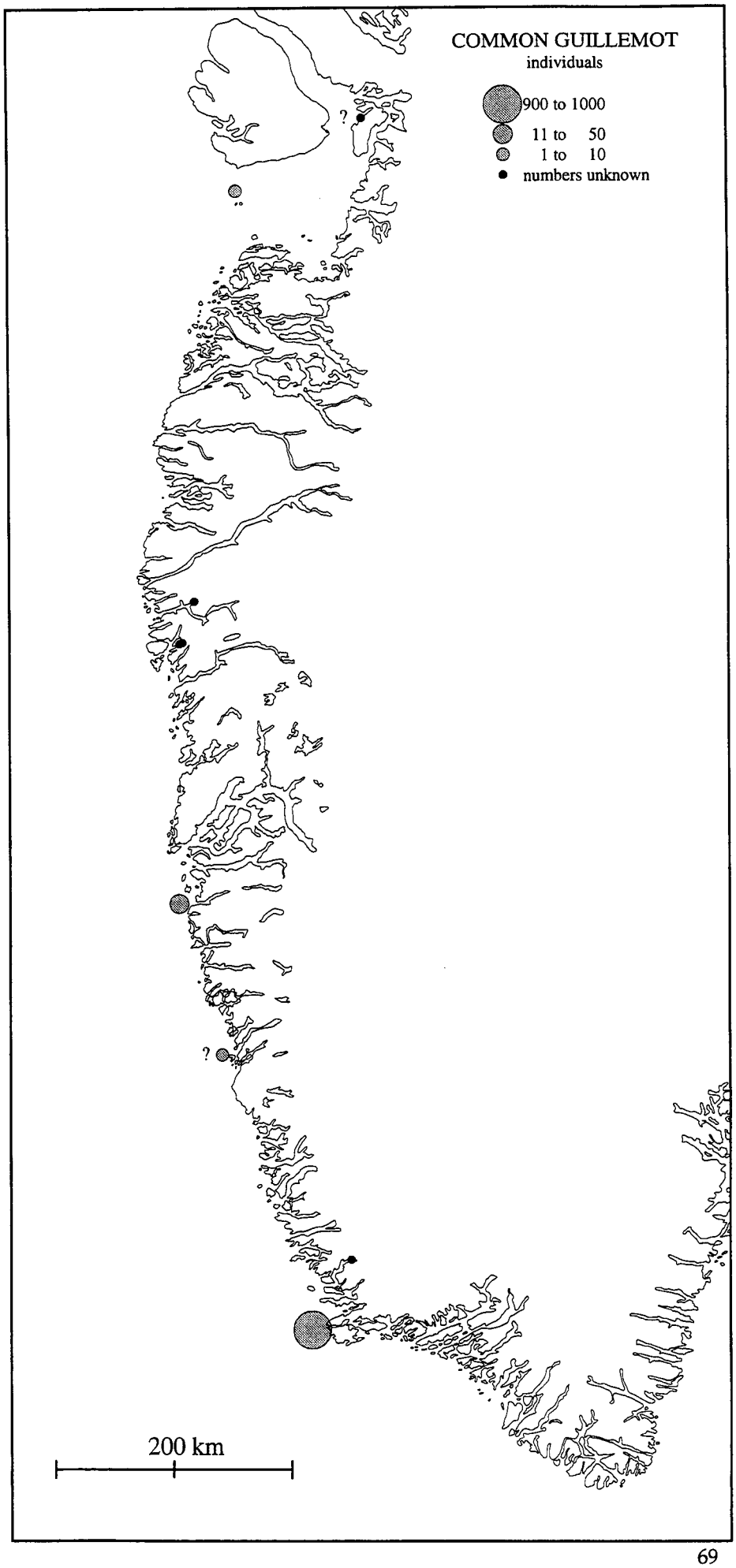


Fig. 32. Distribution of common guillemot breeding colonies in western Greenland. ? indicate sites where birds have been observed in or close to other seabird colonies, although breeding has not beenconfirmed.

POPULATION STATUS : The western Greenland population is very small and marginal compared to the North Atlantic population.

HUMAN EXPLOITATION : West Greenland hunters do not discriminate between common and Brünnich's guillemot. Only 0.1 % of the 6278 guillemots shot and studied during the winter 88/89 were common guillemots (Falk & Durinck 1992).

4.15 Brünnich's guillemot (thick-billed murre) *Uria lomvia*

DISTRIBUTION: Brünnich's guillemot is mainly distributed in the arctic parts of the Atlantic and the Pacific. There are several colonies on the west coast of Greenland (Fig. 33) and two on the east coast near the mouth of Kangertittivaq/Scoresby Sund. Local hunters claim that there is a colony of Brünnich's guillemots in the area of Nunap Isua/Kap Farvel (Nørrevang 1973, GTO 1976, H. Siegstad pers. comm.), but this has not been confirmed, and confusion with the razorbill may be likely.

POPULATION SIZE: Brünnich's guillemot is the best surveyed seabird species in Greenland. It has been the subject of thorough surveys and research since the beginning of the 1980s (Kampp et al. 1994). At present the population in western Greenland is estimated at 497,700 indvs (Kampp et al. 1994). 53 % of the total Greenland population is found in Avanersuaq, and 40 % south of Qimusseriarsuaq/Melville Bugt. The total Greenland population is estimated at 535,000 indvs (Kampp et al. 1994). The eastern Canadian population is estimated at 1.5 mill. pairs (Nettleship & Evans 1985), the Svalbard popula - tion at 1.3 mill indvs (Isaksen & Bakken 1995), the Icelandic at 580,000-800,000 pairs (Petersen 1994, Gardarsson 1995), and there are large colonies on Jan Mayen (107,000 indvs Franeker et al. 1986) and along the Barents Sea coasts of Russia (1.12 mill pairs according to Golovkin 1984).

POPULATION CHANGES: The Brünnich's guillemot population in West Greenland has decreased seriously during the past 50 years, and it is suspected that the overall decline may be as high as 50 % (Kampp et al. 1994). Many colonies are now abandoned. In Uummannaq in particular, the decline has been severe, and no guillemots breed there today. See Kampp et al. (1994) for a thorough summary of the present status, and proposed conservational measures. GERI counted most of the colonies in Upernavik in 1994. The decline described by Kampp et al. 1994, seem to continue particularly in the colonies close to Upernavik town (72008, 72011, 72013, 73007), while the two large colonies to the north (73009, 73010) seem to be more or less stable (Fig. 34). GERI has also counted guillemot colonies in Disko Bugt (69049) and further south in western Greenland (65010, 65013, 65015). The numbers obtained there were also lower than the numbers previously recorded (Fig. 35).

POPULATION STATUS : The western Greenland population constitute a very significant part of the North Atlantic population (Tab. 6.).

Fig. 33. Breeding distribution of Brünnich's guillemot in western Greenland.

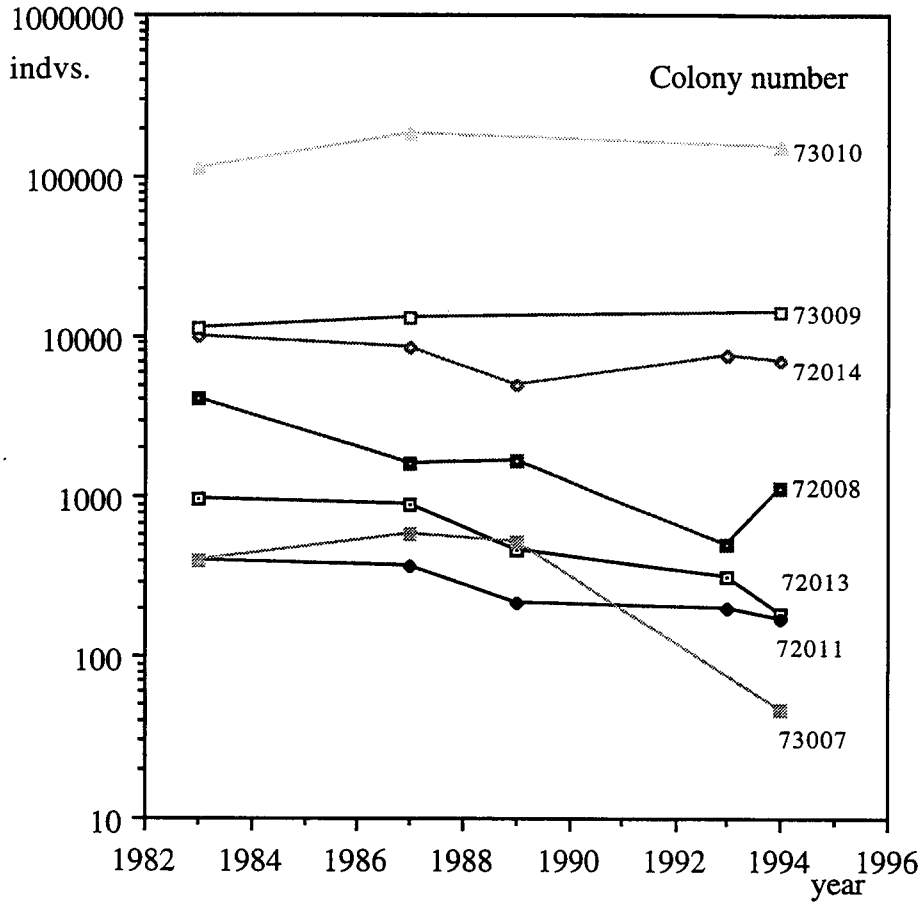


Fig. 34. Results of recent surveys of seven Brünnich's guillemot colonies in Upernavik region and surveyed by GERI in 1994. Numbers refer to code numbers in the database and Appendix I Tab. 11. Note that the scale of the vertical axis is logarithmic.

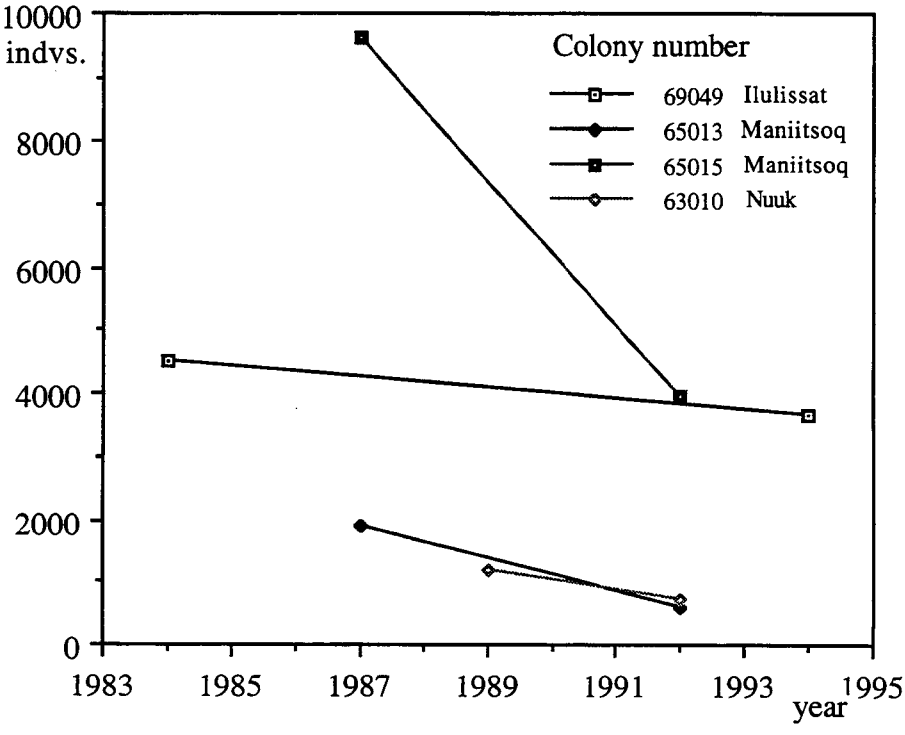


Fig. 35. Results of recent surveys in four colonies of Brünnich's guillemot surveyed and by GERI in 1992 or 1994. All are situated in the regions of Ilulissat, Maniitsoq and Nuuk. Numbers refer to code numbers in the database and Appendix I Tabs 3, 4 and 8.

HUMAN EXPLOITATION: The Brünnich's guillemot and the two eider species are the most important birds to the hunters in Greenland (Kapel & Petersen 1982). Kampp et al. (1994) give an thorough review of the development and impact of guillemot hunting in Greenland, where the summer hunt appears to be particular detrimental to the guillemot population. Falk & Durinck (1992) estimated the winter harvest 1988/1989 in West Greenland at 300,000-400,000 guillemots, mostly of forign origin. In 1993, 210,607 Brünnich's guillemots were reported shot to the bag record system (Namminersornerullutik Oqartussat 1995). This number is probably far below the actual number shot, because many birds are not reported.

In the late 1960s and early 1970s, hundreds of thousands of guillemots annually were caught in salmon drift nets off West Greenland (Tull et al. 1972, Christensen & Lear 1977). This human induced mortality on the guillemot population has after 1975 ceased to a few thousands each year, due to changed salmon fishing regulations, which resulted in spatial and temporal segregation of salmon fishing and the presence guillemots in the West Greenland area (Evans & Waterston 1977, Falk & Durinck 1991).

4.16 Razorbill *Alca torda*

Distribution. The razorbill is restricted to coasts of the northern Atlantic: in the Nearctic from New England via the Labrador Coast to western Greenland, in the Palearctic from Brittany in France, the British Isles, Iceland, Norway, the Baltic to the White Sea and Bjørnøya (Cramp 1985).

In Greenland it is found breeding along almost the whole west coast from South Greenland to central Avanersuaq (Fig. 36).

POPULATION SIZE: Breeding razorbills are difficult to census, because their nests are concealed, under boulders, in crevices etc. Therefore most surveys give the number of individuals recorded in and close to the colony. How such counts relate to the actual number of breeding pairs is not clear. If all the most recent minimum figures for each colony in the region are added, the total is about 3900 indvs (Tab. 4). There are probably several small unrecorded colonies, and we believe that the breeding population is in the range of 2000-5000 pairs.

At least 430,000 pairs are estimated to breed in Europe (Greenland included) according to Tucker & Heath (1994) and 15,000 pairs in eastern Canada and New England (Nettleship & Evans 1985).

POPULATION CHANGES: As the razorbill is so difficult to count, it is even more difficult to reach any conclusive figures on population changes. However, at least 30 former colonies were found to be without razorbills during the most recent visit (Tab. 3). This does not necessarily mean that all these breeding sites have been abandoned; the visit could have occurred in a bad breeding year or at a time of day when the birds were absent. At eight of the abandoned sites, three or fewer indvs had been recorded previously, and these may not have been breeders, but merely prospectors or occasional visitors from neighbouring colonies

Fig. 36. Distribution of razorbill colonies in western Greenland. Colonies not surveyed during the past 25 years are shown as with unknown numbers.

Code no.	Region	last year with birds and numbers of bird (indvs)	year of most recent survey and number of birds (indvs.)
64014	Nuuk	1949: 8	1970: 0
64023	Nuuk	1949: 3	1970: 0
64016	Nuuk	1949: 5	1974: 0
64019	Nuuk	1928: 200	1974: 0
64023	Nuuk	1949: 3	1970: 0
66021	Sisimiut	1960: 1	1992: 0
67024	Kangaatsiaq	1954: 1	1980: 0
67068	Kangaatsiaq	1960: 2	1992: 0
68043	Kangaatsiaq	1954: 40	1992: 0
68063	Kangaatsiaq	1954: 20	1992: 0
68065	Kangaatsiaq	1954: 40	1992: 0
68067	Kangaatsiaq	1954: 25	1992: 0
68069	Kangaatsiaq	1954: 10	1992: 0
68017	Southern Disko B.	1960: 30	1975: 0
68138	Southern Disko B.	1976: 3	1980: 0
69015	Ilulissat	1960: 1	1980: 0
69043	Ilulissat	1946: 20	1994: 0
70006	Qeqertarsuaq	1946: 10	1979: 0
70064	Uummannaq	1920: 40	1984: 0
70065	Uummannaq	1949: 4	1994: 0
70069	Uummannaq	1920: 6	1994: 0
70072	Uummannaq	1920: 40	1984: 0
70086	Uummannaq	1920: 20	1984: 0
70088	Uummannaq	1949: 30	1984: 0
70095	Uummannaq	1920: 20	1994: 0
70097	Uummannaq	1949: 50	1994: 0
70098	Uummannaq	1975: 10	1994: 0
70101	Uummannaq	1975: 3	1994: 0
70115	Uummannaq	1949: 10	1994: 0
71040	Uummannaq	1920: 4	1994: 0
72024	Upernavik	1965: 0	1994: 12
72025	Upernavik	1965: 0	1994: 2
72026	Upernavik	1965: 0	1994: 39
72027	Upernavik	1965: 0	1994: 3
72037	Upernavik	1965: 0	1987: 3
72047	Upernavik	1965: 0	1994: 38
74002	Upernavik	1965: 0	1994: 12

Table 3. Presumably abandoned or newly established razorbill colonies in western Greenland.

On the other hand, there is also evidence that new colonies have been established. During our survey in Upernavik in 1994, we found razorbills at six bird cliffs, where there were no razorbills in 1965 (Joensen & Preuss 1972). Another new was found in 1987.

In summary, there is no doubt that local extinctions have occurred, for example in Nuup Kangerlua/Godthåb Fjord, along the sailing route in Kangaatsiaq/Southern Disko Bugt regions and in Uummannaq region. However, it also seems reasonable to conclude

that the population in Upernavik at least has increased slightly during the recent 30 years. In general, we believe that the razorbill population size in Greenland hasn't undergone any significant changes during the past 50 years.

POPULATION STATUS : The razorbill is classified (Tucker & Heath 1994) as a species of European concern category 4 (species whose global population are concentrated in Europe, but which have a favourable conservation status). The western Greenland population is small compared to the large populations in Iceland and the British Isles.

HUMAN EXPLOITATION : The razorbill is fully protected, although some are evidently shot during guillemot hunting, or on an opportunistic basis.

4.17 Black guillemot *Cepphus grylle*

DISTRIBUTION. The black guillemot has a circumpolar distribution, and occurs from the temperate zone as far north as icefree coasts are found during summer. It is the most common and widespread auk in Greenland. The northernmost colony recorded in the database is found in western Inglefield Land, however, the black guillemot is also known to breed as far north as Washington Land (Salomonsen 1967). On the east coast of Greenland, it is found as far north as Holm Land (Falk et al. in press), although there are extensive coastlines along Northeast Greenland, without breeding black guillemots.

The colony size in western Greenland increase towards north. Colonies with several hundreds birds are rare south of Disko Bugt. Such large colonies are frequent in Uummannaq and Upernavik.

POPULATION SIZE: Black guillemots are extremely difficult to census. Their nests are concealed in crevices and below boulders, and many colonies are rather loose, with the nest being dispersed over long coastlines. The number of birds present on the water in front of the colonies varies with the degree of disturbance, the time of the day and season. Furthermore, a proportion of the birds may be non-breeding immatures attending the colony (Hildén 1994). For example, the number of birds on the water close to the colony peak during the morning in Finnish colonies in the Baltic (Hildén 1994). Most of the censuses carried out in Greenland are merely counts of individuals close to the colonies, and how these numbers refer to the actual number of breeding pairs is not clear. If all the minimum figures from the most recent surveys of western Greenland colonies are added (Tab. 4), the total is about 37,400 indvs. There are, however, many more black guillemots, because many colonies have not been recorded, and many small colonies (less than five pairs) are not included in the database. During the GERI survey in Upernavik, the majority of the 59 new colonies recorded (Tab. 7) were black guillemot colonies. Some of these supported several hundred individuals, indicating that a significant part of the population is not recorded in the database. We assess the breeding population of black guillemots in western Greenland to be in the range of 25,000-100,000 pairs.

Fig. 37. Distribution of black guillemot colonies in western Greenland. Colonies not surveyed during the past 25 years are shown as with unknown numbers.

The European (Greenland included) population is by Tucker & Heath (1994) estimated at 120,000-280,000 pairs. The total Canadian and New England populations is estimated to be in the range of 50,000-100,000 pairs (Nettleship & Evans 1985).

POPULATION CHANGES: No conclusive information is available.

POPULATION STATUS : Tucker & Heath (1994) classified the black guillemot as species of European concern (in category 2, species whose global populations are concentrated in Europe and which have an unfavourable conservation status). This is mainly due to a decline recorded in Scandinavian populations. If the above mentioned population figures hold true, the Greenland population makes up a very significant segment of the total North Atlantic population (Tab. 6).

HUMAN EXPLOITATION : The black guillemot, juveniles in particular, are a popular quarry in some parts of Greenland. However, in Upernavik and Avanersuaq black guillemots are only occasionally or not at all hunted (Durinck 1989, Lyngs 1989, K. Thomsen pers. comm.). In 1993 (only the period October-December) 9,636 black guillemots were reported to the bag record system (Namminersornerullutik Oqartussat/Grønlands Hjemmestyre 1995). The real numbers shot annually are probably much higher. Furthermore, an unknown amount of black guillemots are taken in gill nets set mainly for lumpsucker or arctic char.

4.18 Little auk (dovekie) *Alle alle*

DISTRIBUTION: The global breeding distribution of this auk is restricted to Greenland, Svalbard, Jan Mayen, Franz Josef Land, Novaya Zemlya, Servernaya Zemlya, as well as a few small colonies on Baffin Island, Iceland and in Bering Strait (Cramp 1985, Nettleship & Evans 1985, Nettleship 1996)). In Greenland, very large populations are found in Avanersuaq and at the mouth of Kangertittivaq/Scoresby Sund in East Greenland (Kampp et al. 1986, 1987). A few much smaller colonies are found in Upernavik, in Northeast Greenland, and in the outer part of Disko Bugt. Previously little auks also bred in the southern part of South Greenland off Nanortalik (Salomonsen 1950), where they still may be present (Boertmann 1994). In 1992, a few birds were heard from a birdcliff in the central part of Nuuk region (Boertmann & Mosbech 1992), where little auks were known to breed in small numbers early this century (Oldenow 1933). Fig. 38 shows the breeding distribution in western Greenland.

POPULATION SIZE: Millions of pairs breed in Avanersuaq and at the head of Kangertittivaq/Scoresby Sund in East Greenland. The population in Avanersuaq has been "guesstimated" at 30 millions pairs (Salomonsen 1981). In 1978, Roby et al. (1981) estimated the breeding population in a 140 m wide area at Kangaarsuk/Kap Atholl to be at least 7000 pairs. The total horizontal extent of the colonies in Avanersuaq is about 400 km (Boertmann & Mosbech unpubl.). If the population estimate from Kap Atholl is extrapolated to this extend, the total estimate of little auks would be 20 million pairs. We do not know whether the Kap Atholl colony is representative for the whole

Fig. 38. Breeding distribution of little auk in western Greenland. The distribution in the Avanersuaq region is based on our own survey in 1995.

area, so this estimate is of course very crude. However, it gives an indication of the order of magnitude. An order of magnitude which is supported by spring surveys carried out in western Baffin Bay in 1978 (Renaud et al. 1982). The largest colony south of Qimusseriarsuaq/Melville Bugt is on the island Appalersalik/Horse Head in Upernavik, where Evans (1981) estimated 6000 pairs in 1974. All other colonies hold a maximum of a few hundred pairs.

The population in East Greenland breeding around the mouth of Kangertittivaq/Scoresby Sund has roughly been estimated at more than 3.5 million pairs (Kampp et al. 1987).

The population on Spitsbergen has been estimated at more than 1 million pairs (Isaksen & Bakken 1995). Franeker et al. (1986) estimated the population size on Jan Mayen to be in the order of 10,000-100,000 pairs. The Russian populations in the Barents Sea are assessed at 300,000-350,000 pairs (Golovkin 1984).

POPULATION CHANGES: Nothing is known about trends in the Avanersuaq colonies, except that H.C. Petersen (pers comm.) was told by locals that a colony on Salleq/Bushnan Ø has been deserted. We sailed by Appalersalik/Horse Head in 1994, and observed a few thousand little auks, indicating that this colony holds a number of pairs which is at least in the same order of magnitude as in 1974. In 1965, Joensen & Preuss (1972) visited four small islands where Salomonsen saw breeding little auks in 1936 (less than 100 pairs in total). They failed to find any breeding little auks, but saw 2 indvs close to Uigorluk/Lille Fladø (72040). We visited Uigorluk/Lille Fladø in 1994, and found 500-1000 indvs on this island.

POPULATION STATUS : The Avanersuaq population is extremely important. It constitutes a very significant part (80 % according to Nettleship & Evans 1985) of the global breeding population of the species. Moreover, the breeding colonies are situated along a coastline about 200 km long making the population very vulnerable to oil spills. The little auk population in western Greenland is obviously of particular Greenland conservation concern.

HUMAN EXPLOITATION : The little auks are heavily exploited during the breeding time in Avanersuaq, and mainly by the inhabitants of the settlements Siorapaluk and Savissivik. The little auks are caught with nets in the breeding colonies, and many are preserved for later consumption (kiviaq = whole little auks put into a seal skin with intact blubber layer and subsequently buried and kept under stones during the winter). A commercial catch (20,000-30,000 annually) takes place in Savissivik. In 1993, 104,239 little auks were reported to the bag record system (Namminersornerullutik Oqartussat/Grønlands Hjemmestyre 1995). Nearly all of these were reported from Avanersuaq (98,263) and from the period May to July. These numbers are most likely far below the real caught numbers, as Dietz & Heide -Jørgensen (1984) estimated the annual harvest of little auks to be in the range of 250,000-500,000. Little auks are only hunted to a very small degree in West Greenland during winter. They are usually considered to be too small, and only few (some hundred) are offered for sale at the local markets (Falk & Kampp 1992, A.S. Frich pers. comm.).

4.19 Atlantic puffin *Fratercula arctica*

Distribution. The global breeding distribution of this auk is confined to the coasts of the northern Atlantic, from northeastern USA and northern France in the south to Northwestern Greenland, Novaya Zemlya, and Svalbard in the north.

It breeds in western Greenland in scattered colonies from South Greenland northwards to Avanersuaq. There are also one or two small colonies at the head of Kangertittivaq/Scoresby Sund in East Greenland (Meltofte 1976). In August 1990, Glahder (1993) observed a puffin carrying food just east of Prins Christian Sund in the South Greenland region, indicating the presence of a breeding site in that area.

COLONIES: A total of 58 colonies are known from western Greenland. GERI has visited 33 of these and seen a couple more from the air. The strongholds are central Nuuk, southwestern Disko Bugt and Upernavik (Fig. 39).

POPULATION SIZE: Puffins place their nest in concealed sites such as crevices and burrows, and it is therefore extremely difficult to obtain a realistic count of breeding pairs. Most counts of breeding colonies in Greenland are based on individuals seen in or close to the colony, and such counts tend to underestimate the actual population (Kampp & Falk 1994). If the minimum numbers from the most recent counts of the western Greenland colonies are added, a result of 5400 indvs is obtained (Tab. 4). We estimate the breeding population at 4000-8000 pairs in western Greenland. The largest colony in the area is found on Nunatsiaq/Rotten in Disko Bugt (68010), where around 1000 pairs were estimated in 1976. The current status of this colony is unknown as it has not been visited since.

The total European (including Greenland) population is estimated at 4.8-6.1 mill. pairs (Tucker & Heath 1994). The Canadian population is estimated at 365,000 pairs by Nettleship & Evans (1985).

POPULATION TRENDS. The different surveys filed in the database are of such a heterogeneous quality, that we hesitate to conclude anything about population trends. However, in 1992 we found three breeding sites in Nuuk which have not been reported previously. In recent years breeding puffins have been found in three sites in Upernavik, where there were no puffins in 1965 (Joensen & Preuss 1972). These observations indicate a population increase.

The population was previously threatened by egg collecting, until puffin hunting and egg collecting were prohibited in 1960. Salomonsen (1967) wrote that the population in some particular colonies were doubled a few years after 1960.

POPULATION STATUS: Tucker & Heath (1994) classified the puffin as a species of European conservation concern (in category 2, species whose global populations are concentrated in Europe and which have an unfavourable conservation status in Europe). The western Greenland puffin population is small compared to the total North Atlantic population (Tab. 6).

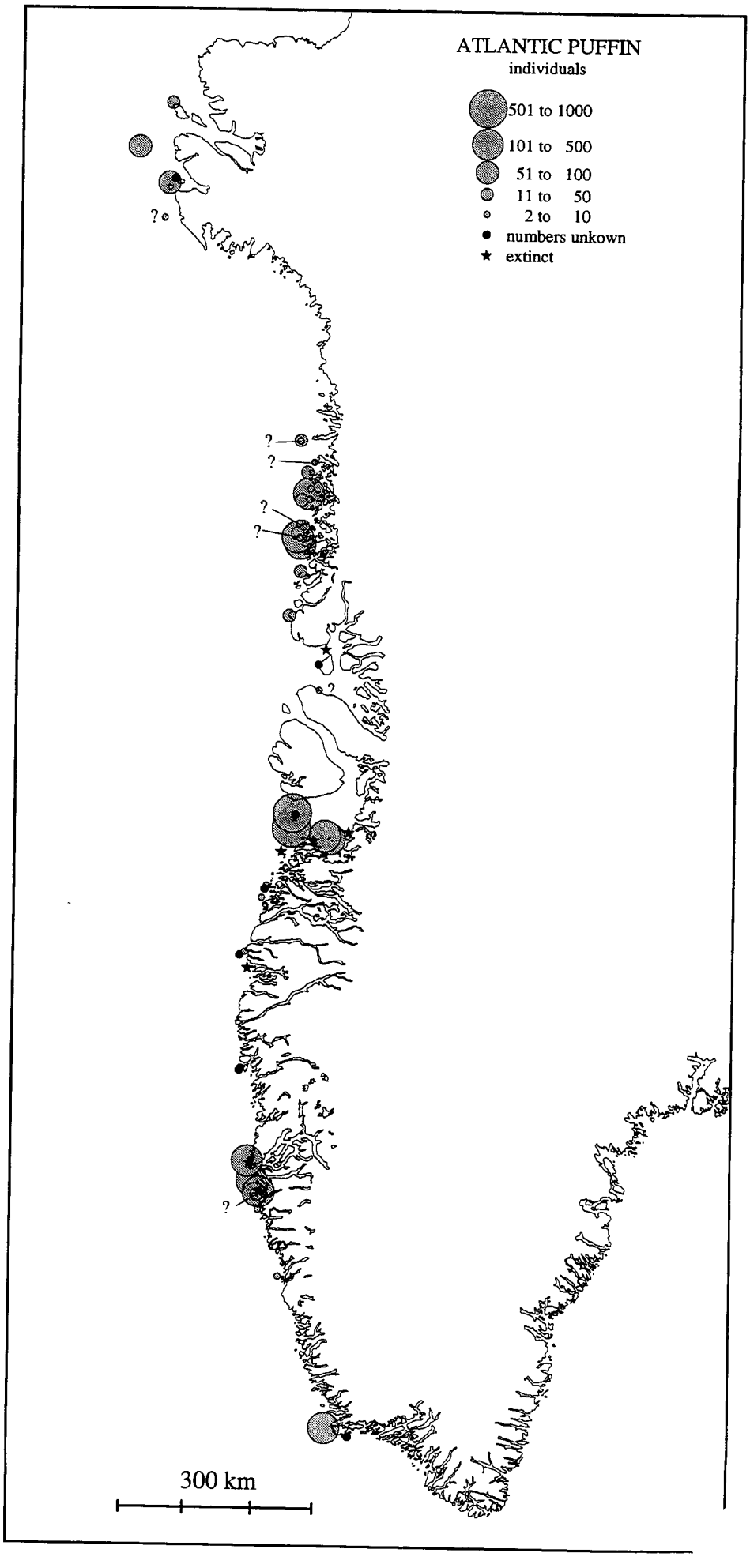


Fig. 39. Breeding distribution of Atlantic puffin in western Greenland. ? indicates sites where a few birds have been observed in recent years, although breeding was not confirmed.

HUMAN EXPLOITATION: The puffin is legally protected both from hunting and egg collecting all year round in Greenland, and this stipulation in general seems to be observed, although some are shot.

5 Population size and important areas

Tab. 4 gives an overview of the total number of breeding seabird in western Greenland as recorded in the database. Based on these figures we attempt to estimate the entire breeding populations of the 19 colonial seabird species in western Greenland (Tab. 5). These estimates are compared with previous estimates. Moreover have we indicated trends in population size and range.

Species/ region	South of Disko Bugt	Disko Bugt	Uummannaq	Upernavik	Avanersuaq	Total
fulmar	130 P	>25,000 P	>45,000 P	>5000 P	5000 I	>80,000 P
great cormorant	910 P	800 P	30 P	230 P	-	1970 P
common eider	2500 P	2000* P	270* P	400 P	>3000 P	>8170 P
Sabine's gull	-	-	-	-	65 P	65 P
black headed-gull	30 I	-	-	-	-	30 I
lesser black-backed gull	11 P	-	-	-	-	11 P
herring gull	4 P	-	-	-	-	4 P
Iceland gull	10,900 P	7100 P	1000* P	300 P	-	19,300 P
Thayer's gull	-	-	-	-	?	?
glaucous gull	1000 P	2800 P	200* P	1500 P	600 P	6100 P
Iceland/glaucous gull	4500 P	900 P	7500* P	360 P	30 P	13,300 P
great b.-backed gull	1210 P	15 P	10 P	25 P	-	1260 P
black-leg. kittiwake	40,000 P	35,000 P	3500* P	10,000 P	14,000 I	102,540 P
Arctic tern	3370 I	12,700 I	7000 I	5000 I	1700 I	29,770 I
common guillemot	>1000 I	-	-	-	-	>1000 I
Brünnich's guillemot	28,300 I	3700 I	-	175,000 I	285,000 I	492,000 I
razorbill	2960 I	270 I	120* I	600 I	20 I	3970 I
black guillemot	9000 I	3900 I	9000* I	10,000 I	5500 I	37,400 I
little auk	10 I	350 I	-	10,000 I	20 mill. P	20 mill. P
Atlantic puffin	1225 I	3100 I	10 I	900 I	200 I	5435 I

Table 4. Numbers (somewhat rounded) of breeding seabirds in western Greenland subregions recorded in the Greenland Seabird Colony Database. The total number of breeding seabirds in western Greenland recorded in the database is approx. 1.025,000 indvs. The little auk colonies in Avanersuaq region are not included in the database. The little auk estimate is explained in the text. P = pairs, I = indvs counted at colonies. South of Disko Bugt = the regions of South Greenland, Paamiut, Nuuk, Maniitsoq, Sisimiut and Kangaamiut. Disko Bugt = the regions of Southern Disko Bugt, Ilulissat and Qeqertarsuaq. * outdated counts which probably not represent the current number.
The number of Brünnich's guillemots presented here is lower than the number presented by Kampp et al. (1994), because some recent counts in Upernavik region are included.

Species	Previous estimates			Total no. from most recent counts (from Tab. 4)	Present estimate	Population trends	
	Evans 1984a	Boertmann 1994**	Other			size	range
northern fulmar	192,000-225,000 P	120,000-170,000 P	>200,000 P (1)	>80,000 P	>80,000 P	?	u
great cormorant	750-1500 P			2000 P	2000-3000 P	+?	e
common eider	-	-	-	>6575 P	10,000-50,000 P	-	u
Sabine's gull	11-1000 P	-	30-50 (3) P**	65 P	50-100P	?	u
black headed-gull	0-100 P	<100 P		30 I	10-20 P	f	e
lesser black-backed gull	0	10 P	-	11 P	10-20 P	+?	e
herring gull	0	3 P	-	4 P	5-20 P	+?	e
Iceland gull	1100-11,000 P	<80,000 P**	-	27,000 P*	30,000-100,000 P	+?	e?
Thayer's gull	x	x	x	-	0-10 P	?	?
glaucous gull	1100-110,000 P	-	-	6000 P	30,000-100,000 P	+?	u
great black-backed gull	200-20,000 P	-	-	1258 P	3000-5000 P	+	e
black-leg. kittiwake	140,000-1,015,000 P	150,000-250,000 P	-	90,740 P	100,000-200,000 P	+/-	u
arctic tern,	200-20,000 P	<80,000 P**	-	29,570 I	30,000-60,000 I	-	u
common guillemot	300-500 I	-		>1000 I	1500-2000 I	?	u
Brünnich's guillemot	170,000-220,000 I	-	498,000 I(4)	492,000 I	492,000 I	-	u
razorbill	1500-5500 P	1500-5500 P	-	3900 I	2000-5000 P	?	u
black guillemot	15,000-39,000 P	25,000-100,000 P	-	30,650 I	25,000-100,000 P	s	u
little auk	7-15 mill. P	-	30 mill. P(2)	-	20 mill. P	?	u
Atlantic puffin	1500-5500 P	1500-3000 P	-	5435 I	4000-8000 P	+	u

Table 5. Western Greenland population estimates for colonial seabirds and population changes during the past 10 years. 1 = Salomonsen 1967, 2 = Salomonsen 1981, 3 = Forchhammer & Maagaard 1990, 4 = Kampp et al. 1994. P = pairs, I = individuals,* incl. Iceland/glaucous gull, ** entire Greenland, x = present in few numbers, x? = perhaps present, ? = trend unknown, +?= probably increasing, + = increasing, f = fluctuating, +/- = locally increasing or decreasing, -? = probably decreasing, - = decreasing, s = stable, u = unchanged, e? = probably expanding, e = expanding.

It is apparent that the majority of the colonial seabirds - mainly Brünnich's guillemots and little auks are found in the two northernmost regions: Upernavik and Avanersuaq. The northern fulmar is numerous in Uummannaq and Disko Bugt, and there are large numbers of kittiwakes in the Disko Bugt region. There are generally far fewer colonial seabirds in the regions south of Disko Bugt, where kittiwake, Brünnich's guillemots and Iceland gull are the most abundant species.

Vulnerability of all species to oil spills is listed in Tab. 6, as well as recovery capacity and fraction of western Greenland populations.

Fig. 40 indicates the most important areas (waters) to colonial seabirds breeding in western Greenland during the breeding season (May through September).

Species	Sensitivity to oil spills in western Greenland		Capacity to recover		Part of Atlantic breeding population in western Greenland %
	individual	population	fecundity	population trend	
northern fulmar	medium	medium	low	?	6
great cormorant	high	low	medium	I	4-6 [1]
common eider	high	medium	medium	D	?
Sabine's gull	medium	medium	medium	F	1 [2]
black-headed gull	low	low	medium	F	<1
lesser black-backed gull	low	low	medium	I	<1 [3]
herring gull	low	low	medium	I	<1
Iceland gull	low	low	medium	?	100 [4]
Thayer's gull	low	medium	medium	?	?
glaucous gull	low	low	medium	?	?
great b.-backed gull	medium	low	medium	I	2-5
black-leg. kittiwake	low	medium	medium	I/D	8-15
Arctic tern	medium	medium	low	D	5-10
common guillemot	high	high	low	?	<1
Brünnich's guillemot	high	high	low	D	5-10
razorbill	high	medium	low	S ?	1-2
black guillemot	high	low	low	?	10-50
little auk	high	medium	low	?	80 [5]
Atlantic puffin	high	high	low	I ?	<2

Table 6. The vulnerability to oil spills and recover capacity of western Greenland seabirds (Mosbech et al. 1996) as well as proportion of western Greenland populations compared to Atlantic population.
I = increasing, I ? = probably increasing, ? = unknown, F = fluctuating, D = decreasing, S ? = probably stable.
[1] ssp. *carbo* only. [2] Canadian and Alaskan population included, [3] ssp. *graellsii*. [4] ssp. *glaucoides* only and Southeast Greenland included, [5] Nettleship & Evans (1985).
Species of which the populations are of particular Greenland conservation concern are written in bold.

6 Discussion

One of the major problems with the figures recorded in the Greenland Seabird Colony Database is that they are usually not comparable, as the census techniques used are not systematic: the same colonies are often counted by different observers, who have used different methods of counting, they have been surveyed at different times during the breeding cycle or at different time of the day etc. Some observers have given figures which are merely guesses, which may not reflect the true numbers or perhaps in extreme cases not the current order of magnitude. Many colonies have not been surveyed for decades, and as such the bird numbers included in the database may be outdated. Another problem is that in some years some species will not breed due to bad weather conditions, or only do so in reduced numbers. For example, the Arctic terns were not present in their colonies in 1992 throughout the area surveyed by GERI due to an unusually late spring. The following year almost all tern colonies revisited were occupied. As a result, conclusions based on counts in a bad breeding year can be misleading, and several years of censusing are needed to evaluate population trends.

under-estimation

The population estimates presented in Tab. 5 are based on the added figures from the most recent counts for each colony in the area. This method involves several kinds of error. Some colonies are not recorded in the database, particularly in areas that have not been surveyed for a long time. This was apparent during the two GERI surveys in 1992 and 1994 (Tab. 7). However, all the new colonies recorded in areas surveyed previously were small. The figures in the database may be lower than the numbers currently present, either due to a population increase since the survey took place, or due to a bad breeding season during the survey. Some species breed both in colonies and solitarily, and solitary breeders are not recorded in the database unless they occur in colonies of other species. Solitary breeding is frequent among common eider, great black-backed gull, and glaucous gull. Black guillemot and glaucous gull breed in small and often loose colonies. Many such colonies are not included in the

Region	Known in advance in surveyed area	Visited by GERI on shipboard survey	New colonies to the database
Nuuk	34	46	15
Maniitsoq	17	36	19
Sisimiut	3	12	9
Kangaatsiaq	17	13	5
Ilulissat	17	19	4
Uummannaq	39	54	15
Upernavik	46	100	59

Table 7. Number of colonies visited during the two GERI surveys along the outer coast of West Greenland in 1992 and 1994. By far the major part of the "new" colonies are small with less than 100 indvs or 50 pairs of breeding birds and mainly with Iceland gulls, glaucous gulls and/or black guillemots. Not all colonies known in advance were visited.

Fig. 40. Important areas for breeding colonial seabirds in western Greenland.

database (less than 5 pairs).There is no doubt that the database figures for black guillemot and glaucous gull under-estimate the current population.

over-estimation

On the other hand over estimation is also possible. For example, many colonies have decreased or have been abandoned since the most recent survey. The two GERI surveys in 1992 and 1994 (Tabs 2 and 3) revealed that many kittiwake and razorbill colonies were without birds, or had lower numbers than recorded previously. Finally, the ability of the observers to count and estimate may be a source of error. Kampp et al. (1994) suggested that earlier estimates of the largest Brünnich's guillemot colony in Upernavik region were too high.

cave nesters

It is very difficult to census species which hide their nests in caves, cracks or burrows, such as razorbill, black guillemot and puffin. Most of the surveys have recorded numbers of birds present in or close to the colonies, and how these figures relate to the real number of breeding pairs is usually unknown.

Tab. 5 lists population estimates presented by Boertmann (1994). These are in most cases higher than the present estimates. However, Boertmann's estimates were prepared on basis on an early version of the database for the BirdLife project "Conservation of dispersed species in Europe". They do not include the recent surveys of 1992 and 1994, and furthermore they represent all of Greenland, and not just the western part.

Although much of the data for estimating the seabird populations in western Greenland are insufficient or inadequate, we present our estimates in order to give an impression, at least, of the order of magnitude of the size of populations.

The population trends presented in Tab. 5 have to be viewed with caution. In general, the data available are not adequate for analysing population trends. Many colonies have only been counted twice, and it is not wise to make conclusions based only on two counts (see above). However, some colonies have been visited several times and surveyed by a few observers. The data from such colonies supplemented with our general impression and anecdotical evidence give us basis to suggest the development of the western Greenland seabird populations in recent years.

density of birds

Why is the density of breeding colonial seabirds so much lower in the southern half of the region (South Greenland-Kangaatsiaq region) than in the northern part, Upernavik and Avanersuaq in particular. Feeding conditions may be much better in the northern part in the breeding season, although there is no data available to test this hypothesis. Another explanation could be a much higher hunting pressure in the southern part of the region, due to the larger human population. There is a negative correlation between human population and bird population numbers (all species except little auk pooled) (Fig. 41). However, this correlation is not statistically significant. A thorough analysis accounting for more accurate population numbers than are available today and differences in hunting pressure both between species and regions will perhaps give

a more detailed answer to the question. The hunting pressure seem to be disproportionate high in some regions as for example in Uummannaq, and the distribution of winter ice prevents bird hunting for long periods of the year in the northern regions.

bag record

We have included the number of seabirds shot as reported to the bag record system in Greenland mainly to give an impression of the order of magnitude of birds shot. These numbers have to be taken with great caution, as they are likely to be much below the actual number of birds shot. The system was introduced in 1993, and the hunters had no previous experience in filling out the questionnaries. Preliminary studies have shown that many guillemots shot or caught are not reported to the bag record system (A.S. Frich pers. comm.).

threats

Hunting and egging are the major human induced threats to the colonial seabird populations in western Greenland during summer. Hunting and eggeing are legally regulated (see Namminersornerullutik Oqartussat 1995); however, for some species the regulations seem inadequate and moreover are they often not observed by the hunters.

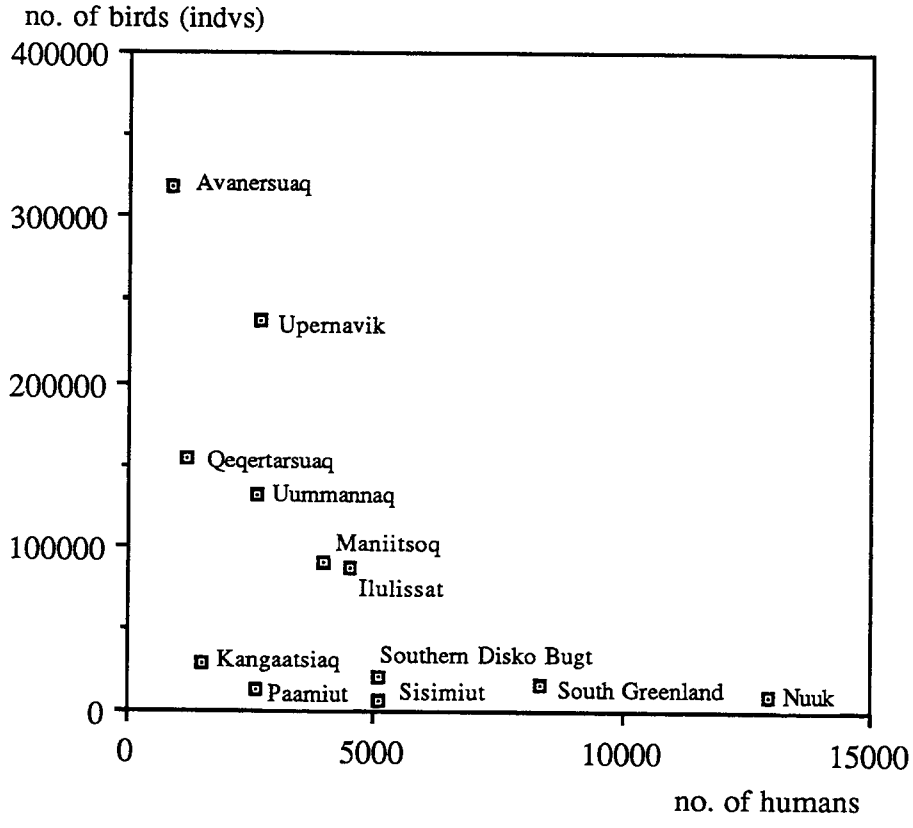


Fig. 41. Estimated number of breeding seabirds plotted against number of inhabitants (Jan. 1st. 1994, Grønlands Statistiske kontor 1994) for each of the twelve regions of western Greenland. Little auks in Avanersuaq region are not included. The correlation is negative, but not statistically significant (Spearman Rank Correlation Coefficient, $r_s = -0.483$, $n = 12$, $p = 0.11$). The non-linear relationship indicate that additionally factors may be involved.

Drowning in salmon driftnets was previously a very significant threat to the Brünnich's guillemot populations, but it has ceased now (Falk & Durinck 1991). The amount of seabirds caught in other types of gill nets is unknown, but might be of significant size. For example, nets for lumpsucker and arctic char are often set in shallow coastal waters where black guillemots are numerous.

Disturbance in colonies may locally and temporarily be a threat. The decline of the Brünnich's colonies is ascribed mainly to hunting during the summer (Kampp et al. 1994). Hunting close to the colonies has probably contributed to reduced breeding succes also caused by the assosiated disturbance. Many other activities such as sailing and helicopter-flying may cause serious disturbance in colonies. Efforts are made to regulate all kind of noisy activities through the hunting regulations (see Namminersornerullutik Oqartussat 1995) and the rules for field work regarding mineral exploration (MRA 1996).

Large oil spills with massive die-off of seabirds have never been reported from Greenland. However, the risk of major oil spills will increase if and when potential oil fields are explored and eventually developed (Mosbech et al. 1996).

7 Final remarks

Fig. 42 shows areas where surveys for seabird colonies are needed. Some of these coasts have never been surveyed (for example Qimusseriarsuaq/Melville Bugt). Others have been surveyed several years ago, and the data are most likely out-dated.

The Greenland Seabird Colony Database will be an essential tool in the environmental impact assessment of future oil exploration and exploitation activities in western Greenland. However, if it shall remain operational, it will be necessary to update the information at regular intervals: every 10 or 15 years for example.

The older data on colonial seabirds in western Greenland are not adequate as baseline data. Up-to-date information is necessary, and only the data obtained during the recent years are useful as baseline information. Moreover, recent information is not comparable to much of the older data, due to different survey methods, and consistent survey methods are crucial for future work.

GERI has recently surveyed the outer coast between Paamiut and Upernavik regions. In this area a potential oil field has recently been discovered off Nuuk. Another potential oil exploration area has recently been identified in the Qimusseriarsuaq/Melville Bugt, why surveys of the coasts of Qimusseriarsuaq/Melville Bugt and the Avanersuaq region are in demand now.

Three of the colonial seabird species breeding in western Greenland are declining: common eider, Brünnich's guillemot and Arctic tern. All of these are moreover heavily exploited, and the eider and the guillemot constitute an important source of meat to the Greenland house-

Fig. 42. Areas where seabird colony surveys are in demand. The outer coasts of these areas, particularly in Melville Bugt, Avanersuaq and Disko Bugt are in demand of surveys, due to existing and potential oil exploration.

holds. The populations of these species should be monitored to ensure conservation and sustainable exploitation. However, most of the seabird populations in western Greenland are shared between two or more nations why conservation and management are international issues. The Circumpolar Seabird Working Group (under Conservation of Arctic Flora and Fauna) has recently issued a conservation strategy and action plan for the Brünnich's guillemot (CAFF 1996) and a similar plan for the eiders is under preparation.

The Greenland Institute for Natural Resources initiated a monitoring programme for Brünnich's guillemots in 1995, and a programme for common eider is planned. However, the Arctic tern population should also be monitored in some way.

Finally, is it important to stress that western Greenland supports large and internationally important populations of breeding colonial seabirds.

8 References

Abraham, K.F. & G.H. Finney 1986. Eiders of the eastern Canadian Arctic. Pp. 55-73 in Reed, A. (ed.). Eider ducks in Canada. - Canadian Wildlife Service. Rep. Ser. No. 46, Ottawa.

Anker-Nilssen, T. (1987): Metoder til konsekvensanalyser olje/sjøfugl. - Viltrapport 44, Direktoratet for Naturforvaltning, Viltforskningen, Trondheim, 114 pp.

Bennike, O. (1990): Observations of geese and other birds in West Greenland, 1989 and 1990. - Dansk Orn. Foren. Tidsskr. 84: 145-150.

Bennike, O. & M. Kelly 1986: Bird observations in central North Greenland, 1984. - Dansk Orn. Foren. Tidsskr. 80: 29-34.

Bertelsen, A. 1921. Fuglene i Umánaq distrikt. - Meddr Grønland 62, 2: 139-214.

Boertmann, D. 1979. Ornithological observations in West Greenland, 1972-77. - Dansk Orn. Foren. Tidsskr. 73: 171-176. (Danish, with English summary).

Boertmann, D. 1992. Nye grønlandske fugle. - Tidsskriftet Grønland 1992 (6): 157-166.

Boertmann, D. 1994. An annotated checklist to the birds of Greenland. - Meddr Grønland Biosc. 38: 64 pp.

Boertmann, D. & A. Mosbech 1992. Kortlægning af kystfuglekolonier i Vestgrønland mellem Aasiaat og Paamiut. - Technical Report, Greenland Environmental Research Institute: 30 pp.

Born, E.W. 1987. Aspects of present-day maritime subsistence hunting in the Thule area, Northwest Greenland. Pp. 109-132 in

Hacquebord, L. & R. Vaughan (eds.). Between Greenland and America. Cross-cultural contacts and the environment in the Baffin Bay area. - Arctic Centre, Groningen.

Brown, R.G.B. 1986. Revised Atlas of Eastern Canadian Seabirds. 1 Shipboard Surveys. - Canadian Wildlife Service: 111 pp.

Burger, J. & M. Gochfeld 1996. Family Laridae (Gulls). Pp. 572-623 in del Hoyo, J. et al. (eds) Handbook of the birds iof the World, Vol 3.. - Lynx Edicions, Barcelona.

CAFF 1996. International murre conservation strategy and action plan. - CAFF International Secretariat, 16 pp.

Carboneras, C. 1992. Order Procellariiformes. Pp. 198-278 in del Hoyo J. et al. (eds.) Handbook of the birds of the World. Vol. 1. - Lynx Edicions, Barcelona.

Christensen, O. & W.H. Lear 1977. Bycatches in salmon driftnets at West Greenland in 1972. - Meddr Grønland 205, 5: 38 pp.

Collar, N.J., Crosby, M.J. & A.J Stattersfield 1994. Birds to watch 2. The world list of threatned birds. - BirdLife International, Cambridge, 407 pp.

Cramp, S. (ed.) 1985. The Birds of the Western Palearctic, Vol. 4. - Oxford University Press: 960 pp.

Cramp, S. & K.E.L. Simmons (eds) 1977. The Birds of the Western Palearctic, Vol. 1. - Oxford University Press: 722 pp.

Debout, G., Røv, N. & R.M. Sellars 1995. Status and population development of cormorants *Phalacrocorax carbo carbo* breeding on the Atlantic coast of Europe. - Ardea 83: 47-59.

Dietz, R. 1986. Spisevaner og tungmetalkoncentrationer i Thule distrikt. - Grønlands Fiskeri- og Miljøundersøgelser: 32 pp.

Dietz, R. & M-P. Heide-Jørgensen 1984. Rapport over indsamling af marine pattedyr og fugle i Thule 26/4-28/6 1984. - Danbiu Aps.: 33 pp.

Durinck, J. 1989. Polarlomvier i Upernavik Distrikt 8. juni - 13. juli 1989. - Unpubl. report: 16 pp.

Erskine, A.J. 1992. Atlas of breeding birds of the maritime provinces. - Nimbus Publishing, Halifax: 270 pp.

Evans, P.G.H. 1974. Report of the Aberdeen University Expedition to Northwest Greenland, 1974. - University of Aberdeen.

Evans, P.G.H. 1981. Ecology and behavior of the Little Auk *Alle alle* in West Greenland. - Ibis 123: 1-18.

Evans, P.G.H. 1984a. The Seabirds of Greenland: Their status and conservation. Pp.49-84 in Croxall, J.P., Evans P.G.H. & R.W. Schreiber

(eds). Status and conservation of the World's seabirds. - ICBP Technical Publication No. 2.

Evans, P.G.H. 1984b. Status and conservation of seabirds in north-west Europe (Excluding Norway and the USSR). Pp. 293-321 in Croxall, J.P., Evans P.G.H. & R.W. Schreiber (eds). Status and conservation of the World's seabirds. -ICBP Technical Publication No. 2.

Evans, P.G.H. & K. Kampp 1991. Recent changes in Thick-billed Murre populations in West Greenland. Pp. 7-14 in Gaston A.J. & Elliot, R.D. (eds). Studies of high-latitude seabirds. 2. Conservation biology of Thick-billed Murres in the Northwest Atlantic. - Can. Wildl. Serv., Occ. paper No. 69.

Evans, P. & G. Waterston 1977. Recent salmon netting restrictions in south-west Greenland. - Polar Record 18: 507-508.

Falk, K. & J. Durinck 1991. The by-catch of Thick-billed Murres in salmon drift nets off West Greenland in 1988. Pp. 23-28 in Gaston A.J. & Elliot, R.D. (eds). Studies of high-latitude seabirds. 2. Conservation biology of Thick-billed Murres in the Northwest Atlantic. - Can. Wildl. Serv., Occ. paper No. 69.

Falk, K. & J. Durinck 1992. Thick-billed Murre hunting in West Greenland, 1988-89. - Arctic 45: 167-178.

Falk, K. & K. Kampp 1992. Havfugle ved Vestgrønland - en opdateret oversigt. - Ornis Consult/Zoologisk Museum Grønlandsundersøgelser, unpublished report: 24 pp + app.

Falk, K. & S. Møller 1995. Colonies of northern fulmars and black-legged kittiwakes associated with the Northeast Water polynya, Northeast Greenland. - Arctic 48: 186-195.

Falk, K., C. Hjort, C. Andreasen, K. D. Christensen, M. Elander, M. Ericson, K. Kampp, R.M. Kristensen, N. Møbjerg, S. Møller & J..M. Weslawski in press. Seabirds utilizing the Northeast Water Polynya. - J. Marine Systems, special issue.

Fisher, J. 1952. A history of the Fulmar, *Fulmarus,* and its population problems. - Ibis 94: 334-354.

Forchhammer, M. 1990. Ornithological observations in Germania Land and Dove Bugt, Northeast Greenland, 1986-1988. - Greenland Home Rule, Dpt. Wildl. Mgmt., Technical report no. 12: 29 pp.

Forchhammer, M. & L. Maagaard 1990. Distribution of breeding Sabine's Gulls in Greenland. - Dansk. Orn. Foren. Tidsskr. 84: 162-164. (Danish, with English summary).

Franeker, J.A., Camphuijsen, K. & F. Mehlum 1986. Status over Jan Mayens Fugler. - Vår Fuglefauna 9: 145-158.

Gardarsson, A. 1995. Numbers and distribution of Common Murre *Uria aalge,* Thick-billed Murre *U. lomvia* and Razorbill *Alca torda* in Iceland. - Bliki 16: 47-65. (Icelandic, with English summary).

GM & OC 1993. Database over Grønlands havfuglekolonier. - Elektronisk database, Grønlands Miljøundersøgelser og Ornis Consult a/s.

Génsbøl, B. 1978. Grønlands natur. - Hamlet, København.

Génsbøl, B. 1996. Grønlands Natur - en rejsehåndbog. - G.E.C. Gad, København: 448 pp.

Glahder, C. 1993. Havfugle langs Syd- og Sydøstgrønland, august 1990. - Dansk Orn Foren. Tidsskr. 87: 252-255.

Golovkin, A.N. 1984. Seabirds nesting in the USSR: the status and protection of populations. Pp. 473-486 in Croxall, J.P., Evans P.G.H. & R.W. Schreiber (eds). Status and conservation of the World's seabirds. - ICBP Technical Publication No. 2.

GTO 1976. Arbejdsgruppen vedrørende koncessionshaveres tekniske aktiviteter i Grønland. Bevaringsværdige områder i Grønland. - Rapport nr. 4.

Gochfeld, M. 1980. Mechanisms and adaptive values of reproductive synchrony in colonial seabirds. Pp. 207-270 in Burger, J., Olla, B.L. & H.E. Winn (eds). Behavior of marine animals, Vol 4. Marine birds. - Plenum Press, New York.

Grimmett, R.F.A. & T.A. Jones 1989. Important bird areas in Europe. - ICBP Technical Publication No. 9, Cambridge: 888 pp.

Grønlands Statistiske Kontor 1994. Grønlands befolkning, 1. januar 1994. - Opgørelser fra Grønlands Statistiske Kontor: 96 pp.

Helms, O. 1926. The birds of Angmagssalik. - Meddr. Grønland, 26, 4: 205-274.

Hildén, O. 1994. Diurnal rythm of colony attendance and optimal census time for the Black Guillemot *Cepphus grylle* in the Baltic Sea. - Ornis Fennica 71: 61-67.

Isaksen, K. & V. Bakken 1995. Breeding populations of seabirds in Svalbard. Pp. 11-35 in Isaksen, K. & V. Bakken (eds): Seabird populations in the northern Barents Sea. - Norsk Polarinstitutt, Medd. Nr. 135.

Joensen, A.H. & N.O. Preuss 1972. Report on the ornithological expedition to Northwest Greenland 1965. - Meddr Grønland 191, 5: 58 pp.

Kampp, K. 1984. Lomvierne i Disko Bugt og Uummannaq Fjord. - Zoologisk Museum: 9 pp.

Kampp, K. 1985. Lomvier og andre havfugle på Ydre Kitsigsut, Sydgrønland 1985. - Zoologisk Museum, København: 26 pp.

Kampp, K. 1986. Lomvierne i Arsuk Fjord 1986. - Zoologisk Museum, København: 11 pp.

Kampp, K. 1990. The Thick-billed Murre population of the Thule District, Greenland. - Arctic 43: 115-120.

Kampp, K. & K. Falk 1994. The birds of Ydre Kitsissut (Kitsissut Avalliit), Southwest Greenland. - Meddr Grønland, Bioscience 42: 25 pp.

Kampp, K. & R.M. Kristensen 1980a. Ross's Gull *Rhodostethia rosea* breeding in Disko Bay, West Greenland, 1979. - Dansk Orn. Foren. Tidsskr. 74: 65-74.

Kampp, K. & R.M. Kristensen 1980b. Fugle på Disko - Vestgrønland. - Unpubl. report 28 pp.

Kampp, K., Meltofte, H. & C.E. Mortensen 1986. Little Auks in Scoresby Sund. - Zoological Museum and Greenland Environmental Research Institute, Copenhagen: 60 pp. (Danish, with English summary).

Kampp, K., Meltofte, H. & C.E. Mortensen 1987. Population size of the Little Auk *Alle alle* in East Greenland. - Dansk Orn. Foren. Tidsskr. 81: 129-136.

Kampp, K., Nettleship, D.N. & P.G.H. Evans 1994. Thick-billed murres of Greenland: status and prospects. Pp. 133-154 in Nettleship, D.N., Burger, J. & M. Gochfeld (eds) Seabirds on Islands, Threats, case-studies and action plans. - BirdLife International, Conservation series No. 1.

Kapel, F.O. & R. Petersen 1982. Subsistence hunting - the Greenland case. - Rep. Int. Whal. Comm. (Special Issue 4): 51-74.

Koch, L. 1945. The East Greenland Ice. - Meddr. Grønland 130(3): 373 pp.

Lloyd, C. Tasker, M.L. & K. Partridge 1991. The status of seabirds in Britain and Ireland.- Poyser, Calton.

Lock, A.R., Brown, R.G.B. & S.H. Gerriets 1994. Gazetteer of marine birds in Atlantic Canada, an atlas of sea bird vulnerability to oil pollution. - Canadian Wildlife Service.

Lyngs, P., 1989. Polarlomvier ved Upernavik 7. maj - 14. juni 1989. Unpubl. report: 14 pp.

Mehlum, F. & V. Bakken 1994. Seabirds in Svalbard (Norway): status, recent changes and management. Pp. 155-171 in Nettleship, D.N., Burger, J. & M. Gochfeld (eds). Seabirds on islands. Threats, case-studies and action plans. - BirdLife International, Conservation series No. 1.

Meltofte, H. 1976. Ornithological observations from the Scoresby Sund area, East Greenland, 1974. - Dansk Orn. Foren. Tidsskr. 70: 107-122. (Danish, with English summary).

Meltofte, H. 1978. A breeding association between Eiders and tethered huskies in North-east Greenland. - Wildfowl 29: 45-54.

Mosbech, A., Dietz, R., Boertmann, D. & P. Johansen 1996. Oil exploration in the Fylla Area. An initial assessment of potential environmental impacts. - National Environmental Research Institute, Technical Report no. 156: 90 pp.

MRA 1996. Rules for field work and reporting regarding mineral resources (excluding hydrocarbons) in Greenland. - Mineral Resources administartion for Greenland.

Namminersornerullutik Oqartussat/Grønlands Hjemmestyre 1995. Piniarneq 1996. - Namminersornerullutik Oqartussat/Atuakkiorfik: 33 pp.

Nettleship, D.N. 1996. Family Alcidae (Auks). Pp. 678-722 in del Hoyo, J. et al. (eds). Handbook of the Birds of the World. - Lynx Edicions, Barcelona.

Nettleship, D.N. & P.G.H. Evans 1985. Distribution and status of the Atlantic Alcidae. Pp. 53-154 in Nettleship, D.N, & T.R. Birkhead (eds). The Atlantic Alcidae. - Academic Press, London: 573 pp.

Nicholson, E.M. 1930. Field-Notes on Greenland Birds. Part II. - Ibis 12th series, vol. 6: 395-428.

Nørrevang, A. 1973. Birds in the Kap Farvel Area, 1970. - Dansk Orn. Foren. Tidsskr. 67: 95-104. (Danish, with English summary).

Oldenow, K. 1933. Fugleliv i Grønland. - Det grønlandske Selskabs Aarsskrift 1932-33: 17-224.

Oldenow, K. 1935. Naturfredning i Grønland. - Det grønlandske selskabs skrifter IX: 389 pp.

Olsen, K.M. 1991. Rare birds in Denmark & Greenland in 1989. -Dansk Orn. Foren. Tidsskr. 85: 20-34 (Danish, with English summary).

Petersen, M.K. 1996. Føde- og fourageringsbiologi hos mallemuk *Fulmarus glacialis*, undersøgt i yngleperioden i koloni ved Disko Fjord, Vestgrønland. - Master thesis, University of Copenhagen: 89 pp.

Petersen, Æ. 1994. Status and population changes of auks in Iceland. - Circumpolar Seabird Bulletin 1: 4-7.

Prestrud, P. & F. Mehlum 1991. Polulation size and summer distribution of the Common Eider *Somateria mollissima* in Svalbard 1981-1985. - Norsk Polarinst. Skr. 195: 9-20.

Rasmussen, K. 1921. Thule Distrikt. Pp. 517-567 in Amdrup, G.C., Bobé, L., Jensen, A.S., & H.P. Steensby (eds). Grønland i tohundredaaret for Hans Egedes landing, Bind 1. - Meddr. Grønland 60, 567 pp.

Renaud, W.E., P.L. McLaren & S.R Johnson 1982. The dovekie, *Alle alle*, as a spring migrant in Eastern Lancaster Sound and Western Baffin Bay. - Arctic 35: 118-125.

Riget, F. 1985. Fugleundersøgelser ved Pakitsoq/Jakobshavn 1984. - Grønlands Fiskeri- og Miljøundersøgelse: 41 pp.

Roby, D.D., Brink, K.L. & D.N. Nettleship 1981. Measurements, chick meals and breeding distribution of Dovekies (*Alle alle*) in Northwest Greenland. - Arctic 34: 241-248.

Røv, N. & K-B. Strann 1986. The present status, breeding distribution, and colony size of the cormorant *Phalacrocorax carbo carbo* in Norway. - Fauna norv. Ser. C. Cinclus 10: 39-44.

Salomonsen, F. 1943. The natural history expedition to Northwest Greenland 1936. Report on the expedition. - Meddr Grønland 124, 1: 38 pp.

Salomonsen, F. 1950. Grønlands Fugle, The Birds of Greenland. - Munksgaard, København: 609 pp.

Salomonsen, F. 1967. Fuglene på Grønland. - Rhodos, København: 341 pp.

Salomonsen, F. 1974. Fuglene in menneskenes land / tingmíssat Kalâdlit nuãne. - Det grønlandske forlag, Nuuk: 127 pp.

Salomonsen, F. 1979a. Ornithological and ecological studies in S.W. Greenland (59°46'-62°27'N. Lat.). - Meddr Grønland 204, 6: 214 pp.

Salomonsen, F. 1979b. Marine Birds in the Danish Monarchy and Their Conservation. Pp. 267-287 in Bartonek, J.C. & D.N. Nettleship (eds). Conservation of Marine Birds of Northern North America. - United States Department of the Interior. Fish and Wildlife Service. Wildlife Research Report 11.

Salomonsen, F. 1981. Fugle. - Pp. 161-360 in Salomonsen, F. (ed.): Grønlands Fauna. - Gyldendal, København.

Skarphedinsson, K.H. in prep. The size of the Icelandic Eider population. - Bliki.

Stemmerik, L. 1990. Hvalrosø - a new breeding site for Fulmar *Fulmarus glacialis* and possibly for Little Auk *Alle alle* in East Greenland. - Dansk Orn. Foren. Tidsskr. 84: 161. (Danish, with English summary).

Thing, H. 1976. Field notes on birds in Thule district, Greenland, 1975. - Dansk Orn. Foren. Tidsskr. 70:141-143.

Tucker, G.M. & M.F. Heath 1994. Birds in Europe: their conservation status. - BirdLife Conservation Series no.3, BirdLife International, Cambridge: 600 pp.

Tull, C.E., Germain, P. & A.W. May 1972. Mortality of Thick-billed Murres in the west Greenland salmon fishery. - Nature 237: 42-44.

Vaughan, R. 1988. Birds of the Thule District, Northwest Greenland. - Arctic 41: 53-58.

Vibe, C. 1967. Arctic animals in relation to climatic fluctuations. - Meddr Grønland 170, 5: 227 pp.

Appendix I

Bird numbers are those from the most recent visit. I = individuals, P = pairs, I/P = individuals or pairs, + = birds present, but no information on numbers, +? = probably breeding, but numbers unknown. The figure 0 indicate that the species has disappeared from the colony.

Tab. 1 South Greenland region

Code no. and name	Species	Numbers	Most recent survey	Comment
59001 Naajat	black guillemot	40 I	1949	
	little auk	+		
60001 Portussoq	Iceland gull	570 I	1994	
	glaucous gull	2 I		
	great black-backed gull	3 P		
	kittiwake	650 P		
	black guillemot	80 I		
60002 Kanajormiut	great black-backed gull	10 I	1983	
	black guillemot	150 I		
60003 Serfartuutsiaq	black guillemot	400 I	1989	
60004 Aqissit	black guillemot	+	1986	
60005 Eqaluit	herring gull	2 I	1995	
	lesser black-backed gull	6 I		
	Iceland gull	160 I		
	glaucous gull	1-5 P		
	great black-backed gull	100 I		
	black-headed gull	8 I		
60006 Qaqortup Imaa	Iceland gull	115 I	1992	
	glaucous gull	5 I		
	great black-backed gull	10 I		
60007 Uvingassut	black guillemot	50 I	1981	
60008 Iliartalik	glaucous gull	+	1983	
	great black-backed gull	+		
60009 Portusoorsuannguaq	Arctic tern	50 I	1985	
60010 Ikerasassuaq	Arctic tern	42 I	1986	
60011 Qiioqit	Iceland gull	40 I/P	1949(1981)	1981: Brünnich's guillemot extinct
	glaucous gull	3 I/P		
	great black-backed gull	2 I/P		
	razorbill	2 P		
	Brünnich's guillemot	0 P		
	black guillemot	2 P		
	puffin	2 I		
60012 Kitsissut Avalliit	fulmar	116 P	1992	several colonies in extensive archipelago
	cormorant	4 I		
	common eider	25 P		
	glaucous gull	24 P		
	great black-backed gull	2 P		
	kittiwake	23 P		
	black guillemot	175 I		
	razorbill	448 I		
	common guillemot	945 I		
	Brünnich's guillemot	9300 I		
	puffin	176 I		
60013 Qanisartuut	black-headed gull	2 P	1983	
	great black-backed gull	1 P		
60014 Niarqornaq	Iceland gull	286 P	1949	

60015 Qalerallit Imaa	Iceland gull kittiwake black guillemot	10 200 +	P P	1974	Probably incl. 60016
60016 Qalerallit Imaa	Iceland gull kittiwake black guillemot	329 11 2	P P P	1949	
60017 Saattut	glaucous gull great black-backed gull black guillemot	1 1 50	P P P	1949	
60018 Niarqornakasik	common eider glaucous gull great black-backed gull black guillemot	1-2 5 25 36	P P P I	1994	
60019 Qeqertaq	black guillemot	30	I	1980	
60020 Torsukattak	no information				
60021 Qingaatsiaq	glaucous gull great black-backed gull	50 50	I I	1981	
60022 Igaliku	black-headed gull	2	P	1989	
60023 Qarsussat	Arctic tern	30	I	1992	
60024 Ikerasassuaq	black guillemot	10	I	1992	
60025 Ikerasassuaq	black guillemot	30	I	1992	
60026 Nuugaatsiaq	black guillemot	20	I	1970	
60027 Kangersuneq Qinngorlleq	Iceland/glaucous gull	100	P	1970	
60028 Kangersuneq Qinngorlleq	Iceland/glaucous gull	25	P	1970	
60029 Pinguiarneq	Arctic tern	11	I	1995	
60501 Kangerlussuatsiaq/ Lindenow Fjord	kittiwake	+		1926	uncertain position
61001 Tasiussaq	black-headed gull	+		1982	
61010 Nuulussuaq	Iceland gull kittiwake black guillemot	0 0 +		1983	gulls present in 1949
61014 Narsarsuaq	black-headed gull	20	I	1989	

Tab. 2 Paamiut region

Code no. and name	Species	Numbers		Most recent survey	Comment
61002 Taateraarunnerit/ Fox Fald	Iceland gull glaucous gull kittiwake black guillemot razorbill common guillemot Brünnich's guillemot	100-200 1 1000 1 3 1 2300	P P P P I I I	1986	

61003 Toornaarsuk Havn	great black-backed gull black guillemot	+ 140	 I	1989		
61004 Isa	no information					
61005 Appat	Brünnich's guillemot	0		1971		
61006 Oquutalik	glaucous gull great black-backed gull	1 7	P P	1971		
61007 Søndre Kangeq	Iceland gull kittiwake Brünnich's guillemot Razorbill	9 20 0 0	I/P I/P	1971	auks present in 1949	
61008 Isulliit	great black-backed gull black guillemot	+ 100	 I	1971		
61009 Innarsuaq	Iceland gull glaucous gull kittiwake black guillemot razorbill	407 + 1064 50 3	I I I I	1991		
61011 Innaq	Iceland gull black guillemot	150 50	P I	1986		
61012 Qoornoq	Iceland/glaucous gull	200	P	1974		
61013 Kuannersooq/Kvanefjord	Iceland gull kittiwake	305 460	P P	1986		
61015 Qeqertat	great black-backed gull	+		1985		
61016 Niaqornaq	common eider	+		1985		
61017 Taartoq	great black-backed gull	+		1985		
61018 Qaqortunnguit	black guillemot	50	I	1994		
61019 Uummannaq Tunorleq	black guillemot	50	I	1994		
62001 Kuannersooq/Kvanefjord	Iceland gull glaucous gull kittiwake black guillemot	220 + 310 +	P P	1986		
62002 Qeqertaq	black guillemot	30	P			
62003 Qassit	Iceland gull glaucous gull kittiwake black guillemot	473 + 199 +	I I	1993		
62004 Appat	fulmar razorbill black guillemot	11 0 9	I I I	1992		
62005 Ikermiut	fulmar great black-backed gull glaucous gull black guillemot	2 6 50 11	P P P I	1971		
62006 Qeqertarsuaaraq	black guillemot	3	I	1992		
62007 Ungilak	black guillemot	15	P	1971		
62008 Kujalliit	great black-backed gull	40	P	1971		
62009 Kuannersooq/Kvanefjord	Iceland gull	10	P	1986		

62010 Ukiiviit	common eider	1 P	1992
	Iceland gull	20 P	
	glaucous gull	16 P	
	great black-backed gull	15 P	
	kittiwake	13 P	
	black guillemot	240 I	
	razorbill	2 I	
62016 Qekka	common eider	22 I	1993
	great black-backed gull	16 I	
	black guillemot	56 I	
62017 Akulleq	Iceland gull	120 I	1994
	black guillemot	20 I	

Tab. 3 Nuuk region

Code no. and name	Species	Numbers	Most recent survey	Comment
62011 Tulugartalik	Arctic tern	+	1986	
62012 Qarsaalik	Arctic tern	+	1974	
62013 Umiarsuakuluup Nunaa	common eider	+	1985	
	Great black-backed gull	+		
	Arctic tern	+		
62014 Teruanniaqqat	Arctic tern	30 I	1993	
62015 Takissoq	Arctic tern	+	1986	
62200 Killiit	Iceland gull	25 P	1992	
	glaucous gull	1 P		
	great black-backed gull	20 P		
	black guillemot	50 I		
	puffin	10 I		
62201 Killiit	glaucous gull	5 P	1992	
	great black-backed gull	9 P		
	black guillemot	10 I		
	razorbill	14 I		
62202 Qiioqi	common eider	1 P	1992	
	glaucous gull	4 P		
	great black-backed gull	9 P		
	black guillemot	4 I		
63203 Simiutat	black guillemot	52 I	1992	
63001 Panerfaarserfia	Iceland gull	70 I	1989	
	great black-backed gull	1 P		
63002 Ukiivissat	glaucous gull	1 P	1978	
	razorbill	15 P		
63003 Ikerasaarsuup Imaa	common eider	1 P	1992	
	great black-backed gull	4 I		
	black guillemot	25 I		
	razorbill	2 I		
63004 Apparsuit	glaucous gull	3 P	1978	
	great black-backed gull	1 P		
	razorbill	20 P		
63005 Itissuatsiaq	common eider	1 P	1992	
	Iceland gull	1 P		
	glaucous gull	1 P		
	great black-backed gull	1 P		
	black guillemot	23 I		

63006 Qilanngaassua	glaucous gull great black-backed gull black guillemot razorbill	1 5 8 30	P P I I		1992	
63007 Qimmit	common eider glaucous gull great black-backed gull black guillemot puffin	5 3 8 25 2	P P P I I		1992	
63008 Ammarunnguit/ Teltøerne	common eider great black-backed gull Arctic tern black guillemot	11 5 80 3	P P I I		1992	terns surveyed 1993
63009 Kangerluarsoruseq	great black-backed gull black guillemot	8 6	P P		1970	
63010 Nunngarrussuit	glaucous gull great black-backed gull black guillemot razorbill common guillemot Brünnich's guillemot puffin	10 30 15 50 30 700 10	I I I I I I I		1992	
63011 Simiuttat	common eider great black-backed gull Arctic tern black guillemot puffin	4 21 + 11 50	P I I I		1992	
63012 Simiuttat	common eider great black-backed gull Arctic tern black guillemot razorbill puffin	3 12 + 15 11 84	P P I I I		1992	
63013 Simiuttat	glaucous gull great black-backed gull black guillemot razorbill puffin	2 70 38 2 75	I I I I I	1992		
63014 Simiuttat	glaucous gull great black-backed gull black guillemot	6 45 15	I I I		1992	
63015 Innersuartuut	glaucous gull great black-backed gull black guillemot razorbill puffin	2 7 6 150 200	P P I I I		1992	
63016 Sallersua	black guillemot razorbill	26 4	I I		1992	
63017 Qissiarsuit	Iceland gull great black-backed gull black guillemot razorbill little auk	1 10 130 4 3-5	P P I I I		1992	
63018 Qeqertarsuaq	Brünnich's guillemot	0			1992	
63019 Qarajat Qeqertaat	common eider Arctic tern black guillemot	3 + 95	P I		1992	
63020 Qissuttuut/Ravneøer	common eider glaucous gull great black-backed gull arctic tern black guillemot razorbill puffin	2 1 9 + 19 14 390	P P P I I I		1992	

63022 Puilassut	black guillemot	5	I/P	1970
63023 Ikattoq	Iceland gull	100	P	1986
63024 Tinissaaq	Iceland gull black guillemot	50 2	I/P I/P	1977
63025 Amitsuarsussuaq	Iceland gull	500	P	1986
63026 Kittoqqaqaq	great black-backed gull	+		1992
63027 Alapernaatsoq	glaucous gull black guillemot razorbill	1 45 24	P I I	1992
63028 Qeqertarsuaq	Arctic tern	+		1986
63029 Naajarluttut	Arctic tern	+		1993
63030 Qaqortorsuaq	Arctic tern	+		1993
63031 Kingittuarsuit	Iceland/glaucous gull great black-backed gull	50 50	I I	1993
63200 Akilia	common eider Arctic tern black guillemot	1 70 11	P I I	1992
63201 Innersuartuut	common eider great black-backed gull Arctic tern black guillemot	4 + 600 56	P I I	1992
63202 Sallersua	black guillemot razorbill	8 4	I I	1992
63203 Ivilikasik	common eider great black-backed gull black guillemot	15 4 34	P P I	1992
63204 Iffit Timilii	great black-backed gull black guillemot razorbill	10 55 20	P I I	1992
63205 Qaarussuit	Iceland gull glaucous gull great black-backed gull black guillemot razorbill	33 10 6 8 36	P P P I I	1992
63206 Qeqertat	Iceland gull glaucous gull great black-backed gull	2 20 20	P P P	1992
63207 Naajarnarit	black guillemot razorbill	10 6	I I	1992
63208 Qassissallit/Hellefiske-øer	glaucous gull great black-backed gull black guillemot razorbill	7 24 80 1	P P I I	1992
64001 Pikiulleq	black guillemot	2	I	1992
64002 Tuapassuit	black guillemot	4	P	1978
64003 Tuapassuit	Iceland gull	50	P	1986
64004 Satsissuaqqat	puffin	+		1970

64005 Qaqortorsuannguit	common eider great black-backed gull black guillemot razorbill	+ 4 15 4	 I I I	1992	
64006 Satsissunnguit	common eider great black-backed gull Arctic tern black guillemot razorbill puffin	100 35 + 45 4 150	P P I I I	1992	
64011 Itillinngguaq	black guillemot razorbill	7 6	I/P P	1970	
64012 Qeqertat	great black-backed gull black guillemot	15 10	P P	1978	
64013 Qaqusuup Qeqertnngui	black guillemot	50	P	1974	
64014 Serfarsuit	Iceland gull black guillemot razorbill	0 10 0	 P 	1970	
64015 Innaarsunnguaq	Iceland gull glaucous gull kittiwake razorbill	1200 + 80 35	I/P I/P I/P	1978	
64016 Nuugaarsuk	Iceland gull kittiwake razorbill	0 0 0	 	1986	
64017 Niaquussat	black guillemot	9	I/P	1970	
64018 Kangiussaq	Iceland gull glaucous gull	300 +	P 	1986	
64019 Innajaatoq	great cormorant Iceland gull kittiwake black guillemot razorbill	8 500 200 + 0	P P P 	1974	cormorants counted in 1986
64020 Kuussua	glaucous gull great black-backed gull	35 1	I/P P	1949	
64021 Nunaruluk	Iceland gull	200	P	1986	
64022 Alleruussat	Iceland gull glaucous gull kittiwake	500 + 0	P 	1986	
64023 Qooqqut	Iceland gull kittiwake razorbill	0 0 0	 	1970	
64024 Naajat Innersuat	Iceland gull	150	P	1986	
64025 Qaqqarsuaq	black guillemot	6	I/P	1970	
64026 Naajat Kuuat	Iceland gull	50	P	1978	
64027 Qingaarsuaq	Iceland gull	30	P	1974	
64028 Sulussugutaassaassaq	Iceland gull glaucous gull	15 +	I/P 	1978	
64029 Nipinnganeq	Iceland gull glaucous gull	10 +	I/P 	1978	

64030	common eider	100	I	1992
Kitsissut/Kook Øerne	great black-backed gull	83	I	
	black guillemot	30	I	
64031	black guillemot	3	P	1978
Tuapassuit				
64032	Arctic tern	15	P	1928
Qeqertarsuit				
64033	Arctic tern	+		1986
Oqquarrissoq				
64206	common eider	6	P	1992
Satsissut	glaucous gull	2	P	
	great black-backed gull	30	P	
	black guillemot	+		

Tab. 4 Maniitsoq region

Code no. and name	Species	Numbers		Most recent survey	Comment
64007	great black-backed gull	3	P	1992	
Timmiakasiit Avalersui	lesser black-backed gull	1	P		
	black guillemot	16	I		
64008	common eider	3	P	1992	
Sarfat	great black-backed gull	6	P		
	lesser black-backed gull	1	P		
	black guillemot	4	I		
64010	common eider	1	P	1992	
Eqaluk	herring gull	1	P		
	lesser black-backed gull	4	P		
	Iceland gull	30	P		
	glaucous gull	2	P		
	great black-backed gull	10	P		
	black guillemot	48	I		
64200	herring gull	1	P	1992	
Kingittuarsuk	lesser black-backed gull	1	P		
	Iceland gull	9	P		
	glaucous gull	5	P		
	great black-backed gull	22	P		
	kittiwake	6	P		
	black guillemot	64	I		
	razorbill	37	I		
64201	black guillemot	45	I	1992	
Illut					
64202	lesser black-backed gull	2	P		
Qeqertatsiaat	Iceland gull	54	P		
	black guillemot	45	I		
	razorbill	34	I		
64203	Iceland gull	4	P	1992	
Toqqussap Nunaa	great black-backed gull	1	P		
	black guillemot	3	I		
	razorbill	30	I		
64204	glaucous gull	3	P	1992	
Toqqussap Nunaa	black guillemot	10	I		
	razorbill	11	I		
64205	glaucous gull	8	P	1992	
Kalotten	black guillemot	35	I		
65001	kittiwake	175	P	1990	
Innarsuaq/Søndre Isortoq	razorbill	35	I		
65002	kittiwake	85	P	1990	
Innarsuaq/Søndre Isortoq	razorbill	10	I		

65003 Innarsuaq/Søndre Isortoq	Iceland gull kittiwake razorbill Brünnich's guillemot	100 P 5000 P 300 I 2200 I	1990	Brünnich's guillemot counted in 1988
65004 Innarsuaq/Søndre Isortoq	Iceland gull kittiwake razorbill	350 I 5350 P 60 I	1990	
65005 Tukingassoq	great black-backed gull Arctic tern	1 P +	1992	
65006 Serfat	great cormorant great black-backed gull black guillemot	0 3 P 55 I	1992	
65007 Saattuarsuit	Arctic tern black guillemot	30 I 4 I	1993	
65008 Sermilinnguaq	Iceland gull glaucous gull great black-backed gull kittiwake black guillemot razorbill	143 P 5 P 1 P 353 P 4 I 10 I	1992	
65009 Sermilinnguaq	Iceland gull great black-backed gull kittiwake black guillemot razorbill	351 P 1 P 2851 P 4 I 51 I	1992	
65010 Sermilinnguaq	Iceland gull glaucous gull kittiwake black guillemot	9 P 1 P 138 P 1 I	1992	
65011 Sermilinnguaq	Iceland gull glaucous gull kittiwake razorbill	72 P 1 P 252 P 40 I	1992	
65012 Sermilinnguaq	Iceland gull glaucous gull kittiwake	48 P 1 P 25 P	1992	
65013 Sermilinnguaq	Iceland gull kittiwake razorbill Brünnich's guillemot common guillemot	51 P 579 P 250 I 570 I +	1992	
65014 Sermilinnguaq	razorbill	10 I	1990	
65015 Sermilinnguaq	Iceland gull kittiwake razorbill Brünnich's guillemot common guillemot	22 P 4420 P 200 I 3970 I +	1992	
65016 Kilaarsarfik	black guillemot	+	1989	
65017 Kilaarsarfik	Iceland gull	+	1989	
65018 Sermitsiaq	Iceland gull	+		
65019 Taateraat	great cormorant Iceland gull kittiwake razorbill Brünnich's guillemot common guillemot	12 P 200 I 10000 P 100 I 8915 I +	1989	
65020 Qaarsup Qaqaa	black guillemot razorbill	10 I 10 I	1989	

65021 Nuupiluk	great cormorant	10	I	1989	
	Iceland gull	+			
	kittiwake	+			
	razorbill	100	I		
65022 Nuupiluk	Iceland gull	+		1989	
	razorbill	25	I		
65023 Qernertoq	great cormorant	6	P	1990	
	Iceland gull	125	P		
	kittiwake	100	P		
65024 Qernertoq	kittiwake	+		1989	
	razorbill	15	I		
65025 Oqaatsuerunerit	great cormorant	+		1989	
	razorbill	20	I		
65026 Qinngua Kujalleq	great cormorant	7	P	1990	
	Iceland gull	50	P		
	kittiwake	250	P		
	black guillemot	6	I		
	razorbill	18	I		
65027 Qinngua Kujalleq	great cormorant	11	P	1990	
	Iceland gull	35	I		
	kittiwake	100	P		
65028 Taateraatsiaat Sermiat	great cormorant	0		1989	gulls counted in 1977
	Iceland gull	160	I/P		
	kittiwake	600	I/P		
	razorbill	10	I		
65029 Taateraatsiaat Sermiat	Iceland gull	75	I/P	1977	
	glaucous gull	6	P		
	kittiwake	275	I/P		
	razorbill	14	I		
65030 Taateraatsiaat Sermiat	great cormorant	0		1989	
	Iceland gull	+			
	kittiwake	+			
	razorbill	20	I		
65031 Taateraatsiaat Sermiat	razorbill	10	I	1989	
65032 Taateraatsiaat Sermiat	razorbill	20	I	1989	
65033 Maniitsorsuaq	black guillemot	11	I/P	1977	
65034 Tuttutooq	black guillemot	6	I/P	1977	
65035 Niaqornaq	Iceland gull	1	P	1977	
	black guillemot	3	I/P		
65036 Inorersut	Iceland gull	70	I/P	1977	
	kittiwake	120	I/P		
	black guillemot	3	I/P		
65037 Niaqornaq	black guillemot	20	I/P	1977	
65038 Qeqertaq	black guillemot	12	I/P	1977	
65039 Tasiussaq	Iceland gull	15	I/P	1977	
	black guillemot	25	I/P		
	razorbill	15	I/P		
65040 Tupertalik	razorbill	25	P	1977	
65041 Nuussuup Qaarsua	razorbill	14	I	1977	
65042 Eqalugaarsuit	great black-backed gull	+		1990	
	Arctic tern	100	I		
	razorbill	4	I		

65043 Maniitsup Sermilia	Iceland gull glaucous gull kittiwake	100 P 30 P 50 P	1980	
65044 Maligissat	great black-backed gull Arctic tern	1 P +	1992	
65045 Upernivik	Arctic tern	50 I	1993	
65046 Iviangit Sujorarlee	Arctic tern	100 I	1993	
65047 Napparutilissuaq/Spaniolø	Arctic tern	500 I	1993	
65048 Issulissuaq	Arctic tern	10 I	1993	
65049 Kangerluk	Arctic tern	50 I	1993	
65050 Inussulik	Arctic tern	35 I	1993	
65200 Serfat	black guillemot	67 I	1992	
65201 Skildpadderne	common eider great black-backed gull black guillemot	4 P 2 P 250 I	1992	
65202 Qunnertooq	great black-backed gull black guillemot	1 P 23 I	1992	
65203 Sermilinnguaq	razorbill	18 I	1992	
65204 Naajarsuit	black guillemot puffin	3 I 2 I	1992	
65205 Qeqertaq	common eider great black-backed gull black guillemot	2 P 16 P 46 I	1992	
65206 Eqalugaarsuit	black guillemot razorbill	16 I 19 I	1992	
65207 Uummannassuaq/Kin of Sal	puffin	+	1992	
66001 Spraglefjeld	great cormorant Iceland gull kittiwake	20 P 100 P 300 P	1990	
66002 Nakkarajooq	great cormorant Iceland gull kittiwake	26 P 21 P 50 P	1990	
66003 Nakkarajooq	great cormorant Iceland gull kittiwake	9 P 35 P 15 P	1990	
66005 Salliarutsit	Iceland gull	+	1989	
66006 Terrassefjeld	Iceland gull	+	1989	
66007 Tapa	great cormorant Iceland gull kittiwake black guillemot razorbill	18 P 40 I/P 98 I/P 3 I 20 I	1977	razorbills counted in 1989
66008 Uiffaq	Iceland gull kittiwake	+ +	1989	
66009 Spraglefjeld	Iceland/glaucous gull	500 I/P	1977	

66010 Illorlersuaq	no information			
66011 Assaassat	Iceland/glaucous gull black guillemot	3 +	P	1973
66014 Naajat Innaat	great cormorant Iceland gull	22 +	P	1978
66015 Nakkajanga	Iceland gull	30	I/P	1973
66038 Kinngatsiaq	Iceland gull	59	P	1992
66039 Puto	Iceland/glaucous gull	30	P	1978
66206 Amerlunnguaq	great black-backed gull black guillemot	1 78	P I	1992

Tab. 5 Sisimiut region

Code no. and name	Species	Numbers		Most recent survey	Comment
66012 Qaqqatsiaq	Iceland gull	10	P	1973	
66013 Naajaallup Nunaa	Iceland gull	10	P	1978	
66016 Qeqertalaap Tasia	Iceland/glaucous gull	10	P	1973	
66017 Naajat	Iceland/glaucous gull	30	I/P	1960	
66018 Sujorarlit	common eider great black-backed gull Arctic tern black guillemot	4 4 100 6	P P I I	1992	terns counted in 1993
66019 Pikiulik	black guillemot	10	I/P	1960	
66021 Qeqertarsuit	Iceland gull black guillemot razorbill	0 9 0	I	1992	
66022 Kiattunngup Qulaa	black guillemot	50	P	1975	
66023 Nuutsiaq	Iceland/glaucous gull	24	I/P	1975	
66024 Naajat Nuuat	Iceland/glaucous gull	49	I/P	1960	
66025 Qeqertarsua	Iceland gull glaucous gull	500 +	P	1975	
66026 Taateraavi	Iceland gull	+		1975	
66028 Ikertooq	kittiwake	0		1975	
66029 Ikertooq	kittiwake	0		1975	
66030 Ikertooq	kittiwake	0		1975	

66031	kittiwake	0		1975
Taateraarsuit Kangilliit	black guillemot	5	I/P	
66032	Iceland/glaucous gull	880	I/P	1960
Naajarsuit				
66033	black guillemot	1	I/P	1960
Akulleq	razorbill	7	I/P	
66034	black guillemot	4	I/P	1960
Akulleq	razorbill	5	I/P	
66035	Iceland gull	1	I/P	1960
Akulleq	black guillemot	1	I/P	
	razorbill	7	I/P	
66036	Iceland gull	12	I/P	1960
Sarfaa	black guillemot	8	I/P	
66037	Iceland/glaucous gull	13	I/P	1960
Maligiaq				
66040	great black-backed gull	8	P	1992
Qassit	black guillemot	95	I	
	puffin	2	I	
66200	great black-backed gull	4	P	1992
Qilanngat	black guillemot	6	I	
	puffin	?		
66201	great black-backed gull	2	P	1992
Ivissuartuut	kittiwake	50	P	
	Arctic tern	51	I	
	black guillemot	2	I	
66202	razorbill	6	I	1992
Sallersuaq				
66203	glaucous gull	2	P	1992
Apparsuit	great black-backed gull	20	P	
	black guillemot	45	I	
66205	common eider	100	P	1992
Sassat	great black-backed gull	200	P	
	black guillemot	120	I	
67003	Iceland gull	3	I/P	1960
Arnaq Qallunaaq	black guillemot	9	I/P	
	razorbill	4	I/P	
67004	Iceland/glaucous gull	120	I/P	1960
Akuliarusersuaq				
67006	Iceland/glaucous gull	15	I/P	1954
Eqalugarsuit				
67009	black guillemot	10	I	1954
Eqalugarsuit Nunaat				
67013	black guillemot	4	I	1980
Niaqornarsuaq	razorbill	0		
67014	great cormorant	3	I/P	1980
Nassuttuutaa	Iceland gull	20	I/P	
	kittiwake	95	I/P	
	black guillemot	2	I/P	
	razorbill	10	I/P	
67015	great cormorant	54	P	1980
Nassuttuutaa	Iceland gull	22	I/P	
	kittiwake	35	I/P	
	black guillemot	2	I/P	
67016	common eider	16	P	1980
Nassuttuutaa	Iceland gull	1	P	
67017	great cormorant	0		1980
Nuuk	Iceland gull	5	I/P	
	kittiwake	0		
	black guillemot	7	I/P	
	razorbill	0		

67022 Sikuartuut	black guillemot	10	P	1980
67023 Qeqertarsuaq	great cormorant	36	I/P	1980
	glaucous gull	3	I/P	
	black guillemot	12	I/P	
67028 Naajaalik	glaucous gull	10	I/P	1980
67029 Naajaallit	glaucous gull	11	I/P	1980
67033 Sannerut	black guillemot	10	P	1954
67078 Kissaviat	glaucous gull	8	P	1973
67081 Eqalugarsuit	Iceland/glaucous gull	70	I/P	1980
67201 Naajatooq	lesser black-backed gull	1	P	1992
	great black-backed gull	6	P	
	glaucous gull	1	P	
	black guillemot	34	I	
67202 Inussulinnguaq	common eider	2	P	1992
	great black-backed gull	16	P	
	black guillemot	230	I	
	razorbill	10	I	
	puffin	7	I	
67204 Avannarlersuaq	great black-backed gull	4	P	1992
	black guillemot	135	I	
67205 Umiatsia Livik	common eider	5	P	1992
	great black-backed gull	3	P	
	black guillemot	250	I	

Tab. 6 Kangaastsiaq region

Code no. and name	Species	Numbers		Most recent survey	Comment
67011 Qaannat Aqqutaat	great cormorant	27	I/P	1980	
	Iceland gull	35	I/P		
	kittiwake	30	I/P		
	black guillemot	12	I		
	razorbill	20	I		
67012 Qaannat Aqqutaat	Iceland gull	4	I/P	1980	
	black guillemot	5	I/P		
	razorbill	0			
67019 Qaarsup Qulaa	great cormorant	15	I/P	1980	
	Iceland gull	10	I/P		
	glaucous gull	2	I/P		
	black guillemot	3	I/P		
67020 Qeqertannguaq	common eider	0		1980	
	great black-backed gull	9	I/P		
67021 Salleq	great cormorant	0		1980	
	black guillemot	4	I/P		
67024 Innarsuaq	great cormorant	27	I/P	1980	
	Iceland gull	90	I/P		
	glaucous gull	1	I/P		
	kittiwake	0			
	black guillemot	1	I/P		
	razorbill	0			
67025 Innarsuaq	great cormorant	33	I/P	1980	
	Iceland gull	89	I/P		
	kittiwake	40	I/P		
	black guillemot	12	I/P		
	razorbill	130	I		

67026 Spiret	great cormorant	128	I/P	1980
	Iceland gull	26	I/P	
	kittiwake	0		
	razorbill	8	I/P	
67027 Ikeruup Nuua	great cormorant	3	I/P	1980
	Iceland gull	44	I/P	
	kittiwake	15	I/P	
	black guillemot	6	I/P	
	razorbill	20	I/P	
67030 Innartallit	great cormorant	20	I/P	1980
	common eider	10	P	
	Iceland gull	16	I/P	
	kittiwake	55	I/P	
	black guillemot	20	I	
	razorbill	10	I/P	
67032 Nuersorfiaqqap Avannaatungaa	glaucous gull	16	I/P	1954
67034 Quassulik	black guillemot	40	I	1954
67035 Aqqitsoq	black guillemot	30	I	1954
67036 Ipiutaarsuk	great cormorant	54	I/P	1980
	glaucous gull	5	I/P	
	black guillemot	2	I/P	
	razorbill	2	I/P	
67037 Ipiutaarsuk	great cormorant	9	I/P	1980
	Iceland gull	9	I/P	
	glaucous gull	1	I/P	
67038 Kukissooq	common eider	22	P	1980
	great black-backed gull	1	P	
	black guillemot	3	I/P	
67039 Illup Nunaa	Iceland gull	10	I/P	1980
	black guillemot	8	I	
67040 Pinilerujuk	great cormorant	43	I/P	1980
	Iceland gull	26	I/P	
	glaucous gull	2	I/P	
	black guillemot	14	I	
67041 Serfat	black guillemot	400	I	1980
67042 Serfat	Iceland gull	0		1980
	black guillemot	50	P	
67043 Serfat	common eider	10	I	1980
	great black-backed gull	20	I/P	
	black guillemot	20	I	
67044 Hvidøre	great cormorant	13	I/P	1980
	Iceland gull	2	I/P	
	glaucous gull	1	P	
67045 Illut Nunaat	Iceland/glaucous gull	5	I/P	1980
67046 Sarfarsuaq	common eider	15	I	1980
	Iceland gull	1015	P	
	great black-backed gull	7	P	
67047 Iviangernat	Iceland/glaucous gull	20	P	1954
67048 Tronen	glaucous gull	40	I/P	1980
67049 Serfalik	common eider	1	P	1980
	Iceland gull	20	P	
	great black-backed gull	40	P	
	black guillemot	140	I	

67050 Sarfarlik	common eider	22	I	1980
	Iceland gull	70	I/P	
	glaucous gull	1	P	
	great black-backed gull	4	I/P	
	black guillemot	2	I/P	
67051 Sarfarlik	common eider	18	I	1980
	Iceland gull	16	I/P	
	glaucous gull	30	I/P	
	great black-backed gull	10	I/P	
	black guillemot	50	I/P	
	razorbill	4	I/P	
67052 Isersiutip Qaqqaa	glaucous gull	11	I/P	1980
67053 Innaa	glaucous gull	35	I/P	1954
67054 Saqqarsuaq	glaucous gull	8	I/P	1954
67055 Siggut Alanngorliit	black guillemot	20	I	1980
67056 Qaarsortooq	glaucous gull	39	I/P	1954
67057 Aorrussaq	black guillemot	1000	I	1954
67058 Aorrussaq	black guillemot	200	I	1954
67059 Qasigiarsuit	Iceland gull	26	I/P	1954
	kittiwake	240	I/P	
	black guillemot	1	I/P	
67060 Qasigiarsuit	Iceland gull	45	I/P	1954
	glaucous gull	1	P	
	kittiwake	370	I/P	
	black guillemot	4	I/P	
67061 Qasigiarsuit	Iceland gull	360	I/P	1954
	glaucous gull	15	P	
	kittiwake	1200	I/P	
	black guillemot	5	I/P	
67062 Uiffaq	great cormorant	11	I/P	1980
	Iceland gull	25	I/P	
	black guillemot	6	I/P	
	razorbill	15	I/P	
67063 Innakasik	great cormorant	43	P	1980
	Iceland gull	14	I/P	
	black guillemot	4	I/P	
	razorbill	4	I/P	
67064 Ulorsuit	Iceland/glaucous gull	1000	P	1980
67065 Amitsuarsuk	Iceland gull	16	I/P	1954
	glaucous gull	20	I/P	
67066 Eqalussuit	great cormorant	0		1992
	Iceland gull	42	P	
	glaucous gull	3	P	
	black guillemot	4	I	
	razorbill	10	I	
67067 Ukalilik	great black-backed gull	1	P	1992
	black guillemot	14	I	
67068 Serfartuut	glaucous gull	3	P	1992
	black guillemot	15	I	
	razorbill	0		
67070 Taateraat	Iceland gull	5	I/P	1960
	glaucous gull	20	I/P	
67071 Allungersat/ Fattighusfjorden	Iceland gull	2	I/P	1960
	black guillemot	4	I/P	

67072 Fattighusfjorden	Iceland gull	43	I/P	1960
67073 Qaassaq	black guillemot razorbill	5 3	I/P I/P	1960
67074 Sarfalik	great cormorant common eider Iceland gull glaucous gull great black-backed gull black guillemot	138 26 3 25 5 30	I/P P I/P I/P I/P I/P	1980
67075 Siggut Alanngarliit	great cormorant Iceland gull glaucous gull black guillemot	15 150 1 10	I/P I/P P I/P	1980
67076 Iterfiluup Tasia	Iceland/glaucous gull	50	P	1954
67077 Eqalussuit Tasiat	Iceland/glaucous gull	48	I/P	1960
67082 Naajat	black guillemot	6	I/P	1960
67083 Kitsissut	Arctic tern	25	I	1993
67084 Uummannaq/Rifkol	puffin	+		1949
67200 Simiutannguit	common eider great black-backed gull black guillemot	+ 4 75	P I	1992
67203 Terianniartooq	great black-backed gull black guillemot puffin	3 75 6	P I I	1992
68001 Tuttullip Saqqaa	Iceland gull black guillemot razorbill	1 3 15	P I/P I/P	1960
68004 Avataq	glaucous gull great black-backed gull Arctic tern black guillemot	4 1 ? 130	P P I	1992
68005 Qarsaartallit	glaucous gull black guillemot	4 50	P I	1992
68006 Tasiussaq	Iceland gull glaucous gull	128 10	I/P I/P	1980
68007 Tasiussaq	Iceland gull black guillemot	3 6	I/P I/P	1980
68040 Neqituut	black guillemot razorbill puffin	15 6 8	I I I	1992
68043 Innalinnguaq	great black-backed gull black guillemot razorbill puffin	10 185 0 0	I I	1992
68055 Itinneeralinnguaq	glaucous gull kittiwake black guillemot	2 0 10	I/P I/P	1954
68056 Qeqertaa	Iceland gull black guillemot razorbill	20 2 4	I/P I/P I/P	1954
68058 Toornaarsoqqortooq	Iceland gull kittiwake black guillemot	20 44 4	I/P I/P I/P	1954

68059	Iceland gull	20	I/P	1954
Toornaarsoqqortooq	kittiwake	8	I/P	
	black guillemot	2	I/P	
	razorbill	6	I/P	
68060	Iceland gull	95	I/P	1954
Kangerluluk	glaucous gull	1	P	
	black guillemot	25	I/P	
68061	Iceland gull	15	I/P	1960
Qoornua	kittiwake	35	I/P	
68062	black guillemot	15	I/P	1954
Eqalussuartooq				
68063	black guillemot	36	I	1992
Anillagiarsua	razorbill	0		
68064	black guillemot	+		1954
Killiat ikerasaa				
68065	glaucous gull	3	P	1992
Innalissuaq	kittiwake	0		
	black guillemot	24	I	
	razorbill	0		
68066	glaucous gull	12	I	1992
Tinuteqissaap Nunaa	black guillemot	18	I	
	razorbill	2	I	
68067	Iceland gull	10	P	1992
Oqaatsut	glaucous gull	100	I	
	kittiwake	0		
	black guillemot	30	I	
	razorbill	0		
68068	razorbill	25	I/P	1954
Alanngorsua				
68069	black guillemot	5	I	1992
Alanngorsua	razorbill	0		
68070	black guillemot	10	I/P	1954
Serfartooq				
68071	Iceland gull	37	I/P	1954
Sarfarsuaq	black guillemot	2	I/P	
	razorbill	5	I/P	
68072	Iceland gull	10	I/P	1954
Seersinninnguup Nuua	kittiwake	41	I/P	
68073	Iceland/glaucous gull	62	I/P	1954
Naajannguit				
68074	Iceland/glaucous gull	17	I/P	1954
Naajannguit				
68075	Iceland/glaucous gull	18	I/P	1954
Naajannguit				
68076	glaucous gull	1	P	1954
Niaqornaarulik	black guillemot	15	I/P	
68077	great cormorant	6	I/P	1954
Qeqertarujuk	Iceland gull	23	I/P	
	kittiwake	24	I/P	
68078	Iceland gull	25	I/P	1954
Tasiussarsuup Qinngua	black guillemot	2	I/P	
68079	great cormorant	5	I/P	1954
Qasigiaqarfik Kujalleq	common eider	2	P	
	Iceland gull	1030	I/P	
	glaucous gull	2	I/P	
	kittiwake	510	I/P	
	black guillemot	6	I/P	
68080	Iceland gull	140	I/P	1954
Qasigiaqarfik Kujalleq	black guillemot	4	I/P	
68082	Iceland gull	13	I/P	1954
Akuliaruseq	kittiwake	2	I/P	

68083	Iceland gull	9	I/P	1954	
Sarfarsuaq	kittiwake	0			
68084	Iceland gull	13	I/P	1954	
Puerlu	kittiwake	600	I/P		
	black guillemot	1	I/P		
68085	Iceland gull	140	I/P	1954	
Uitsiivik	glaucous gull	2	I/P		
	kittiwake	550	I/P		
68086	great cormorant	8	P	1954	
Umerlut nunaa	Iceland gull	1	P		
	kittiwake	0			
68087	glaucous gull	5	I/P	1954	
Umerlut nunaa	black guillemot	6	I/P		
68088	glaucous gull	2	I/P	1954	
Eqalugaarsuit Nuussuat	black guillemot	40	I/P		
68089	black guillemot	34	I	1954	
Pikiulli					
68091	Iceland gull	1	P	1954	
Pikiulli	black guillemot	15	I/P		
68092	common eider	20	P	1954	
Pikiulli	Iceland gull	1	P		
	Arctic tern	+			
	black guillemot	25	I/P		
68093	Iceland gull	15	I/P	1954	
Qarsorsat Nuuat	kittiwake	6	I/P		
	black guillemot	2	I/P		
68094	Iceland gull	44	I/P	1954	
Qarsorsat Nuuat	kittiwake	54	I/P		
	black guillemot	4	I/P		
68095	Iceland gull	8	I/P	1954	
Ukuarsuaq	kittiwake	54	I/P		
68096	Iceland gull	100	I/P	1954	
Kissaviat					
68097	common eider	20	P	1954	
Pikiulli	Arctic tern	+			
68098	common eider	67	P	1954	
Qeqertai					
68099	common eider	30	P	1954	Gulls counted in 1995
Sarfarsuaq	great black-backed gull	8	P		
68100	common eider	1092	P	1954	
Akuliarutsip Qeqertai					
68101	common eider	439	P	1954	
Tasiussarsuup Qinngua					
68102	common eider	556	P	1954	
Saattut					
68119	glaucous gull	5	I/P	1960	
Innarsuaq					
68121	glaucous gull	100	I	1992	
Alanngorsuup Innaa	kittiwake	12	I		
	black guillemot	160	I		
	razorbill	8	I		
68123	Iceland gull	447	I/P	1960	
Innap Ilua	glaucous gull	3	I/P		
	black guillemot	25	I/P		
	razorbill	1	I/P		
68124	Iceland gull	120	I/P	1960	
Itissaaq Kujalleq	glaucous gull	3	I/P		
68125	Iceland gull	3	I/P	1960	
Innalik	black guillemot	4	I/P		

68126 Qarassap Tasia	Iceland/glaucous gull	470	I/P	1960
68127 Ukalilik	black guillemot	35	I/P	1960
68128 Qipingassup Nunaa	glaucous gull	5	I/P	1960
68130 Kangilernga	Iceland gull black guillemot	24 3	I/P I/P	1960
68131 Kangilernga	glaucous gull	32	I/P	1960
68132 Akileriit Qeqertarsui	Iceland gull black guillemot	37 5	I/P I/P	1960
68133 Akileriit Qeqertarsui	Iceland gull razorbill	2 5	I/P I/P	1960
68140 Qiioqersuit	Arctic tern	500	I	1993
68202 Qeqertaa	common eider glaucous gull black guillemot razorbill	1 3 21 31	P P I I	1992

Tab. 7 Southern Disko Bugt region

Code no. and name	Species	Numbers		Most recent survey	Comment
68008 Appalilik	great black-backed gull black guillemot razorbill puffin	+ 2 4 0	 I/P I/P	1980	
68009 Oqaatsut	Arctic tern	50	I	1946	
68010 Nunatsiaq	Arctic tern black guillemot razorbill little auk puffin	+ 6 50 + 1000	 I/P I/P I/P	1975/76	
68013 Saattuarsuit	great black-backed gull Arctic tern black guillemot little auk puffin	1 310 9 25 0	P P I I	1976	
68014 Kuussuaq	Iceland Gull glaucous gull kittiwake	50 10 1000	P P P	1946	
68015 Qeqertasussuk	Iceland gull black guillemot	3 2	P P	1946	
68016 Sarpiussat	glaucous gull black guillemot	3 10	P P	1946	
68017 Tunutta Innaa	great cormorant Iceland gull kittiwake black guillemot razorbill	23 19 0 5 0	I/P I/P I/P 	1980	
68018 Nuuk	Iceland gull black guillemot razorbill	4 10 0	I/P I/P 	1980	

68019 Orpissooq	no information				
68020 Orpissooq	Iceland gull glaucous gull kittiwake black guillemot	200 5 250 4	I/P I/P I/P I/P	1980	
68021 Orpissuup Nunaa	glaucous gull	26	I/P	1976	
68022 Arnarlivik	fulmar glaucous gull black guillemot	8 373 2	P I/P I/P	1980	
68023 Arnarlivik	fulmar	30	P	1946	
68024 Tarsaarsivik	Iceland/glaucous gull	200	I/P	1980	
68025 Niaqornarsuaq	Iceland gull kittiwake black guillemot	45 0 3	I/P I/P	1980	
68026 Innarsuaq	great cormorant Iceland gull glaucous gull kittiwake black guillemot razorbill	64 27 10 30 6 3	I/P I/P I/P P P I/P	1980	
68027 Saattut	Arctic tern	+		1946	
68028 Tunuttaa Imaa	Arctic tern	+		1946	
68029 Kitsisunnguit	Arctic tern black guillemot razorbill puffin	5000 300 2 12	I I I I	1980	tern numbers from 1993
68030 Saattuarsuit	Arctic tern black guillemot razorbill little auk puffin	135 5 3 200 200	P P I I I	1980	
68031 Salleq	glaucous gull	40	P	1946	
68032 Qinnguata Tasia	glaucous gull	70	P	1946	
68037 Alanngukasik	Iceland gull glaucous gull	103 10	I/P I/P	1976	
68039 Ikerasassuaq	glaucous gull black guillemot	3 25	I/P I/P	1960	
68041 Aappilattoq	black guillemot	16	I	1992	
68042 Qunnertussut	black guillemot razorbill	50 15	I/P I/P	1954	
68044 Manermiut	Iceland gull	50	I/P	1954	
68045 Umiivik	Iceland gull black guillemot	5 6	I/P I/P	1954	
68046 Niaqornaq	Iceland gull	79	I/P	1954	
68047 Nuggorissoq	Iceland gull	50	I/P	1954	
68048 Ulussat Nuuat	Iceland gull black guillemot razorbill	7 12 4	I/P I/P I/P	1954	At least gulls still present in 1993 (seen from aircraft)

68049 Amitsuarsuk	Iceland gull	37	I/P	1954
68050 Ikerasak	glaucous gull	65	I/P	1954
68051 Innaq Kangilleq	glaucous gull	15	I/P	1954
68052 Innaq Kangilleq	Iceland gull glaucous gull	40 5	I/P I/P	1954
68053 Nuussuaq	Iceland gull black guillemot	5 10	I/P I/P	1954
68054 Nalingaap Sullua	Iceland gull kittiwake black guillemot	40 0 50	I/P I/P	1954
68057 Taateraalik	Iceland gull glaucous gull black guillemot razorbill	20 2 6 10	I/P I/P I/P I/P	1954
68081 Nasiffik	Iceland gull kittiwake	30 37	I/P I/P	1954
68103 Ikerasassuaq	black guillemot	8	I/P	1960
68104 Uvingassoq	black guillemot	25	I/P	1976
68105 Qeqertarmiut	black guillemot	15	I/P	1976
68106 Qassiviup Nuua	Iceland gull glaucous gull kittiwake black guillemot	10 2 0 10	I/P I/P I/P	1976
68107 Qassiviup Nuua	black guillemot	20	P	1976
68108 Annertussoq	black guillemot razorbill	300 5	P I	1976
68109 Annertussup Qaqqai	Iceland gull glaucous gull	50 70	I/P I/P	1960
68110 Nuugaatsiaq	Iceland gull black guillemot	1 10	P I/P	1960
68111 Innaarsulik	black guillemot	50	I/P	1960
68112 Qornua	great cormorant Iceland gull glaucous gull kittiwake black guillemot razorbill	25 110 3 65 50 4	P I/P I/P I/P I/P I/P	1980
68113 Qarlortup Tunua	Iceland gull	27	I/P	1960
68114 Qarlortup Ilua	black guillemot	50	I/P	1960
68115 Orpissuup Nunaa	Iceland/glaucous gull	180	I/P	1976
68116 Arnarlivik	Iceland gull black guillemot	1 10	P I/P	1960
68117 Orpisooq	black guillemot	12	I/P	1960
68118 Orpisooq	black guillemot	14	P	1980

68134 Appaliliup Ikarlussua	Arctic tern	50 P	1970	
68135 Saattuarsuit	great black-backed gull Arctic tern black guillemot	2 P 50 I 50 I	1992	terns counted in 1993
68137 Qeqertasussuk	Iceland gull black guillemot	40 I/P 50 I/P	1980	
68138 Kangiussaq	great cormorant Iceland gull glaucous gull kittiwake black guillemot razorbill	2 I/P 45 I/P 3 I/P 40 I/P 4 I/P 0	1980	
68141 Kittorsalik	Arctic tern	15 I	1993	
68142 Qussalik	Arctic tern	+	1993	
68143 Killit	Arctic tern	+	1993	
68144 Portukullak	Arctic tern	25 I	1993	
68145 Qaersup	Arctic tern	400 I	1993	
68146 Portussut	Arctic tern	50 I	1993	
68147 Innarsuaq	great cormorant	20 I	1993	
68148 Pullat	Arctic tern	1000 I	1972	
68200 Akullit	black guillemot	30 I	1992	

Tab. 8 Ilulissat region

Code no. and name	Species	Numbers	Most recent survey	Comment
68033 Naajannguit	Iceland gull	10 I/P	1960	
68034 Qilanngalik	Arctic tern black guillemot puffin	500 I/P 10 I/P 0	1946	
68035 Qilanngalik	great cormorant Iceland gull glaucous gull kittiwake	2 I/P 125 I/P 3 I/P 0	1976	
68036 Qangattalik	great cormorant Iceland gull kittiwake	55 I/P 1200 I/P 0	1976	
69003 Tasersuaq Alleq	great cormorant Iceland gull glaucous gull kittiwake	+ 50 I/P 1 I/P 0	1976	
69004 Pannaat	Iceland/glaucous gull	150 I/P	1946	
69005 Alanngorsuaq	glaucous gull	0	1976	

69006 Alanngorsuaq	Iceland/glaucous gull	90 I/P	1976	
69007 Oqaatsuerunnerit	great cormorant	81 I/P	1976	
	Iceland gull	700 I/P		
	glaucous gull	3 I/P		
	kittiwake	0		
69008 Aappaluttoq	Iceland gull	123 I/P	1976	
69009 Nuuluk	Iceland gull	92 I/P	1976	
	glaucous gull	5 I/P		
69010 Nuuluk	great cormorant	30 I/P	1976	
	Iceland gull	300 I/P		
	kittiwake	0		
69011 Qaarsoq	Iceland gull	60 I/P	1976	
	kittiwake	0		
69012 Upernivik	Iceland gull	50 I/P	1976	
69013 Kangersuneq	Iceland gull	37 I/P	1960	
	kittiwake	0		
	black guillemot	20 I/P		
69014 Anoritooq	Iceland gull	16 I/P	1960	
	kittiwake	0		
	black guillemot	15 I/P		
69015 Nuunnguaq	Iceland gull	2 P	1984	
	glaucous gull	+		
	kittiwake	246 I		
	black guillemot	6 I		
	Brünnich's guillemot	0		
69016 Nuunnguaq	Iceland gull	+	1984	
	glaucous gull	+		
	kittiwake	53 I		
	black guillemot	19 I		
	Brünnich's guillemot	0		
69017 Nuunnguaq	great cormorant	+ ?	1984	cormorants seen in 1994
	Iceland gull	18 P		
	kittiwake	237 I		
	razorbill	5 P		
69018 Sarfaq	Iceland gull	10 P	1984	
	glaucous gull	1 P		
	kittiwake	0		
69019 Sarfaq	Iceland gull	15 P	1984	
	kittiwake	0		
69020 Qernertup Nuua	Iceland gull	0	1980	
	glaucous gull	0		
	kittiwake	0		
69021 Timmeernerit	great cormorant	0	1960	
	Iceland gull	0		
	kittiwake	0		
	black guillemot	0		
69022 Nuuluk	Iceland gull	10 I/P	1960	
	glaucous gull	7 I/P		
	kittiwake	0		
	black guillemot	17 I/P		
	razorbill	4 I/P		
69023 Qaqulluit	great cormorant	63 I/P	1960	Brünnich's guillemot extinct before 1980
	glaucous gull	64 I/P		
	black guillemot	50 I/P		
	razorbill	10 I/P		
	Brünnich's guillemot	0		
69024 Qeqertannguaq	common eider	1975 P	1960	

69025	Iceland gull	2	I/P	1960
Oqaatsunnguit	kittiwake	0		
	black guillemot	4	I/P	
69026	Iceland gull	1	I/P	1960
Qingaarsuaq	kittiwake	170	I/P	
69027	kittiwake	2500	I/P	1960
Qingaarsuaq				
69028	great cormorant	3	I/P	1960
Qingaarsuaq	Iceland gull	1	I/P	
	kittiwake	570	I/P	
	black guillemot	4	I/P	
69029	Iceland gull	22	I/P	1946
Qeqertakassak	black guillemot	5	I/P	
69030	great cormorant	1	I/P	1946
Qeqertakassak	Iceland gull	5	I/P	
	kittiwake	200	I/P	
69031	glaucous gull	12	I/P	1946
Qeqertakassak				
69032	great cormorant	5	I/P	1946
Qeqertakassak	Iceland gull	28	I/P	
	kittiwake	150	I/P	
69033	Iceland gull	+		1994
Naajaat	glaucous gull	+		
	kittiwake	10000	P	
	black guillemot	2	I	
69034	Iceland gull	360	I/P	1980
Oqaatsut	kittiwake	5200	I/P	
	black guillemot	150	I/P	
69035	Iceland gull	20	I/P	1975
Oqaatsut	glaucous gull	20	I/P	
	kittiwake	1200	I/P	
69036	Iceland gull	63	I/P	1980
Oqaatsut	kittiwake	2200	I/P	
	black guillemot	6	I/P	
69037	Iceland gull	+		1994
Oqaatsut	kittiwake	+		
69038	Iceland gull	200	P	1994
Oqaatsut	kittiwake	5000	P	
69039	great cormorant	20	I/P	1980
Affassaq	Iceland gull	70	I/P	
	glaucous gull	10	I/P	
	kittiwake	45	I/P	
	black guillemot	10	I/P	
69040	great cormorant	18	I/P	1980
Affassaq	Iceland gull	20	I/P	
	kittiwake	0		
	black guillemot	4	I/P	
69041	Iceland gull	80	P	1994
Anillagiaa	glaucous gull	25	P	
	kittiwake	110	P	
	black guillemot	85	I	
69042	glaucous gull	2	P	1994
Anillagiaa	kittiwake	0		
	black guillemot	0		
69043	glaucous gull	2	P	1994
Smallesund	kittiwake	0		
	black guillemot	16	I	
	razorbill	0		
69044	Iceland gull	36	P	1994
Smallesund	glaucous gull	1	P	

69045	great cormorant	22	P	1994	
Oqaatsut Nuuat	Iceland gull	54	P		
	glaucous gull	1	P		
	kittiwake	84	P		
	black guillemot	14	I		
	razorbill	24	I		
69046	Iceland gull	13	P	1994	
Oqaatsut Nuuat	kittiwake	31	P		
	razorbill	0			
69047	glaucous gull	1	P	1994	
Kangaarsuk	black guillemot	27	I		
	razorbill	0			
69048	great cormorant	0		1984	
Kangerluk	Iceland gull	25	P		
	kittiwake	75	P		
	razorbill	8	I		
69049	great cormorant	22	P	1994	
Innaq	Iceland gull	147	P		
	kittiwake	5838	P		
	black guillemot	10	I		
	razorbill	11	I		
	Brünnich's guillemot	3655	I		
69076	Iceland gull	45	I/P	1960	
Qoororsuaq	glaucous gull	20	I/P		
69077	great cormorant	26	P	1984	
Akuliarusersuaq	Iceland gull	30	P		
	glaucous gull	6	P		
	kittiwake	43	P		
69078	great cormorant	+?		1984	cormorants
Akuliarusersuaq	Iceland gull	15	P		seen in 1994
	glaucous gull	58	P		
69079	great cormorant	+?		1984	cormorants
Akuliarusersuaq	Iceland gull	13	P		seen in 1994
69080	Iceland gull	3	P	1984	
Qissussalik	glaucous gull	18	P		
69081	great cormorant	7	P	1984	
Narsatsiaat Qaqqat	Iceland gull	21	P		
	glaucous gull	1	P		
	kittiwake	0			
69082	great cormorant	+?		1980	cormorants
Qinngua Kujalleq	Iceland gull	8	P		seen in 1994
69083	Iceland gull	21	P	1984	
Qinngua Kujalleq	glaucous gull	4	P		
69084	common eider	6	P	1980	
Akuliarusersuaq					
69085	common eider	2	P	1980	
Qinngua Avannarleq					
69086	common eider	23	P	1960	
Qinngua Avannarleq					
69087	common eider	61	P	1960	
Qinngua Avannarleq					
69088	common eider	0		1980	
Qinngua Avannarleq					
69089	Iceland gull	1	I/P	1960	
Qingaarsuaq	glaucous gull	25	I/P		
69090	Iceland gull	30	I/P	1960	
Qaanngullip Tasia	glaucous gull	290	I/P		
69091	glaucous gull	75	I/P	1960	
Qaanngullip Tasia					
69092	Iceland gull	10	I/P	1960	
Qaanngulik	black guillemot	25	I/P		

69093 Qingaarsuaq	glaucous gull	27	I/P	1960	
69094 De Quervains Havn	Iceland/glaucous gull	+		1960	
69095 Niaqornaarsuaq	Iceland gull black guillemot	1 4	I/P I/P	1960	
69102 Tasersuaq Alleq	Iceland/glaucous gull	20	I/P	1976	
69103 Aallaaniarfik	Iceland gull kittiwake	100 15	I/P I/P	1976	
69104 Qajaa	great cormorant Iceland gull	+ 170	 I/P	1976	cormorants seen in 1993
69105 Qajaa	Iceland gull	300	I/P	1976	
69106 Upernivik	Iceland gull	10	I/P	1976	
69107 Aappaluttoq	no information				
69108 Tasersuaq Qalleq	no information				
69109 Serminnguaq	no information				
69110 Serminnguaq	no information				
69111 Innarsuup Nuua	no information				
69112 Nuukasik	Iceland/glaucous gull	+		1995	
69113 Qaqqamiut	no information				
69117 Qinngua Kujalleq	Iceland gull	14	P	1984	
69118 Qammavik	Iceland gull kittiwake	0 0		1994	
69119 Qinngua Kujalleq	Iceland gull glaucous gull	13 2	P P	1984	
69120 Qinngua Kujalleq	glaucous gull	7	P	1984	
69122 Niaqornaq	black guillemot	11	I	1984	
69126 Appat	glaucous gull black guillemot	1 70	P I	1994	
69127 Arnaa	Iceland gull	16	P	1994	
69135 Sikuiuitsoq	great cormorant Iceland/glaucous gull	+ +		1995	
69128 Itilliarsuup Nua	Iceland/glaucous gull	+		1994	
69129 Niaqornarsuaq	great cormorant	+		1994	
70001 Panissap Qaqqaa	glaucous gull	50	I/P	1946	
70002 Qeqertaq	Arctic tern black guillemot	120 50	I I	1994	

70003 Innaarsuit	glaucous gull black guillemot	1 P 46 I	1994
70004 Atanikerluk	great black-backed gull black guillemot	1 P +	1994
70010 Atanikerluk	Arctic tern	45 P	1975
70012 Qassutit	black guillemot	45 I	1994
70120 Noorlinnguaq	glaucous gull black guillemot	1 P 49 I	1994

Tab. 9 Qeqertarsuaq region

Code no. and name	Species	Numbers	Most recent survey	Comment
68011 Oqaq	Arctic tern	75 I	1993	
68136 Killiit	Arctic tern black guillemot	+ +	1973	
68139 Nunarsuaq	great cormorant black guillemot	1 P +	1990	
69001 Assissut	Arctic tern black guillemot razorbill little auk puffin	800 I 50 I 80 I 90 I 800 I	1988	
69002 Qummarfik	little auk puffin	+ +	1946	
69050 Qasigissat	great cormorant black guillemot	30 I/P 80 I	1976	
69051 Nassaaq	great cormorant Iceland gull great black backed gull	21 P 48 P 3 P	1979	
69052 Kingittoq	glaucous gull	8 I/P	1946	
69053 Paakkarut	glaucous gull	6 I/P	1946	
69054 Eqaluit	glaucous gull	40 I/P	1976	
69055 Inngisuaq	glaucous gull	15 I/P	1976	
69056 Nuuk Kangilleq	glaucous gull	160 I/P	1976	
69057 Qeqertaarsuk	glaucous gull	105 I/P	1976	
69058 Quinnguaq	glaucous gull	45 I/P	1946	
69059 Nanngissat	Iceland gull kittiwake black guillemot	2 I/P 0 12 I/P	1976	
69060 Ikineq	Iceland gull	750 I/P	1976	
69061 Ikineq	glaucous gull	100 P	1954	

69062 Qeqertaq	great cormorant fulmar Iceland gull glaucous gull	115 21,000 60 250	P P I I	1993		
69063 Qeqertaq	great cormorant kittiwake black guillemot	0 80 35	 P I	1982	kittiwakes present in 1993	
69064 Kuannit	great cormorant Iceland gull glaucous gull kittiwake black guillemot razorbill	15 25 2 250 8 5	I/P I/P I/P I/P I/P I/P	1976		
69065 Umiiarneq	glaucous gull	260	I/P	1976		
69066 Ukaleqartarfik	great cormorant glaucous gull	15 25	P P	1992		
69067 Qeqertaarsuk	Iceland gull	0		1976		
69068 Naajarsuit Nuuat	glaucous gull	260	I	1990		
69069 Nuuk Qiterleq	glaucous gull	20	I	1990		
69070 Nuuk Kangilleq	fulmar glaucous gull	3000 65	I/P I/P	1975		
69071 Oqaatsunnguit	fulmar	3700	I	1990		
69072 Qujanartoq	great cormorant glaucous gull	60 50	P I	1990		
69073 Uiffaq	glaucous gull	150	I	1990		
69074 Innarsuaq	glaucous gull black guillemot	40 100	P I	1982		
69075 Ippik	Iceland/glaucous gull	80	I	1990		
69096 Taseraarsuk	glaucous gull	10	P	1970		
69097 Killiit	black guillemot	30	I	1976		
69098 Killiit	black guillemot	50	P	1973		
69099 Skarvefjeld	black guillemot	300	P	1975		
69100 Kuuk Qaamassoq	glaucous gull	4	P	1980		
69101 Killussaatsut Kuuat	glaucous gull	25	P	1976		
69114 Saattut	Arctic tern	100	P	1982		
69115 Nuuk Killeq	glaucous gull	55	I/P	1976		
69116 Qeqertaq	great cormorant Iceland gull black guillemot	8 9 10	I/P I/P I/P	1976		
69121 Ungussivik	Arctic tern black guillemot	100 28	I I	1988		
69123 Ungussivik	Arctic tern	100	P	1982		

69124 Maligiaq	black guillemot	22 I	1979
69125 Norujuk	Arctic tern	100 I	1990
69129 Niaqornarsuaq	great cormorant	+	1994
69130 Kangersuup Kuussua	Iceland/glaucous gull	+	1994
69131 Nuuk Qiterleq	Iceland/glaucous gull	+	1994
69132 Eqalunnguit Qaqqaat	Iceland/glaucous gull	+	1994
69133 Akulliit/Mellemfjord	Iceland/glaucous gull	+	1991
69134 Akulliit/Mellemfjord	great cormorant	2 P	1991
70005 Kuugannguup Innartaa	great cormorant glaucous gull kittiwake black guillemot	+ 10 I 150 I +	1979
70006 Oqaatsunnguit	great cormorant black guillemot razorbill	15 I 4 I 0	1993
70007 Serfarsuit	great cormorant glaucous gull black guillemot razorbill	50 I 20 I 175 I 20 I	1979
70008 Niaqussat	great cormorant glaucous gull great black-backed gull	10 P 2 P 6 P	1979
70013 Napassulissuaq	great cormorant black guillemot	4 P +	1979
70014 Innaarsukassak	black guillemot	+	1979
70015 Qullissaaqqaat	black guillemot	+	1979

Tab. 10. Uummannaq region

Code no. and name	Species	Numbers	Most recent survey	Comment
70009 Qeqertannguaq	common eider Iceland gull Arctic tern	+ + +	1946	
70011 Niaqornaq	great cormorant Iceland gull kittiwake black guillemot	8 I/P 5 I/P 20 I/P 1 I/P	1975	
70017 Talerua	black guillemot	50 P	1920	
70018 Hareøen	Iceland/glaucous gull black guillemot	100 P 200 P	1920	
70019 Napparussuaq	glaucous gull black guillemot	2 P 50 P	1920	

70020 Innartaa	great cormorant Iceland/glaucous gull black guillemot	+ 50 200	P P	1920	cormorants seen 1993
70021 Talerua	Iceland/glaucous gull black guillemot	10 50	P P	1920	
70022 Nuuk Killeq	black guillemot	0		1994	
70023 Niaqornaarsuk	great cormorant Iceland gull black guillemot razorbill	5 4 50 10	P P P P	1920	
70024 Niaqornaarsuup	common eider	30	P	1920	
70025 Qeqertanngua	common eider glaucous gull razorbill	10 2 30	P P P	1920	
70026 Nuussaq	great cormorant	+		1994	
70027 Niaqornaarsuk	great black-backed gull Arctic tern black guillemot	1 0 5	P I	1994	
70028 Nalluarsussuaq	great cormorant glaucous gull black guillemot	8 1 20	P P I	1994	
70029 Nuussuutaa	black guillemot	37	I	1994	
70030 Nuussuutaata	glaucous gull great black-backed gull Arctic tern black guillemot	1 4 15 5	P P I I	1994	
70031 Qeqertai	Arctic tern black guillemot	600 80	I I	1994	
70032 Qupittaq	black guillemot	20	P	1920	
70033 Kanissut	black guillemot	10	P	1920	
70034 Nuuluk	black guillemot	10	P	1920	
70035 Qutaarluk	black guillemot	40	P	1920	
70036 Salissaq	great black-backed gull black guillemot puffin	1 250 1	P I I	1994	
70037 Niaqornat	great black-backed gull black guillemot	1 6	P I	1994	
70038 Serfat	black guillemot	7	I	1994	
70039 Qaajanaq	black guillemot	48	P	1920	
70040 Ilusissoq	Iceland/glaucous gull black guillemot	50 10	P P	1920	
70041 Nuffiumaneq	Iceland/glaucous gull	400	P	1920	
70042 Innarsuaq	Iceland/glaucous gull kittiwake black guillemot	500 50 100	P P P	1920	
70043 Nuugaarsuk	black guillemot	50	P	1920	

70044 Illerfiussaq	black guillemot	30	P	1920
70045 Kuussuup Nuua	Iceland/glaucous gull black guillemot	100 100	P P	1920
70046 Qaarsoq	black guillemot	50	P	1920
70047 Nunavik	black guillemot	20	P	1920
70048 Qeqertaq	Iceland/glaucous gull black guillemot	10 15	P P	1920
70049 Itipilua	Iceland/glaucous gull kittiwake black guillemot	1000 500 30	P P P	1920
70050 Sermip Eqinga	Iceland/glaucous gull	500	P	1920
70051 Nuugaarsuk	Iceland/glaucous gull black guillemot	1200 20	P P	1920
70052 Anagguffik	Iceland/glaucous gull	30	P	1920
70053 Qarassap Nunataa	Iceland/glaucous gull kittiwake black guillemot	200 40 50	P P P	1920
70054 Sineriaq	black guillemot	150	P	1920
70055 Sineriaq	Iceland/glaucous gull black guillemot	10 50	P P	1920
70056 Akuliarusersuaq	Iceland/glaucous gull black guillemot	30 100	P P	1920
70057 Akuliarusersuaq	Iceland/glaucous gull black guillemot	40 150	P P	1920
70058 Illerussaq	Iceland/glaucous gull	200	P	1920
70060 Qeqertarsuaq	black guillemot	10	P	1920
70061 Talerua	black guillemot	10	P	1920
70062 Nulukassaat	black guillemot	50	P	1920
70063 Amaamakassak	black guillemot	24	I	1984
70064 Innarsuaq	kittiwake razorbill Brünnich's guillemot	1500 0 0	I	1984
70065 Innarsuaq	fulmar kittiwake black guillemot razorbill	>10.000 0 2 0	P I	1994
70066 Iterlak	black guillemot	20	P	1920
70067 Tunnerit	black guillemot	20	P	1920
70068 Qingaarsuaq	kittiwake black guillemot	0 2	I	1994
70069 Qingaarsuaq	Iceland/glaucous gull kittiwake black guillemot razorbill Brünnich's guillemot	0 0 53 0 0	I	1994

70070 Alannguaraq	Iceland/glaucous gull	100	P	1920
70071 Aqajarua	common eider	20	P	1920
70072 Pamiallua	Iceland/glaucous gull kittiwake black guillemot razorbill	0 0 20 0	 I 	1984
70073 Akulleq	common eider	20	P	1920
70074 Niaqornakassak	Iceland/glaucous gull black guillemot	10 20	P P	1920
70075 Pingingaq	Iceland/glaucous gull	100	P	1920
70076. Itissaap Qeqertaa	common eider glaucous gull Arctic tern black guillemot	20 4 30 40	P P P P	1920
70077 Sermeerlat Kangerlua	common eider Arctic tern	10 30	P P	1920
70078 Aunerit	Iceland/glaucous gull	40	P	1920
70079 Akuliarusinnguup	Iceland/glaucous gull kittiwake	50 200	P P	1920
70080 Qaqqaa	common eider black guillemot	4 150	P P	1920
70081 Sermillip Kangerlua	Iceland/glaucous gull	10	P	1920
70082 Sermilik	Iceland/glaucous gull	20	P	1920
70083 Nuugutakassak	Iceland/glaucous gull	100	P	1920
70084 Qaarsorsuaq	black guillemot	10	P	1920
70085 Aappilattoq	black guillemot	20	I	1984
70086 Amitsuatsiaq	Iceland/glaucous gull kittiwake black guillemot razorbill	0 0 40 0	 I 	1984
70087 Saqqaq	Iceland/glaucous gull	200	P	1920
70088 Qingartarsuaq	fulmar kittiwake black guillemot razorbill Brünnich's guillemot	+ 0 10 0 0	 I 	1984
70089 Qeqertannguaq	common eider	10	P	1920
70090 Innannguup Nuua	black guillemot	100	P	1920
70091 Saattut	black guillemot	10	P	1920
70092 Assorliit	common eider Arctic tern black guillemot	0 0 2	 I	1994
70093 Uigorliit	Arctic tern	100	P	1920

70094 Iterlak	black guillemot	8	P	1920
70095 Umiasussuk	Iceland/glaucous gull kittiwake black guillemot razorbill Brünnich's guillemot	0 0 21 0 0	 I 	1994
70096 Umiasussuup Ilua	Iceland/glaucous gull	10	P	1920
70097 Agguarfik	glaucous gull kittiwake black guillemot razorbill Brünnich's guillemot	1 0 43 0 0	P I 	1994
70098 Innarsuaq	Iceland/glaucous gull kittiwake black guillemot razorbill Brünnich's guillemot	0 0 0 0 0	 	1994
70099 Appat ikerat	kittiwake black guillemot	200 50	P P	1920
70100 Salliup Nuua	black guillemot	7	I	1994
70101 Salleq	fulmar glaucous gull kittiwake black guillemot razorbill Brünnich's guillemot	>10.000 10 0 21 0 0	P P I 	1994
70102 Naggorfik	black guillemot	50	P	1920
70103 Ukalilik	black guillemot	50	P	1920
70104 Qinngoq	black guillemot	50	P	1920
70105 Sinittarfissuup	black guillemot	20	P	1920
70106 Qaqqaa	Iceland/glaucous gull kittiwake	400 200	P P	1920
70107 Kangilleq	Iceland/glaucous gull	10	P	1920
70108 Nunatakassak	Iceland/glaucous gull	10	P	1920
70109 Illukassak	Iceland/glaucous gull kittiwake	500 200	P P	1920
70110 Qeqertaassaq	black guillemot	20	P	1920
70111 Qeqertaassaq	Iceland/glaucous gull kittiwake razorbill	100 50 4	P P P	1920
70112 Nunaarsussuaq	black guillemot	100	P	1920
70113 Qoororsuaq	Iceland/glaucous gull kittiwake	30 50	P P	1920
70114 Perlerfik	common eider Iceland/glaucous gull kittiwake	10 50 20	P P P	1920
70115 Salliarusiarsuup	Iceland/glaucous gull black guillemot razorbill	0 0 0	 	1994

70116 Niaqornaarsuk	great cormorant	+		1993
70117 Erqua	great cormorant	+		1993
70118 Erqua	great cormorant	+		1993
70119 Talerua	great cormorant	+		1993
70121 Nuuluup Qaqqai	great cormorant glaucous gull black guillemot	5 4 18	P P I	1994
70122 Qoorukassak	great cormorant glaucous gull great black-backed gull	4 1 1	P P P	1994
70123 Innarsuaq	glaucous gull black guillemot	1 80	P I	1994
71001 Qeqertat	common eider black guillemot	0 26	 I	1984
71002 Qammik	common eider black guillemot	10 50	P P	1920
71003 Saattuarsuit	common eider	16	P	1920
71004 Akuliaruseq	black guillemot	10	P	1920
71005 Nunaarsukassak	black guillemot	100	P	1920
71006 Nunataq	Iceland/glaucous gull	10	P	1920
71007 Qaarsorsuup Tasia	Iceland/glaucous gull kittiwake black guillemot	500 300 20	P P P	1920
71008 Innerit	Iceland/glaucous gull kittiwake black guillemot	20 10 10	P P P	1920
71009 Nuussuatsiaq	Iceland/glaucous gull kittiwake black guillemot	50 400 30	P P P	1920
71010 Akuliarusersuaq	Iceland/glaucous gull kittiwake black guillemot razorbill	50 200 20 4	P P P P	1920
71011 Qaamarujuk	Iceland/glaucous gull kittiwake	6 30	P P	1920
71012 Qeqertannguit	Arctic tern	20	I	1994
71013 Alfred Wegener Halvø	Iceland/glaucous gull	10	P	1920
71014 Tupersuatsiaat	black guillemot	10	P	1920
71015 Appatsiaat	fulmar Iceland gull glaucous gull kittiwake black guillemot razorbill Brünnich's guillemot	>15.000 70 10 132 32 3 0	P P P P I I	1994
71016 Tornit	black guillemot	20	P	1920

71017 Kangerluarsuup	common eider black guillemot	10 P 100 P	1920	
71018 Qeqertaa	Iceland/glaucous gull	50 P	1920	
71019 Qiioqip Qaqqai	black guillemot	0	1994	
71020 Qaarsorsuaq	black guillemot	200 P	1920	
71021 Inukassaat	common eider glaucous gull black guillemot	7 P 1 P 6 I	1994	
71022 Kangerlussuaq	common eider	50 P	1920	
71023 Naajat	Iceland/glaucous gull	300 P	1920	
71024 Uiffaq	glaucous gull black guillemot	1 P 285 I	1994	
71025 Qalattoq	Iceland gull glaucous gull kittiwake black guillemot razorbill	45 P 10 P 56 P 55 I 4 I	1994	
71026 Paakassaa	Iceland gull glaucous gull black guillemot razorbill	270 P 10 P 61 I 9 I	1994	
71027 Qeqertalik	glaucous gull	6 P	1920	
71028 Innaa	glaucous gull black guillemot razorbill puffin	5 P 50 P 6 P >1 I	1920	puffins seen 1994
71029 Illorsuit	black guillemot	16 P	1920	
71030 Iluliumaneq	glaucous gull black guillemot	8 P 20 I	1920	
71031 Qinngussaap	common eider Arctic tern black guillemot	3 P 400 I 37 I	1994	
71032 Qeqertanngui	Iceland gull glaucous gull black guillemot	173 P 10 P 6 I	1994	
71033 Qinngussaaq	black guillemot	124 I	1994	
71034 Akuliaruseq	Iceland/glaucous gull black guillemot	0 42 I	1994	
71035 Nuugaatsiaap	common eider Arctic tern	25 P 100 P	1920	
71036 Qeqertaa	Arctic tern	500 I	1994	
71037 Igutsartooq	Iceland/glaucous gull	0	1994	
71038 Serfaarsuit	glaucous gull	2 P	1920	
71039 Itsakup Qeqertaa	black guillemot common eider black guillemot	30 P 15 P 400 P	1920	
71040 Maniiseqqut	glaucous gull black guillemot	0 200 I	1994	

71041 Ilivertooq	glaucous gull black guillemot	2 35	P I	1994
71042 Umiarsuaassarsuaq	Iceland/glaucous gull	30	P	1920
71043 Oqqorliit	common eider Arctic tern black guillemot puffin	1 1000 6 0	P I I	1994
71044 Qeqertat	common eider Arctic tern black guillemot little auk	0 4000 45 1	 I I I	1994
71045 Qernertukassak	Iceland/glaucous gull	20	P	1920
71046 Naajat innaat	Iceland/glaucous gull	100	P	1920
71047 Niaqornakassak	Iceland/glaucous gull	100	P	1920
71048 Majoqqaa	Iceland/glaucous gull	6	P	1920
71049 Inngia Fjord	glaucous gull black guillemot	5 10	P P	1920
71050 Qiioqe	Iceland gull glaucous gull black guillemot	57 5 24	P P I	1994
71051 Inukassaat	Iceland gull	350	I	1994
71052 Akuliaruseq	black guillemot	53	I	1994
71053 Assorlinnguit	Arctic tern black guillemot	100 2	I I	1994
71054 Eqquutat	black guillemot	10	I	1994
71055 Ilivertooq	black guillemot	27	I	1994
71056 Eqe	black guillemot	10	I	1994
71057 Tasiussap Imaa	black guillemot	37	I	1994
71058 Tasiussap Imaa	black guillemot	14	I	1994
71059 Afertuarsuk	black guillemot	15	I	1994
71060 Narsinganersua	glaucous gull black guillemot	1 60	P I	1994
71061 Qinnivik	glaucous gull black guillemot	8 63	P I	1994
72001 Inngia Fjord	Iceland/glaucous gull	50	P	1920
72002 Mågefjeld	Iceland/glaucous gull kittiwake black guillemot	>30 500 +	I I	1994

Tab. 11 Upernavik region

Code no. and name	Species	Numbers	Most recent survey	Comment
71062 Qaarqut Nuuat	glaucous gull black guillemot	7 P 29 I	1994	
71063 Maligissap Akiane Innarsuaq	glaucous gull black guillemot	12 P 21 I	1994	
71064 Sigguk	great cormorant glaucous gull black guillemot razorbill puffin	3 P 52 P 50 I 17 I 25 I	1994	
71065 Siggup Qoorua	black guillemot	10 I	1994	
71066 Siggup Qoorua	glaucous gull black guillemot	1 P 29 I	1994	
71067 Serfat	glaucous gull black guillemot razorbill	48 P 160 I 5 I	1994	
71068 Innaq	black guillemot	25 I	1994	
71069 Salluit Kuuat	glaucous gull black guillemot	3 P 97 I	1994	
71070 Qeqertaq	glaucous gull black guillemot	27 P 220 I	1994	
71071 Qeqertaq	black guillemot	80 I	1994	
71072 Ilorrruatsiaaq	great cormorant	+	1994	
71073 Naajakavsaat	great cormorant black guillemot	+ 50 I	1994	
72003 Kiatannguaq	Arctic tern black guillemot	60 I 12 I	1994	
72004 Upernaviarsuk	great black-backed gull Arctic tern black guillemot	1 P 60 I 12 I	1994	
72005 Kingittuarsuk	kittiwake black guillemot razorbill Brünnich's guillemot puffin	350 I 25 I 2 I 39 I 3 I	1987	
72006 Angissoq	glaucous gull black guillemot razorbill Brünnich's guillemot puffin	8 P 225 I 7 I 0 28 I	1994	
72007 Angissoq	great black-backed gull glaucous gull black guillemot razorbill Brünnich's guillemot puffin	1 P 3 P 485 I 3 I 0 1 I	1994	
72008 Apparsuit	glaucous gull kittiwake black guillemot razorbill Brünnich's guillemot	4 P 505 P 2 I 10 I 1145 I	1994	

72009 Iperaq	great cormorant	1	P	1994	
	Iceland gull	7	P		
	glaucous gull	10	P		
	kittiwake	55	P		
	black guillemot	31	I		
	razorbill	7	I		
72010 Uummannaq	great cormorant	14	P	1987	glaucous gulls counted in 1993
	glaucous gull	25	I		
	black guillemot	41	I		
	razorbill	9	I		
	Brünnich's guillemot	0			
72011 Timmiakulussuit	fulmar	>5000	P	1994	
	glaucous gull	44	P		
	kittiwake	199	P		
	razorbill	23	I		
	Brünnich's guillemot	175	I		
72012 Qoornoq	glaucous gull	1	P	1994	
	black guillemot	47	I		
	razorbill	0			
	Brünnich's guillemot	0			
72013 Appatsiaat	Iceland gull	20	P	1994	
	glaucous gull	10	P		
	kittiwake	465	P		
	razorbill	3	I		
	Brünnich's guillemot	190	I		
72014 Apparsuit	glaucous gull	167	I	1994	
	kittiwake	2060	P		
	black guillemot	17	I		
	razorbill	4	I		
	Brünnich's guillemot	6860	I		
72015 Issortussoq	Arctic tern	1000	I	1994	
72016 Niaqornarsuaq	great cormorant	11	P	1965	
	Iceland/glaucous gull	75	I		
	kittiwake	43	P		
72017 Paaq	great cormorant	5	P	1965	
	Iceland/glaucous gull	75	I		
	kittiwake	100	P		
	black guillemot	20	I		
	razorbill	8	I		
72018 Qamutit	great cormorant	18	P	1965	
	Iceland/glaucous gull	40	I		
	kittiwake	115	P		
	black guillemot	25	I		
	razorbill	6	I		
72019 Tasersuatsiaap Qaa	great cormorant	5	P	1965	
	common eider	+			
	black guillemot	50	I		
	razorbill	4	I		
72020 Nutaarmiut	great cormorant	18	P	1965	
	Iceland/glaucous gull	20	I		
	kittiwake	30	P		
	black guillemot	50	I		
	razorbill	40	I		
72021 Saninngassoq	great cormorant	4	P	1965	
	Iceland/glaucous gull	40	I		
	black guillemot	50	I		
72022 Naku	great cormorant	12	P	1965	
	Iceland/glaucous gull	120	I		
	kittiwake	230	P		
72023 Nunaa	great cormorant	23	P	1983	
	glaucous gull	100	I		
	kittiwake	0			
	razorbill	0			

72024 Akinnaq	great black-backed gull	1	P	1994
	glaucous gull	14	P	
	black guillemot	160	I	
	razorbill	12	I	
72025 Naajannguaq	great cormorant	1	P	1994
	Iceland gull	17	I	
	kittiwake	80	P	
	black guillemot	16	I	
	razorbill	2	I	
72026 Naalungiussaq	great cormorant	22	P	1994
	glaucous gull	32	P	
	black guillemot	81	I	
	razorbill	39	I	
72027 Maniitsunnguaq	great cormorant	15	P	1994
	glaucous gull	9	P	
	Iceland gull	8	P	
	kittiwake	51	P	
	black guillemot	105	I	
	razorbill	3	I	
72028 Umiartorfiit	common eider	5	P	1994
	great black-backed gull	3	P	
	glaucous gull	2	P	
	black guillemot	34	I	
72029 Qeqertasussuk	glaucous gull	34	I	1965
	black guillemot	75	P	
72030 Illutalik	common eider	4	P	1994
	great black-backed gull	2	P	
	glaucous gull	5	P	
	Arctic tern	55	I	
	black guillemot	85	I	
	puffin	21	I	
72031 Puugutaa	Iceland/glaucous gull	24	I	1965
	kittiwake	100	P	
	black guillemot	50	I	
	razorbill	3	I	
72032 Qarliit Qeqertaat	Iceland/glaucous gull	50	I	1965
	kittiwake	100	P	
72033 Naku	Iceland/glaucous gull	15	I	1965
	kittiwake	250	P	
72034 Naku	glaucous gull	40	I	1965
	kittiwake	150	P	
	razorbill	5	I	
72035 Nutaarmiut	Iceland gull	67	P	1994
	glaucous gull	7	P	
	kittiwake	98	P	
72036 Ammaassarsuaq	Iceland gull	100	I	1965
	kittiwake	41	P	
	black guillemot	80	I	
	razorbill	1	I	
72037 Saqqarsuaq	kittiwake	0		1994
	black guillemot	15	I	
	razorbill	4	I	
	Brünnich's guillemot	0		
72038 Oqaatsut	great cormorant	+		1994
	glaucous gull	+		
72039 Saattoq	common eider	0		1994
	Arctic tern	0		
72040 Uigorluk	common eider	25	P	1994
	great black-backed gull	1	P	
	Arctic tern	2000	I	
	black guillemot	90	I	
	little auk	500	I	
	puffin	16		
72041 Illunnguaq	Arctic tern	40	I	1965

72042 Kingittuarsuk	great black-backed gull	1	P	1994
	glaucous gull	10	P	
	black guillemot	90	I	
	razorbill	32	I	
	puffin	125	I	
72043 Avannarleq	glaucous gull	3	P	1994
	black guillemot	420	I	
	little auk	0		
	puffin	2	I	
72044 Aorrussaq	common eider	5	P	1994
	great black-backed gull	2	P	
	glaucous gull	6	P	
	black guillemot	100	I	
	razorbill	12	I	
	puffin	350	I	
72045 Umiasussuk	glaucous gull	13	I	1965
	black guillemot	280	I	
	razorbill	9	I	
72046 Laksefjorden	Iceland/glaucous gull	50	I	1994
72047 Sallinngualua	great cormorant	3	P	1994
	Iceland gull	28	P	
	glaucous gull	6	P	
	kittiwake	52	P	
	black guillemot	23	I	
	razorbill	38	I	
72049 Eqalukkat	Iceland gull	15	I	1965
	glaucous gull	15	I	
	black guillemot	40	I	
72050 Eqalukkat	great cormorant	6	P	1983
	glaucous gull	100	I	
	black guillemot	+		
72051 Uummannap Sallia	great black-backed gull	1	P	1983
	glaucous gull	7	P	
	black guillemot	+		
72052 Inussulik	Arctic tern	10	I	1983
72053 Ikermiut	Arctic tern	+		1983
72054 Ilorrit	black guillemot	150	I	1965
72055 Appallit	black guillemot	9	I	1994
72056 Innarsuaq	glaucous gull	4	P	1994
	black guillemot	400	I	
72057 Kongevarden	glaucous gull	1	P	1994
	black guillemot	35	I	
72058 Niaqua	glaucous gull	40	I	1994
	black guillemot	85	I	
	razorbill	3	I	
72059 Oqaatsunnguit	great black-backed gull	1	P	1994
	glaucous gull	20	I	
	black guillemot	88	I	
72060 Saattoq	great black-backed gull	1	P	1994
	black guillemot	28	I	
72061 Manitsuarsuk	common eider	26	P	1994
	great black-backed gull	1	P	
	black guillemot	100	I	
72062 Agnertussoq	great cormorant	3	P	1994
	glaucous gull	14	P	
	black guillemot	35	I	

72063 Anaanaa	glaucous gull black guillemot razorbill puffin	5 P 81 I 1 I 1 I	1994
72064 Ø nord for Qasigissat	great black-backed gull black guillemot	1 P 23 I	1994
72065 Angissoq	black guillemot	160 I	1994
72066 Nunarsuaq	black guillemot	85 I	1994
72067 Najannguaq	glaucous gull black guillemot	1 P 80 I	1994
72068 Nerritut	great cormorant Iceland/glaucous gull	10 P 50 I	1994
72069 Laksefjord	Iceland/glaucous gull	50 I	1994
72070 Sermikassak	Iceland/glaucous gull	15 P	1994
72071 Najannguaq	great cormorant	10 P	1994
72072 Ø vest f. Niaqornarsuaq	common eider	+	1994
72073 Paaq	great cormorant	+	1994
72074 Qammavik	black guillemot	30 I	1994
72075 Qulassivik	great cormorant	+	1994
72076 Toornaarsuttooq	great cormorant black guillemot	+ +	1994
73001 Kitsissut	common eider Arctic tern	? 100 I	1994
73002 Kingittuarsuk	common eider glaucous gull black guillemot razorbill Brünnich's guillemot puffin	200 P 4 I 9 I 25 I 0 100 I	1987/89
73003 Island s of Kippaku	common eider	76 P	1987
73004 Nutaarmiut	common eider Arctic tern	1 P 6 I	1994
73005 Saattunnguit	glaucous gull	1 P	1994
73006 Pikiulli	Arctic tern common eider Arctic tern black guillemot	15 I 6 P 800 I 70 I	1994
73007 Toqqussaaq	common eider glaucous gull black guillemot razorbill Brünnich's guillemot puffin	1 P 36 P 425 I 55 I 46 I 9 I	1994
73008 Mattaangassut	Iceland gull glaucous gull kittiwake black guillemot razorbill	15 P 5 P 315 P 20 I 1 I	1994

73009 Kippaku	glaucous gull	14	P	1994
	kittiwake	1510	P	
	black guillemot	26	I	
	razorbill	13	I	
	Brünnich's guillemot	13790	I	
73010 Apparsuit	glaucous gull	124	P	1994
	kittiwake	1920	P	
	black guillemot	35	I	
	razorbill	11	I	
	Brünnich's guillemot	153103	I	
73011 Qallunaat	Iceland/glaucous gull	65	I	1994
	kittiwake	800	I	
	black guillemot	30	I	
73012 Toqqussaarsuk	glaucous gull	38	P	1994
	black guillemot	96	I	
	razorbill	35	I	
	puffin	149	I	
73013 Appalersalik	glaucous gull	31	P	1994
	black guillemot	150	I	
	razorbill	20	I	
	little auk	2000	I	
	puffin	12	I	
73014 Nuuluk	Iceland/glaucous gull	100	I	1965
	black guillemot	25	I	
73015 Killeq	glaucous gull	50	I	1965
	black guillemot	300	I	
73016 Qeqertarsuaq	glaucous gull	1	P	1994
	Arctic tern	72	I	
73017 Tuttoqqortuup Nuussua	glaucous gull	+		1983
	black guillemot	+		
	razorbill	4	I	
73018 Qeqertaq	black guillemot	10	P	1983
73019 Navaranaaq	glaucous gull	30	I	1983
	black guillemot	75	I	
	razorbill	6	I	
73020 Kingittortallit	glaucous gull	6	I	1989
	black guillemot	47	I	
	little auk	17	I	
	razorbill	13	I	
73021 Kangaarsuk	black guillemot	10	I	1994
73022 Simiutaq	black guillemot	10	I	1994
73023 Tasiussaq	glaucous gull	5	P	1994
73025 Qallunaat	Iceland gull	18	P	1994
	kittiwake	94	P	
	black guillemot	9	I	
73026 Qeqertarsuaq	Iceland gull	26	P	1994
	kittiwake	94	P	
	black guillemot	14	I	
73027 Qallunaat	Iceland/glaucous gull	15	P	1994
73028 Qaqakassak	great cormorant	14	P	1994
	glaucous gull	17	P	
73029 Mernup Erqua	Iceland/glaucous gull	25	I	1994
73030 Avannarlinngiut	common eider	2	P	1994
	glaucous gull	24	P	
	black guillemot	200	I	

73031	great cormorant	11	P	1994
Paornivik	Iceland gull	6	P	
	glaucous gull	20	P	
73032	Iceland gull	40	I	1994
Qullikorsuaq	glaucous gull	170	I	
	black guillemot	60	I	
73033	glaucous gull	10	P	1994
Tuttorqortooq	black guillemot	8	I	
73034	Iceland/glaucous gull	8	P	1994
Mattaangassuk				
73035	glaucous gull	7	P	1994
Mattaangassuk	black guillemot	3	I	
73036	great black-backed gull	1	P	1994
Qeqertarsuaq	arctic tern	25	I	
73037	glaucous gull	22	I	1994
Alakkarsaariarsuaq	black guillemot	35	I	
73038	common eider	3	P	1994
Uigorliarsuk	glaucous gull	8	P	
	black guillemot	65	I	
73039	common eider	7	P	1994
Upernaviarsuk	great black-backed gull	1	P	
	glaucous gull	2	P	
	black guillemot	158	I	
73040	common eider	2	P	1994
Niisartuut	glaucous gull	3	P	
	black guillemot	265	I	
	puffin	6	I	
73041	common eider	4	P	1994
Qeqertaq	Arctic tern	275	I	
	black guillemot	135	I	
73042	glaucous gull	8	I	1994
Illunnguit	black guillemot	51	I	
	razorbill	7	I	
73043	Iceland gull	3	I	1994
Paagussat	glaucous gull	70	I	
	kittiwake	53	P	
	razorbill	4	I	
73044	glaucous gull	13	P	1994
Ikerasakassak	black guillemot	21	I	
73045	glaucous gull	1	P	1994
Pikiullip Qeqertanngue	black guillemot	48	I	
73046	glaucous gull	5	P	1994
Oqaatsut	black guillemot	91	I	
73047	glaucous gull	10	P	1994
Uigorlersuaq	black guillemot	68	I	
73048	black guillemot	90	I	1994
Kittorsaq				
73049	Arctic tern	+		1994
Qeqertakasaat				
73050	great cormorant	+		1994
Kangerlussuaq	Iceland/glaucous gull	+		
73051	black guillemot	100	I	1994
Taartorsuit				
73052	black guillemot	30	I	1994
Ikerasarsuk				
73053	Arctic tern	280	I	1994
Atungassat				
73054	Arctic tern	10	I	1994
Saffiorfik				

74001 Kitsissorsuit	great cormorant Iceland gull glaucous gull black guillemot puffin	2 P 20 P 10 P 80 I 1 I	1994
74002 Kitsissorsuit	great cormorant common eider great black-backed gull glaucous gull black guillemot razorbill puffin	5 P 5 P 2 P 50 P 100 I 12 I 14 I	1994
74003 Kitsissorsuit	common eider great black-backed gull glaucous gull black guillemot	5 P 1 P 45 P 110 I	1994
74004 Naajatalikkut	common eider kittiwake black guillemot	+ + +	1936
74005 Uummannaq	black guillemot	50 I	1965
74006 Qallunaaq Arnaq	black guillemot	45 I	1994
74007 Qasigialissuaq	glaucous gull black guillemot	3 P 190 I	1994
74008 Vinterøer	common eider Iceland/glaucous gull black guillemot	5 P 20 P 40 I	1994
74009 Nuussuaq	Iceland gull glaucous gull black guillemot	15 P 3 P 130 I	1994
74010 Illulik	glaucous gull black guillemot	8 P 20 I	1994
74011 Saattoq	Arctic tern	25 I	1994
74012 Tulugalissuup Qeqertai	Arctic tern	+	1994
74013 Tulugalissuup Qeqertai	black guillemot	+	1994
74014 Tulugalissuaq	black guillemot	+	1994
74015 Tulugalissuaq	black guillemot	+	1994
74016 Tulukaat	black guillemot	100 I	1994
74017 Nasittarfik	black guillemot	150 I	1994
74018 Kiatassuup Nua	black guillemot	+	1994
74019 Kiatassuup Nua	black guillemot	+	1994
74020 Inussulik	black guillemot	+	1994
74021 Inussulik	glaucous gull	+	1994
74022 Kukkerfillip Akia	Arctic tern	+	1994

74023 Qeqertarsuaq	glaucous gull	+	1994
74024 Qunnersiviit	black guillemot	+	1994
74025 Qilalukkiarfik	Arctic tern	+	1994
74026 Avalleq	black guillemot	+	1994
74027 Ikertilik	black guillemot	+	1994

Tab. 12 Avanersuaq region

Code no. and name	Species	Numbers	Most recent survey	Comment
75001 Saattut/Sabine Øer	common eider glaucous gull Sabine's gull Arctic tern black guillemot	50 P 3 P 50 I 100 P 20 P	1978	Sabine's gull present 1994
75002 Island E of Sabine Øer	Sabine's gull Arctic tern	3 I 50 I	1994	
75003 Niaqorsuup Saarlia	black guillemot	+	1994	
75004 Innaaqqigsorsuaq	black guillemot	20 I	1995	
75005 Naajapaluit	glaucous gull	5 P	1995	
75006 Tuttulissuup Saqqalersua	black guillemot	15 I	1995	
75007 Tuttulissuup Saqqalersua	glaucous gull	5 P	1995	
76001 Paattorfiarsuk	common eider Arctic tern	100 P ?	1985	
76002 Booth Sund	common eider Arctic tern	100 P 50 I	1968	
76003 Booth Sund	common eider Arctic tern	100 P 100 P	1987	
76004 Booth Sund	common eider	+	1987	
76005 Booth Sund	common eider Arctic tern	+ 40 P	1987	
76006 Booth Sund	common eider	66 P	1968	
76007 Kitsissut/Isbjørn Ø	glaucous gull black guillemot Brünnich's guillemot	5 P 30 I 5370 I	1987	
76008 Kitsissut/Mellemø	Brünnich's guillemot	80 I	1987	
76009 Kitsissut/Nordvestø	Brünnich's guillemot	1250 I	1987	
76010 Kitsissut/ Hollænderhatten	glaucous gull black guillemot razorbill puffin	+ + 12 I 60 I	1987	

76011 Kitsissut/Nordvestø	black guillemot	25	I/P	1975	
76012 Appat Appai	glaucous gull kittiwake black guillemot Brünnich's guillemot	100 5000 100 48000	I I I I	1987	
76013 Issuvissuup Appai/ Parker Snow Bugt	glaucous gull kittiwake black guillemot razorbill Brünnich's guillemot	100 2000 50 4 50000	I I I I I	1987	
76014 Appat/Saunders Ø	fulmar glaucous gull kittiwake black guillemot Brünnich's guillemot puffin	5000 100 5000 100 143000 1	I I I I I I	1987	
76015 Kitsissut/Björling Ø	black guillemot	200	I	1987	
76016 Qeqertaaraq	common eider glaucous gull Arctic tern	50 + 35	P I I	1987	terns counted in 1994
76017 Seqquussuaq	Arctic tern	50	I	1987	
76018 Nuulliarsuit	Arctic tern	+		1987	
76019 Igannaq/Dalrymple Rock	common eider glaucous gull black guillemot puffin	400 200 400 50	P P P P	1988	
76020 Innaq Ungalleq	glaucous gull black guillemot	30 250	I I	1987	
76021 Qeqertaarsuit/ Ederfugleøer	common eider	1000	P	1988	
76022 Iterlassuup/Three Sister Bees	common eider Arctic tern black guillemot	+ + +		1988	
76023 Balgoni øer	glaucous gull black guillemot	1 136	P I	1993	
76024 Appat/Saunders Ø	black guillemot	100	I	1994	
76025 Appat/Saunders Ø	glaucous gull	20	I	1994	
76026 Ukkusissaq	glaucous gull	50	I	1994	
76027 Qilalugaqarfik	black guillemot	30	I	1994	
76028 Sorte Fjeldvæg	glaucous gull black guillemot	20 20	I I	1994	
76029 Balgoni øer	black guillemot	+		1994	
76030 Ammaarsiorfik	black guillemot	150		1994	
76031 Igannaq/Conical Rock	common eider puffin	+ ?		1995	
76032 Qerrorsuit	glaucous gull	+		1995	
76034 Illernaarsusuaq	glaucous gull	+		1995	

76035 NE of Kap Edvard Holm	black guillemot	30 I	1995	
77001 Qeqertat/Lion Øer	Sabine's gull Arctic tern	3 P 200 I	1978	terns counted in 1994
77002 Appaarsuit/Hakluyt Ø	glaucous gull kittiwake black guillemot razorbill Brünnich's guillemot puffin	100 I 2000 I 200 I 2 I 37000 I 30 I	1987	
77003 Isussik	glaucous gull black guillemot	+ +	1987	
77004 Anivaaq/Kap Leininger	glaucous gull	+	1987	
77005 Kangaarsussuaq	glaucous gull black guillemot	+ 40 I	1987	
77006 Qimmiuneqarfik	Sabine's gull Arctic tern	10 P +	1939	
77007 Barden Bugt	black guillemot	50 I	1994	
77008 Kap Trautwine	Thayer's gull black guillemot	+ 180 I	1994	Thayer's gull recorded 1936
77009 Olrik Fjord	Iceland/glaucous gull	50 I	1994	
77010 Naajarsuit	Iceland/glaucous gull	20 I	1994	
77011 Olrik Fjord	Iceland/glaucous gull	10 I	1994	
77012 Qoorupaluk	glaucous gull black guillemot	1 P 200 I	1994	
77013 Qoorupaluk	black guillemot	50 I	1994	
77014 Innuussat	black guillemot	50 I	1994	
77015 Qeqertarsuaq/Herbert Ø	black guillemot	50 I	1994	
77016 Serfat/Kap Lee	black guillemot	110 I	1994	
77017 Illernaarsuk/ Kap Henson	glaucous gull black guillemot	10 P +	1994	
77018 Asungaq/ Northumberland Ø	black guillemot	70 I	1994	
77019 Isiguk	glaucous gull	+	1995	
77020 Serfarsuit	glaucous gull	5 P	1995	
77021 Tikeraassaq	glaucous gull	5 P	1995	
77022 Kangerluarsuk	arctic tern	25 I	1995	
77023 Inukitsupaluk	glaucous gull	50 I	1995	
77024 Qeqertaarsupaluk	arctic tern	100 I	1995	

77025 Qeqertaarsuussarsuaq	glaucous gull	50 I	1995
77026 Kap Tyrconnel	black guillemot	25 I	1995
78001 Pikiulleq/Littleton Ø	common eider	>1000 P	1988
78002 Knorr Øer	common eider	+	1988
78003 Sutherland Ø	common eider	+	>1950
78004 Crystal Palace Klipper	glaucous gull	+	1995
78005 McCormick Bugt	glaucous gull	+	1995
78006 Marshall Bugt	arctic tern	60 I	1995
78007 Radcliffe Pynt	glaucous gull	+	1988
79001 Dallas Bugt	arctic tern	100 I	1995
79002 S of Kap Agassiz	glaucous gull	5 I	1995

Appendix II

English and *scientific* engelsk og *videnska-* *beligt* navn tuluttut *ilisimatuussutsik-* *kullu* taaguutaat	Danish dansk navn qallunaatut taaguutaat	Greenlandic grønlandsk navn kalaallisut taaguutaat
Arctic tern *Sterna paradisaea*	havterne	imeqqutaalaq
Atlantic puffin *Fratercula arctica*	lunde	qilanngaq
black-headed gull *Larus ridibundus*	hættemåge	nasalik
black guillemot *Cepphus grylle*	tejst	serfaq
Brünnich's guillemot *Uria lomvia*	polarlomvie	appa
common guillemot *Uria aalge*	atlantisk lomvie	appa sigguttooq
great cormorant *Phalacrocorax carbo*	skarv	oqaatsoq
common eider *Somateria mollissima*	ederfugl	miteq siorartooq
glaucous gull *Larus hyperboreus*	gråmåge	naajarujussuaq
great black-backed gull *Larus marinus*	svartbag	naajarluk
herring gull *Larus argentatus*	sølvmåge	-
Iceland gull *Larus glaucoides*	hvidvinget måge	naajarnaq
kittiwake *Rissa tridactyla*	ride	taateraaq
lesser black-backed gull *Larus fuscus*	sildemåge	-
little auk *Alle alle*	søkonge	appaliarsuk
northern fulmar *Fulmarus glacialis*	mallemuk	qaqulluk
razorbill *Alca torda*	alk	apparluk
Sabine's gull *Larus sabini*	Sabinemåge	taateraarnaq
Thayer's gull *Larus thayeri*	Thayers måge	-

Bird names in English, Danish and Greenlandic.
Liste over anvendte engelske fuglenavne samt dansk og grønlandsk oversættelse.
Timmissat tuluttut kiisalu qallunaatut kalaallisullu taagutaat.

National Environmental Research Institute

The National Environmental Research Institute - NERI - is a research institute of the Ministry of Environment and Energy. NERI's tasks are primarily to do research, collect data and give advice on problems related to the environment and nature.

Addresses:

National Environmental
Research Institute
Frederiksborgvej 399
P.O.Box 358
DK-4000 Roskilde
Denmark

Tel: +45 46 30 12 00
Fax: +45 46 30 11 14

Management
Personnel and Economy Secretariat
Research and Development Secretariat
Department of Atmospheric Environment
Department Environmental Chemistry
Department Policy Analysis
Department of Marine Ecology and Microbiology

National Environmental
Research Institute
Vejlsøvej 25
P.O.Box 413
DK-8600 Silkeborg
Denmark

Tel:+45 89 20 14 00
Fax:+45 89 20 14 14

Department of Lake and Estuarine Ecology
Department of Streams and Riparian Areas
Department of Terrestrial Ecology

National Environmental
Research Institute
Grenåvej 12, Kalø
DK-8410 Rønde
Denmark

Tel:+45 89 20 14 00
Fax:+45 89 20 15 14

Department of Coastal Zone Ecology
Department of Landscape Ecology

National Environmental
Research Institute
Tagensvej 135, 4
DK-2200 København N
Denmark

Tel:+45 32 82 14 15
Fax:+45 32 82 14 20

Department of Arctic Environment

Publications:

NERI publishes professional reports, technical instructions, reprints of scientific and professional articles, a magazine of game biology and the Annual Report.

Included in the annual report is a review of the publications from the year in question. The annual reports and an up-to-date review of the years' publications are available on application to NERI.