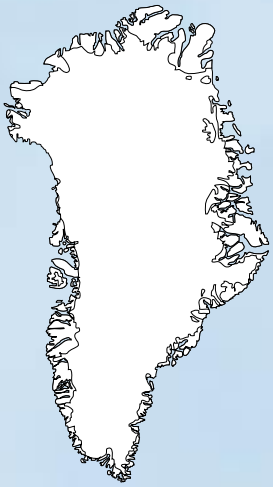
Ministry of Environment and Energy
National Environmental Research Institute

The Greenland Ramsar sites

A status report

NERI Technical Report, no. 346



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2001

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Department of Arctic Environment

Data sheet

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Abstract:	The eleven Ramsar sites in Greenland are reviewed in terms of their status as habitats for waterbirds and other fauna. Management and monitoring is proposed, as well as revisions of their boundaries. A number of potential new Ramsar sites are described.

Keywords:	Ramsar convention, Ramsar sites, Greenland, waterbirds, seabirds, legislation, protection, management.
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Preface

In 1988, eleven areas in Greenland were designated and included in the Ramsar convention. Some information material was prepared (Anonymous 1990), and status reports were later issued together with the status reports on the Danish Ramsar areas (Jepsen et al. 1990, 1993, 1996). Now there is a need for a more thorough status for each of the Greenland Ramsar areas as a preparation for the implementation of the Ramsar Convention into Greenland legislation and as a basis for a critical evaluation and revision of the areas.

The preparation of this report was financially supported by the Danish Environmental Protection Agency (EPA), as a part of the environmental support program DANCEA - Danish cooperation for Environment in the Arctic (grant 123/001-0219). The authors are solely responsible for all results and conclusions presented in the report, and this do not necessarily reflect the position of the Danish EPA.

Anders Mosbech, Christian Glahder (both NERI-AE) and Kaj Kampp and Knud Falk (Ornis Consult) allowed us to include unpublished information. Thor Hjarsen and Peter Nielsen (both the Greenland government) read and commented the manuscript and gave valuable advice.

Summary

The Ramsar sites

Site no. 1, Aqajarua and Sullorsuaq
The site has lost some value as moulting king eiders almost have disappeared. However, the site still meets the criteria of wetlands of international importance, as significant numbers of white-fronted geese stay at the site during the moulting period. Regulations of the boat and helicopter traffic and of the scallop fishery are recommended.

Site no. 2, Qinnquata Marraa and Kuussuaq
The site is of very high importance to moulting king eiders and an extension of the site is recommended as well as regulations of helicopter and boat traffic and of the scallop fishery.

Site no. 3, Kuannersuit Kuussuat
This site seems to be prematurely designated, and unless new investigations reveal higher numbers of staging and breeding waterbirds, the site may be deleted from the Ramsar list of wetlands of international importance.

Site no. 4, Kitsissunnguit
Despite a dramatic reduction in the Arctic tern colony, the site is still of high national and international importance. An extension of the breeding bird reserve to cover all the islands is recommended as well of enforcement of existing legislation.

Site no. 5, Naternaq
The site is of very high importance to moulting white-fronted geese. Regulation of the helicopter traffic and an extension of the site are recommended.

Site no. 6, Eqalummiut Nunaat and Nassuttuup Nunaa
Besides the high importance to moulting white-fronted geese the site shows high waterbird diversity. Regulation of helicopter traffic is recommended.

Site no. 7, Ikkattoq
The site is nationally important to moulting sea ducks and internationally important to breeding white-tailed eagles. Regulation of boat and helicopter traffic is recommended in the interior parts of the Ikkattoq Fjord.

Site no. 8, Kitsissut Avalliit
This site is one of the most diverse seabird breeding colonies in Greenland and as such of high international importance. Even though the site is a breeding reserve, breeding bird numbers are declining. Enforcement of existing legislation is recommended.

Site no. 9, Heden
The site covers the major part of the largest level tundra area in Greenland and is of high international importance to moulting geese. Regulation of helicopter traffic is recommended.

Site no. 10, Hochstetter Forland
The site is of high international importance to moulting geese. Regulation of helicopter traffic is recommended.

Site no. 11, Kilen
The site is of high international importance to moulting geese and a unique representative of a high-arctic desert habitat. An extension of the site to include the biological important islands Henrik Krøyer Holme and the surrounding polynya area is recommended. Helicopter traffic should be regulated.

Potential new Ramsar sites
Four potential new Ramsar sites are described in details, while some more potential areas are summarised in Table 1 (page 73).

Further recommendations
- Implementation of the Ramsar Convention in the Greenland Home Rule legislation to ensure protection and efficient management of the sites.
- Development of specific management plans including monitoring programmes and borderline revisions in each Ramsar site. See Table 2 (page 79) for a summary of the sites demand of management.
- Public information campaigns to broaden the knowledge of the Greenland Ramsar sites.

Conclusions
The Greenland Ramsar sites have the potential to be an efficient tool in the conservation of the wetland fauna primarily the birds.

When the eleven Greenland Ramsar sites where designated in 1987, the baseline information from Greenland was limited. However, except for one of the sites (no. 3) all the sites, based on an increased level of information, still fulfil the criteria of Ramsar sites and still are important habitats for waterbirds. The increased level of information also revealed several other areas which fulfil the criteria, and the designation of some of these as Ramsar sites including regulation of the human activities within them, could be an important contribution to the conservation of particularly the hunted waterbird populations in West Greenland.

Dansk resumé

Grønlands elleve Ramsar-områder beskrives og vurderes ud fra den tilgængelige viden om deres naturhistorie, med vægt på forekomsten af vandfugle (Box II).

De ti områder opfylder et eller flere af Ramsar-konventionens kriterier for udpegning (Box I oprindelige kriterier, Box III nye opdaterede kriterier). Et område lever ikke op til, og har formodentlig aldrig levet op til, nogle af disse kriterier. Det er område nr. 3 Kuannersuit Kuussuat på Disko.

I to områder (nr. 1 Mudderbugten og nr. 4 Grønne Ejland) er vigtige forekomster af vandfugle blevet reduceret betydeligt siden de blev udpeget. Årsagen er menneskelig aktivitet, hvilket strider imod konventionens hensigt.

I nogle tilfælde er områdernes grænsedragning ikke hensigtsmæssig, og der gives forslag til revision af grænserne i disse områder.

Det anbefales at der udarbejdes forvaltningsplaner og indledes regelmæssig overvågning for/i områderne.

En række andre vådområder (i bred forstand, se Appendix II), der opfylder Ramsar-kriterier beskrives. Nogle af disse områder kan evt. udpeges som erstatning for områder der reduceres eller slettes af den grønlandske liste, eller de kan udpeges selvstændigt.

Det konkluderes, at Ramsar-områder kan blive et værdifuldt redskab til bevarelse af især vandfuglebestande i Grønland. Men det kræver at menneskelige aktiviteter reguleres i højere grad, end det er tilfældet i dag. I visse tilfælde kan man dog nøjes med at håndhæve gældende lovgivning.

Introduction

The Convention on Wetlands, signed in Ramsar Iran in 1971 (Appendix I, page 89), is an intergovernmental treaty which provides the framework for national action and international co-operation for the conservation and wise use of wetlands and their resources. There are presently (September 2000) 122 contracting parties to the Convention, with 1031 wetland sites, totalling 78.2 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance. Of the total of 1031 Ramsar sites only 28 sites are situated within the Arctic climatic zone: five on Svalbard, seven in Siberia, four in Canada, one in Alaska and 11 in Greenland. Why there are so few Ramsar sites in the Arctic is not known, but an explanation could be that the need for protection generally is higher in more southern and densely inhabited areas and because nature conservation in the Arctic more is based on large national parks and reserves.

It is worth noticing that the Convention not only deals with the selected sites included in the list, but also states that the Contracting Parties (Article 3.1):

> ***"shall formulate and implement their planning so as to promote the conservation of the wetlands included in the list, and as far as possible the wise use of wetlands in their territory."***

that (Article 3.2):

> ***"shall arrange to be informed at earliest possible time if the ecological character of any wetland in its territory and included in the List has changed,..."***

and that (Article 4.1):

> ***"shall promote the conservation of wetlands and waterfowl by establishing reserves on wetlands, whether they are included in the list or not and provide adequately for their wardening."***

Wetlands demonstrate a wide range of forms. The Convention takes a broad approach in determining the wetlands, which come under its protection. Under the text of the Ramsar Convention (Article 1.1), wetlands are defined as:

> "***areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres***".

In addition, the Ramsar Convention (Article 2.1) provides that wetlands:

> ***"may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands".***

When identifying a wetland of international importance the text of the Ramsar Convention (Article 2.2) states that:

> ***"Wetlands should be selected for the List of Wetlands of International Importance on account of their international significance in terms of ecology, botany, zoology, limnology or hydrology" and indicates that "in the first instance, wetlands of international importance to waterfowl at any season should be included".***

See also Appendix II (page 94) for an extended definition.

Ramsar sites are per definition internationally important and a set of criteria has been developed for a standardised identification. The criteria are divided into four groups: 1) criteria for representative or unique wetlands, 2) general criteria based on plants or animals, 3) specific criteria based on waterfowl and 4) specific criteria based on fish (Box I). An area can be considered internationally important if it meets at least one of these criteria.

Originally, the primary objective of the Ramsar Convention was waterbird protection, but over the recent years the Convention has taken a more holistic approach to wetland protection.

In Denmark, the Ramsar sites have been integrated with other inter-governmental conventions like Natura 2000 and special protected areas under the EEU Bird Directive.

In this report the term "waterbird" will be used as a synonym for the term "waterfowl" in a broad sense (Box II, page 9). Auks (Alcidae) are not mentioned in the Ramsar definition of waterbirds, although penguins, their ecologically counterparts of the southern hemisphere, are. The Ramsar Bureau (T. Salathe pers. comm.) consider this issue as the auks are "probably simply missed out", and points out that as waterbirds/waterfowl are defined as "birds ecologically dependent on wetlands". As wetlands include rocky marine shores (Appendix II, page 94) there is no reason not to consider auks as waterbirds. However, for pure legality reasons the Ramsar Bureau recommend that:

- Greenland/Denmark formally submit a recommendation to have auks included as waterbirds for application to the specific criteria B5 and B6 - to the Convention's Standing Committee and ultimately to the next meeting of the Conference of the Contracting Parties (COP8 in November 2002),

and/or

- Greenland issues a national decree/law/regulation that clearly includes auk populations as a numerical criterion for designating Ramsar sites in Greenland.

However, the auks were included as waterbirds when the eleven Greenland Ramsar sites were selected and designated (Anonymous 1987).

Box I:

The Criteria for Identifying Wetlands of International Importance

as adopted by the 4th and 6th Meetings of the Conference of the Contracting Parties to the Convention on Wetlands (Ramsar, Iran, 1971) to guide implementation of Article 2.1 on designation of Ramsar sites
(Annexes to Recommendation 4.2, Montreux, Switzerland, 1990, and Resolution VI.2, Brisbane, Australia, 1996)
NOTE: ***These are NOT the guidelines presently in use when identifying a new wetland of international importance (see Box III).***
Furthermore criteria no. 4 was not implemented in the guidelines at the time of the designation of the Greenland Ramsar sites (1987).

A wetland is identified as being of international importance if it meets at least one of the criteria set out below:

1. Criteria for representative or unique wetlands

A wetland should be considered internationally important if:
(a) it is a particularly good representative example of a natural or near-natural wetland, characteristic of the appropriate biogeographical region; or
(b) it is a particularly good representative example of a natural or near-natural wetland, common to more than one biogeographical region; or
(c) it is a particularly good representative example of a wetland which plays a substantial hydrological, biological or ecological role in the natural functioning of an major river basin or coastal system, especially where it is located in a trans-border position; or
(d) it is an example of a specific type of wetland, rare or unusual in the appropriate biogeographical region.

2. General criteria based on plants or animals

A wetland should be considered internationally important if:
(a) it supports an appreciable assemblage of rare, vulnerable or endangered species or subspecies of plant or animal, or an appreciable number of individuals of any one or more of these species; or
(b) it is of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora and fauna; or
(c) it is of special value as the habitat of plants or animals at a critical stage of their biological cycle; or
(d) it is of special value for one or more endemic plant or animal species or communities.

3. Specific criteria based on waterfowl

A wetland should be considered internationally important if:
(a) it regularly supports 20,000 waterfowl; or
(b) it regularly supports substantial numbers of individuals from particular groups of waterfowl, indicative of wetland values, productivity or diversity; or
(c) where data on populations are available, it regularly supports 1% of the individuals in a population of one species or subspecies of waterfowl.

4. Specific criteria based on fish

A wetland should be considered internationally important if:
(a) it supports a significant proportion of indigenous fish subspecies, species or families, life-history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity; or
(b) it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend.

Box II:
Waterbird definition

As formulated on http://www.ramsar.org/

The Convention functionally defines waterfowl (a term which, for the purposes of these Criteria and Guidelines, is considered to be synonymous with "waterbirds") as "birds ecologically dependent on wetlands" (Article 1.2). This definition thus includes any wetland bird species. However, at the broad level of taxonomic order, it includes especially:

- penguins: *Sphenisciformes*;
- divers: *Gaviiformes*;
- grebes: *Podicipediformes*;
- wetland related pelicans, cormorants, darters and allies: *Pelecaniformes*;
- herons, bitterns, storks, ibises and spoonbills: *Ciconiiformes*;
- flamingos: *Phoenicopteriformes*;
- screamers, swans, geese and ducks (wildfowl): *Anseriformes*;
- wetland related raptors: *Accipitriformes* and *Falconiformes*;
- wetland related cranes, rails and allies: *Gruiformes*;
- hoatzin: *Opisthocomiformes*;
- wetland related jacanas, waders (or shorebirds), gulls, skimmers and terns: *Charadriiformes;*
- coucals*: Cuculiformes;* and
- wetland related owls: *Strigiformes.*

Greenland and the Ramsar Convention

Denmark ratified the Ramsar convention in 1977, when Greenland was a part of the Danish State. In 1987, the newly established Greenland government proposed that eleven Ramsar-sites should be designated in Greenland and included in the Danish list of Ramsar sites, as foreign matters was (and still is) a common issue between Denmark and Greenland. These eleven sites were acknowledged by the Ramsar secretariat in 1988 (Figure 2). The Ramsar sites in Greenland cover more than 13,400 km^2 of Arctic ecosystems and include wetlands both in marine, tidal and fresh-water environments. There are no permanent settlements in any of the Greenland Ramsar sites.

When designating the Ramsar sites (Jepsen et al. 1990, 1993, 1996) especially the criteria from group 1 (Box I, Figure 1) were used. In western Europe and North America the criteria of all three groups (Box I) have been used much more evenly, although with sub-criterion 1.a as the most frequent (Frazier 1999). Greenland Ramsar sites are situated in connection with coastal areas and more than 20% of the combined areas are found in marine environments. It is remarkable that the criteria in group no. 3 (Box I) were not used for justification of the international important wetland status of the Greenland Ramsar sites. This was most likely due to lack of adequate data on the waterbirds occurring in the sites at the time of designation. Generally, knowledge like the temporary use of the sites as staging and moulting areas was limited, and the Ramsar designations were in some cases

based upon insufficient data. This situation has improved considerably, although we still miss important information from many sites and regions of Greenland.

Overviews of the Greenland Ramsar sites have previously been published together with the status of the Danish Ramsar sites (Jepsen et al. 1990, 1993, 1996).

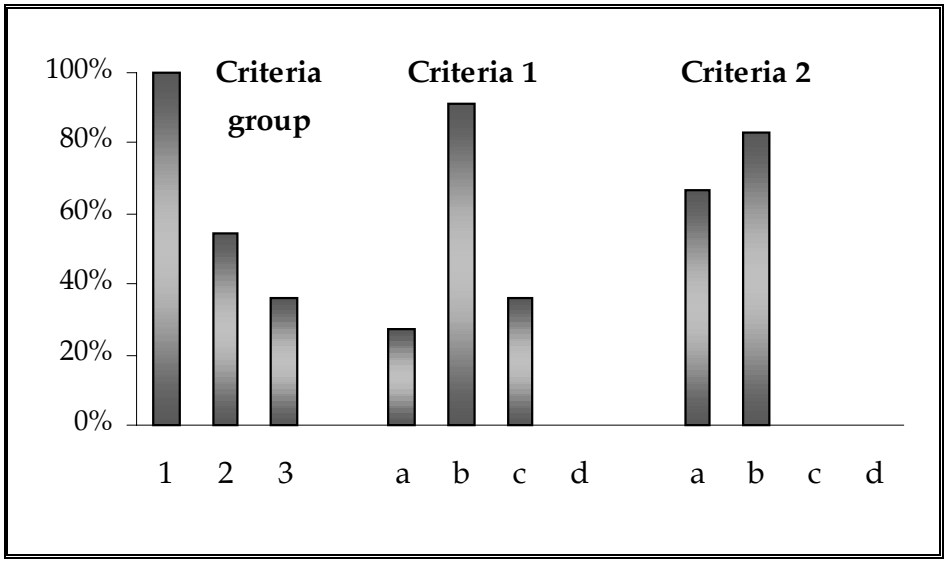


Figure 1: Percentage of criteria used in Greenland Ramsar sites ("Criteria group" above) and the sub-criteria used in criteria group 1 and 2 (Box I). Note that criteria group no. 4 was not adopted in the set of criteria at the time of designation. Furthermore criteria group no. 3 were not used with sub-criterions in the Greenland Ramsar sites (Jepsen et al. 1990, 1993, 1996). Please note that more than one criterion usually has been applied to a site.

Waterbirds of Greenland

There are no endemic bird species in Greenland, but some endemic subspecies have been recognised. Among the waterbirds are: Greenland white-fronted goose (*Anser albifrons flavirostris*), mallard (*Anas platyrhynchos conboschas*) and dunlin (*Calidris alpina arctica*). Moreover, the Greenland populations of white-tailed eagle (*Haliaeetus albicilla*) and red-breasted merganser (*Mergus serrator*) are by some authors treated as endemic subspecies, although they are not generally accepted. However, they are most likely genetically isolated from nearby populations. This is probably also the case for the great cormorant (*Phalacrocorax carbo*) population breeding in West Greenland.

Greenland has special international responsibility for a number of species and separate populations of waterbirds. These are those where large and significant segments of the populations at a given time occur within the borders of Greenland. Especially among the species: northern fulmar, white-fronted goose, pink-footed goose, light-bellied

brent goose, barnacle goose, Iceland gull, Ivory gull, Arctic tern, little auk, Brünnich's guillemot, king eider and common eider Greenland holds significant large proportions of the populations.

In general, there is little information on population dynamics and trends available for Greenland birds. An exception is the goose populations, which mainly have been studied in their winter habitats in Europe or North America. These populations have, with few exceptions, increased in numbers. The Greenland breeding populations of common eider and Brünnich's guillemot have on the other hand shown considerable declines through the 20th century and in the case of the eiders since even late in the 18th century. Over exploitation in the form of hunting, egg collection and disturbance are believed to be the reasons for these population declines.

Protection

Harvesting of natural resources, such as hunting and egg collection has always been a vital part of the Greenland culture. The hunting pressure has increased through the 20th century a as function of a growing population, more and more efficient weapons and an increasing radius of action due to faster boats. Amongst the above mentioned birds Brünnich's guillemot, common eider and kittiwake are the heaviest hunted species in Greenland.

The hunting regulations have an open season for most of the common waterbird species, with only the breeding season closed, typically from 1 June to 15 August. Furthermore there are local hunting regulations in some municipalities (Appendix III, page 96). Besides the species regulations some land areas are protected as breeding bird reserves (§ 11) where all traffic is prohibited from 1 June to 31 August (Anonymous 1989).

Shooting and "unnecessary noise" are furthermore prohibited (§ 3) within a distance of five kilometres from colonies of black, common and Brünnich's guillemot, razorbill, little auk, kittiwake, fulmar and great cormorant, within a distance of 200 metres from colonies of common eider and king eider, Arctic tern and gulls.

Collection of eggs from fulmar, Arctic tern, Arctic skua, great black-backed gull, Iceland gull, glaucous gull, kittiwake, black guillemot and little auk are allowed until 1 July.

Despite these hunting regulations, there is no doubt that hunting and related activities and disturbance today have a strong negative effect on some of the seabird population in Greenland, particularly the breeding Brünnich's guillemots and common eiders.

Furthermore, the municipalities have local hunting and fishing regulations, as well as locally protected areas (Grønlandsk lovregister section 14, Anonymous (1996) or later editions). Some of these regulations may overlap with the Ramsar sites and are in a few cases listed.

The Ramsar sites in Greenland are not implemented in the national legislation, a fact also seen in many other Ramsar Convention contracting countries.

Only a small fraction of the Greenland Ramsar sites are protected by other legislation. Two Ramsar sites are situated within the National Park of North and Northeast Greenland (sites nos. 10 and 11). This does, however, not protect the sites from mineral and hydrocarbon exploration and exploitation (no current exploitation). Moreover, are the inhabitants of Ittorqortormiit (Scoresbysund) allowed polar bear hunting as long as it is carried out in the traditional way by means of dog sledge.

Three Ramsar sites are partially (sites nos. 4 and 5) or totally (no. 8) included by the hunting regulations as breeding bird reserves (Anonymous 1989).

The Bureau of Minerals and Petroleum (Government of Greenland) has designated a large number of "Areas important to Wildlife". This designation is however, not implemented in the Greenland legislation, and applies only to activities in relation to mineral exploration. In these areas, activities like helicopter flying, are regulated according to minimise disturbance to wildlife (Box IV, page 78).

Apart from disturbance and hunting there are generally few threats to the Greenland Ramsar sites. Land development or reclamation is currently not taking place except in cities and agriculture is restricted to very limited areas in southernmost Greenland. Petroleum and mineral exploration takes place in Greenland, but so far the only plans for exploitation is a gold ore in South Greenland. Several hydro power plants have also been proposed in West Greenland. Only one has actually been established in 1993, and there are no plans for development of the others. As most of the Ramsar sites are coastal, marine oil spills constitute a potential threat, at least in West Greenland, where most shipping and hydrocarbon exploration takes place. Furthermore, gill net fishing may be a problem locally and disturbance and probably also habitat degradation associated with scallop fishing occurs (see sites nos. 2 and 3).

Site review

Each of the 11 existing Ramsar sites in Greenland is presented with updated data, and they are assessed in relation to the stipulations of the Ramsar Convention.

Technical data are listed for each site, giving:

Site no.:	- the Greenland Ramsar site number.
Name:	- the local name of the site as seen in the maps of the Danish Survey and Cadastre (1:250,000).
Danish name:	- is only mentioned if different from the name above.
International no.:	- the international Ramsar site number.
IBA no.:	- the Important Bird Area number as presented in Heath & Evans (2000).
Seabird colony:	- registration number of seabird colonies recorded within the site (Boertmann et al. 1996).
Municipality:	- name(s) of the municipality where the site is located.
Coordinates:	- approximate geographical coordinates for the centre of the site.
Size:	- the size of the site in square kilometres.
Terrestrial/marine:	- the approximate distribution of terrestrial and marine environment within the site.
Altitude:	- the altitude range of the site in meters above sea level.
Ramsar criteria:	- the justification (see Box I, page 8) for the original designation (Jepsen et al. 1990, 1993, 1996).
Updated criteria:	- the justification for the present Ramsar status based on the new criteria (see Box III, page 60) and on the updated information presented in this report.

The technical data are followed by an overview of the international and national importance of the site in relation to the number of waterbirds utilising the site.

Each of the Ramsar sites is reviewed with the newest data on staging, moulting and breeding birds available. The review typically contains a table on the number of birds that use the site as a moulting or staging area and a table listing the breeding birds. When possible, other taxa (mammals, plants etc.) are included in the site descriptions.

A short description of the habitats, and a status of the biological changes in the site is given where data makes this possible.

The protection section describes the degree of protection by the legislation and other rules in Greenland.

Maps of the area accompany the site review. The borders of the Ramsar sites have been copied from the original maps prepared by the Greenland authorities in 1987. See also discussion of the borders page 53.

In the "Status" section the justification for the new criteria met by the sites are listed.

Table 2 on page 79 summarises the conflict (with human activities) potential, the management demand and current threats of each site.

Data quality

The information on bird numbers in the Ramsar sites is of a very varying quality, ranging from actual counts made on location to very rough estimates based on occasional visits. Especially, nests of non-colonial geese, ducks and waders are difficult to record and the number breeding pairs given in this report must be regarded as absolute minimum number.

Moulting geese and eiders in West Greenland have been subject to specific counts (Glahder 1999a, Mosbech & Boertmann 1999), which have provided better estimates of the numbers of birds occurring in some of the Ramsar sites. However, in some cases these counts may be regarded as a "snapshot" of the birds present in a given area at the present time rather than a figure representing the total number of birds utilising the area through a given season. This is especially the case for king eider where the phenology differs between sexes and age-classes (Frimer 1994).

Moreover, research activities have generally been more intensive in West Greenland, leaving large areas of East Greenland poorly covered. The knowledge on bird numbers in the East Greenland Ramsar sites is typically based on just one or two surveys (see site nos. 9, 10 and 11). A further limitation in the information is the general lack of studies in the winter season. In most land areas and in East and North Greenland, this lack is without significance, since these areas during winter are almost without biological activity with relevance to the Ramsar Convention. But the coastal part of the West Greenland Open Water Area (60° - 67° N) is an extremely important winter habitat for seabirds, and surveys during that season has only recently been initiated.

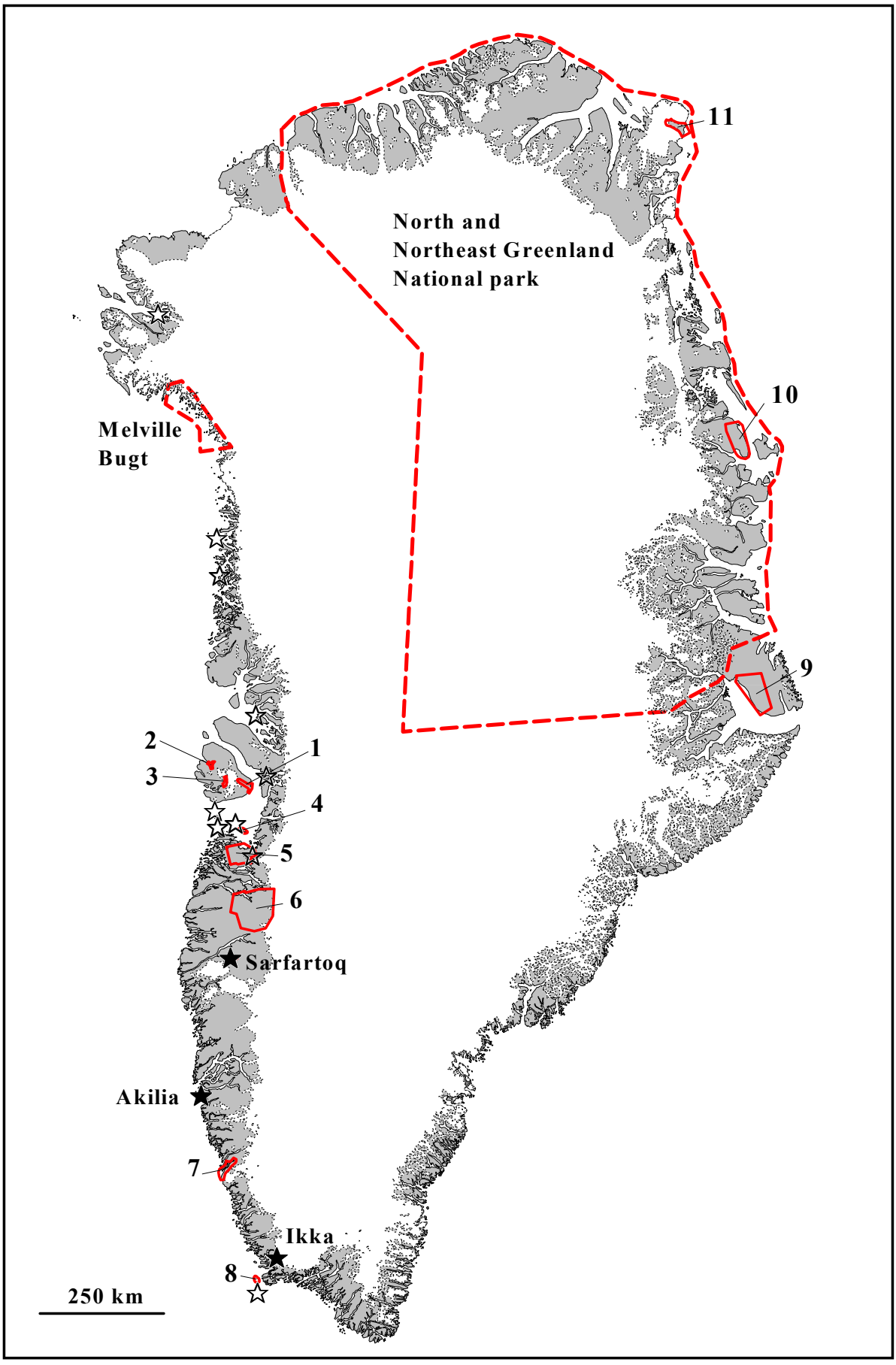
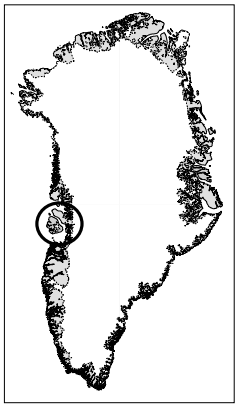


Figure 2: Overview of the eleven Ramsar sites and the protected areas in Greenland. Ramsar sites indicated by their no. National parks and protected areas indicated by dotted lines or filled asterisks and by their name. Breeding bird reserves shown by open asterisks.

Site no. 1 (Figure 3)

Name: **Aqajarua and Sullorsuaq**
Danish name: **Mudderbugten and Kvandalen**



International no.: 385
IBA no.: 025
Seabird colony: 69125
Municipality: Qeqertarsuaq
Coordinates: 69°40'N, 52°00'W
Size: 224 km²
Terrestrial/marine: 80/20%
Altitude: 0-200 m
Ramsar criteria: 1.a and 1.b
Updated criteria: A1, B4, B6

International and national importance

The site was designated primarily because of the large concentrations of king eider that use the area for moulting in late summer/autumn.

A significant number (more than 1% of the World population) of the Greenland white-fronted goose population use the site as moulting area in July-August.

Staging and moulting waterbirds at site no. 1

Species	Updated figures	Other figures
White-fronted goose *Anser albifrons flavirostris*	372 (1995)[1]	248 (1994)[6] 397 (1992)[1] 254 (1989)[2]
Canada goose *Branta canadensis*	128 (1995)[1]	22 (1992)[1] 13 (1989)[2]
Mallard *Anas platyrhynchos*		93 (1994)[6]
Common eider *Somateria mollissima*		c. 700 (1989)[2]
King eider *Somateria spectabilis*	1,074 (1998)[7] 104 (1995)[3] 469 (1994)[3] 1,023 (1993)[3]	max. 400 (1990-1992)[4] 30,000 (1949 and 1954)[5]

[1] Glahder 1999a, [2] Frimer & Nielsen 1990, [3] Mosbech & Boertmann 1999, [4] Frimer 1993, [5] Salomonsen 1967, [6] NERI unpubl. 2000, [7] Boertmann & Mosbech in prep.

Other staging waterbirds

Long-tailed duck (*Clangula hyemalis*), teal (*Anas crecca*), red knot (*Calidris canutus*) and ruddy turnstone (*Arenaria interpres*) in small numbers (Frimer & Nielsen 1990).

Breeding waterbirds (pairs) at site no. 1

Species	Updated figures	Other figures
Red-throated diver *Gavia stellata*		4 (1989)[2]
White-fronted goose *Anser albifrons flavirostris*	5 (1995)[1]	2 (1992)[1] 5 (1989)[2]
Canada goose *Branta canadensis*		1-3 (1989)[2]
Red-necked phalarope *Phalaropus lobatus*		*- extremely abundant*[2]
Arctic skua *Stercorarius parasiticus*		8 (1989)[2]
Arctic tern *Sterna paradisaea*		100 ind. (1990)[3]

[1] *Glahder 1999a,* [2] *Frimer & Nielsen 1990,* [3] *NERI-AE & OC 2000*

Other breeding waterbirds

Mallard (*Anas platyrhynchos*), occasionally northern pintail (*Anas acuta*), long-tailed duck (*Clangula hyemalis*), red-breasted merganser (*Mergus serrator*), great ringed plover (*Charadrius hiaticula*), purple sandpiper (*Calidris maritima*) and occasionally grey plover (*Pluvialis squatarola*) (Frimer & Nielsen 1990).

Habitats

The site consists of the large U-shaped valley Sullorsuaq, the shallow marine bay Aqajarua and the northern part of the low and sloping sedimentary foreland Flakkerhuk. A large braiding river runs through the valley, and along this and at the many ponds and small lakes there are extensive marshlands. The river mouth is a wide delta with mud- and sandflats exposed at low tide, and with salt marshes in the higher parts. At the coast of Flakkerhuk there are barrier beaches and lagoon. In the drier parts there are dwarf scrub heaths and fell fields. Along the northern side of the valley at least 35 homeothermic springs have been located (Kristensen 2000).

Other species

In a freshwater lake North of the river and in the central part of the delta there is a dense population of pond snails (*Lymnaea*), which probably are an important food source for many waterbird species (Frimer & Nielsen 1990).

Protection
The site has been designated an "Area important to wildlife" (eiders and other seaducks on the marine parts and geese on the terrestrial parts) by the Bureau of Minerals and Petroleum (Box IV, page 78). No further protection exists.

Comment
In recent years there has been some mineral and hydrocarbon exploration activities (mainly helicopter flights) in and close to the area.

Status
The marine part of the site used to be the single most important area for moulting king eiders in Greenland. It has now lost its value as a moulting ground. Only birds able to fly (and in much smaller numbers) now utilise the area. Aqajarua is easily reached by boat from Ilulissat, the largest town in the region, and is a popular recreational and hunting area. In addition, a scallop trawler has been operating in the area for several years (Mosbech & Boertmann 1999). The scallop fishery has declined in the area over recent years, and in 1999 only 20 tons of the 240 tons quota were fished (pers. comm. J.J. Engelstoft, Greenland Institute of Natural Resources).

The number of moulting and breeding white-fronted geese using the site seems to have increased over the last two decades. This is the general trend observed at several places in Greenland and is probably due to protection of the species on its wintering grounds. Furthermore, the number of Canada geese has increased dramatically in West Greenland over the past 10-15 years, a trend that the counts from Sullorsuaq also reflect.

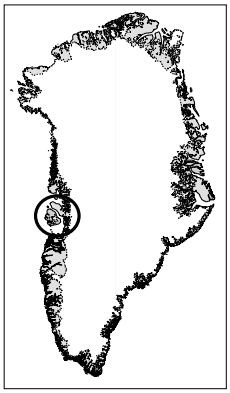
New criteria applied (Box III, page 60): A1 for the shallow marine bay and the lush and extensive wetlands in the valley; B4 for the moulting white-fronted geese and B6 for the number of white-fronted geese utilising the area.

Threats
The most current threats on the marine parts are hunting and disturbance from boat traffic and scallop fishing. On the terrestrial and freshwater parts it is helicopter traffic.

Figure 3: Map of Ramsar sites no. 1, 2 and 3 at Disko Island. Black squares = towns and black dots = settlements.

Site no. 2 (Figure 3)

Name: **Qinnquata Marraa and Kuussuaq**
Danish name: **Nordfjord and Stordal**



International no.: 386
IBA no.: 023
Seabird colony: 69130
Municipality: Qeqertarsuaq
Coordinates: 69°55′N, 53°20′W
Size: 65 km²
Terrestrial/marine: 72/28%
Altitude: 0-100 m
Ramsar criteria: 1.b and 1.c
Updated criteria: A1, B4, B6

International and national importance

The waters close to, and within the site are today the single most important moulting area for king eiders in Greenland and therefore of high international importance. Furthermore is the site important for Greenland white-fronted goose as up to approximately 2% of the population have been recorded there during the summer.

Staging and moulting waterbirds at site no. 2

Species	Updated figures	Other figures
White-fronted goose *Anser albifrons flavirostris*	539 (1995)[1]	168 (1992)[1]
Canada goose *Branta canadensis*	174 (1995)[1]	79 (1992)[1]
Brent goose *Branta bernicla hrota*	156 (1995)[4] 42 (1994)[4]	
King eider *Somateria spectabilis*	7,000 (1994)[2] 1,350 (1993)[2]	>1,000 (1990-91)[3]
Red-breasted merganser *Mergus serrator*	35 (1994)[5]	65 (before 1990)[6]

[1] Glahder 1999a, [2] Mosbech & Boertmann 1999, [3] Frimer 1993, [4] Boertmann et al 1997, [5] NERI-AE 1994, [6] Jepsen 1993.

Breeding waterbirds (pairs) at site no. 2

Species	Updated figures	Other figures
Red-throated diver *Gavia stellata*		*- nesting almost colonially*[2]
White-fronted goose *Anser albifrons flavirostris*	4 (1995)[1]	0 (1992)[1] 50 (b. 1990)[3] *
Canada goose *Branta canadensis*	3 (1995)[1]	1 (1992)[1]

[1] Glahder 1999a, [2] K. Kampp & R.M. Kristensen unpubl. 1979, [3] Jepsen 1993
** = Probably not based on actual counts.*

Other breeding waterbirds
Mallard (*Anas platyrhynchos*), long-tailed duck (*Clangula hyemalis*), red-throated diver (*Gavia stellata*) and glaucous-/Iceland gull (*Larus hyperboreus/glaucoides*) (C. Glahder unpubl. 1995, NERI-AE & OC 2000).

Habitats
The site comprises the lower parts of two broad glacial valleys, both with braiding rivers. The rivers reach the fjord in a common delta with large mudflats exposed during low tide. In the valleys there are a variety of wetlands including small pools and extensive moss-sedge marshes. The innermost and shallow part of the fjord Kangersooq is included too. The coasts (except for the delta) are low and rocky, only with narrow sedimentary beaches.

Protection
The site has been designated an "Area important to wildlife" (eiders and other seaducks on the marine parts and geese on the terrestrial parts by the Bureau of Minerals and Petroleum (Box IV, page 78). No further protection exists.

Comments
At the western boundary of the site there is a small field hut used by scientists from the Arctic Station in Qeqertarsuaq.

Status
The site seems to have gained importance as a moulting area for king eiders over the last decade. The reason this site hasn't lost it importance like Aqajaura (site no. 1) is probably because of its remoteness. However, only a fraction of the king eiders staying in the fjord are within the boundary of the site. The birds are dispersed all over the Kangersooq Fjord and along the coastline north and south of the fjord mouth.

The numbers of moulting king eiders in West Greenland in late August are estimated at 30,000-40,000 birds (Mosbech & Boertmann 1999). More than 20% of the moulting king eiders in late August has been recorded in or close to this site, making the fjord the most important moulting area for king eider in Greenland today.

New criteria applied (Box III, page 60): A1 for the shallow marine fjord and river delta; B4 for the moulting white-fronted geese and moulting king eiders and B6 for the number of king eiders utilising the area.

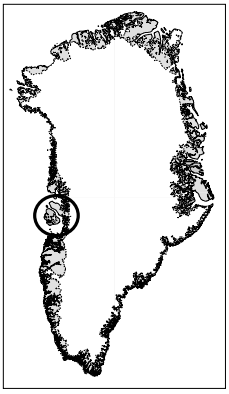
Threats
Hunting by boat takes place, but due to the remoteness of the fjord, apparently not as intensively as in the other fjords of Disko. Extensive low level helicopter flying is another threat both to king eiders and geese.

At and south of the fjord mouth there are large occurrences of Iceland scallop (*Clamys islandia*). A no-quota fishery on these takes place, and the fishing activities may pose a threat to the king eiders by disturbance and by reducing the quality of the feeding grounds (Due & Ingerslev 2000).

Site no. 3 (Figure 3)

Name: **Kuannersuit Kuussuat**

International no.: 387
IBA no.: -
Seabird colony: -
Municipality: Qeqertarsuaq
Coordinates: 69°40′N, 53°20′W
Size: 52 km²
Terrestrial/marine: 100/0%
Altitude: -
Ramsar criteria: 1.b, 1c and 2b
Updated criteria: A1



International and national importance

The site has a small population of common eider breeding in fresh water and red-necked phalarope is very common. Furthermore, relatively small numbers of white-fronted geese breed and moult in the site. The fjord just outside the Ramsar site was previously important king eiders moulting habitat (Frimer 1993).

Staging and moulting waterbirds at site no. 3

Species	Updated figures	Other figures
White-fronted goose *Anser albifrons flavirostris*	74 (1995)[1]	30 (1992)[1] 200 (b. 1993)[3] *
Mallard *Anas platyrhynchos*	11 (1995)[2]	

[1] *Glahder 1999a,* [2] *C. Glahder unpubl. 1995,* [3] *Jepsen 1993*
* = *Probably not based on actual counts.*

Habitats

The site comprises a large valley with a wide braiding river and which recently was covered by ice. Barren moraines and small lakes (many with turbid water) dominate the landscape. A delta with extensive sandflats is found at the head of the fjord. The vegetation is marches and dwarf scrub heats, but large areas are almost naked gravel plains. At the head of the valley at Sorte Hak, a glacier recently has surged more than 10 km during only 4 years (Nielsen 2000).

Protection

The site has been designated an "Area important to wildlife" (eiders and other seaducks on the marine parts and geese on the terrestrial parts) by the Bureau of Minerals and Petroleum (Box IV, page 78). Qeqertarsuaq municipality have a local regulation which states that it

is prohibited to hunt and chase eiders in the interior parts of the fjord. No further protection exists.

Comments
The site is the only Ramsar site in Greenland, which is not designated as an Important Bird Area (IBA).

Several "hot" (homeothermic) springs are found within the site.

Breeding waterbirds (pairs) at site no. 3

Species	Updated figures	Other figures
Red-throated diver *Gavia stellata*		- *unknown numbers*[2]
White-fronted goose *Anser albifrons flavirostris*	2 (1995)[1]	
Mallard *Anas platyrhynchos*		- *unknown numbers*[2]
Common eider *Somateria mollissima*		- *unknown numbers*[2]
Long-tailed duck *Clangula hyemalis*		- *unknown numbers*[2]
Red-breasted merganser *Mergus serrator*		- *unknown numbers*[2]
Red-necked phalarope *Phalaropus lobatus*		- *unknown numbers*[2]

[1] *Glahder 1999a,* [2] *Jepsen 1993*

Status
The information on the site is scarce and a proper assessment of the site status is not possible, without further studies. The site apparently does not meet any of the specific criteria based on waterbirds given by The Ramsar Convention on Wetlands. However, criterion A1 is perhaps met due to the many wetlands in the valley.

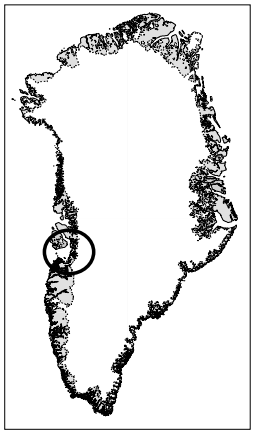
Threats
No serious threats have been identified to this site.

Hunting and disturbance may prevent king eiders from moulting in large numbers in the fjord just outside the Ramsar site.

Site no. 4 (Figure 4)

Name: **Kitsissunnguit**
Danish name: **Grønne Ejland**

International no.: 388
IBA no.: 030
Seabird colonies: 68029, 68030
Municipality: Qasigiannguit and Aasiaat
Coordinates: 68°50'N, 51°50'W
Size: 69 km²
Terrestrial/marine: 12/88%
Altitude: 0-25 m
Ramsar criteria: 2.a, 2.b and 3
Updated criteria: A1, B3, B4, B5



International and national importance

A significant proportion of the North Atlantic population of Arctic tern breeds (or bred) within the boundaries of the site along with a rich variety of other waterbirds. The tern colony was probably the largest ever recorded in the World.

Breeding waterbirds (pairs) at site no. 4

Species	Updated figures	Other figures
Common eider *Somateria mollissima*		*- before 1974:* *some pairs*[1]
Red-necked phalarope *Phalaropus lobatus*	56 (1996)[1]	100 (b. 1990)[4]
Red phalarope *Phalaropus fulicarius*	15 (1996)[1]	10-11 (1980)[3]
Black guillemot *Cepphus grylle*	179 (1996)[1]	*- common* (1980)[3]
Little auk *Alle alle*	235 ind. (2000)[6] *- no change* (1996)[1]	200 ind. (1980)[3]
Puffin *Fratercula arctica*	*- no change* (1996)[1]	200 ind. (1980)[3]
Arctic tern *Sterna paradisaea*	*- no breeders observed* (2000)[6] 10,000 (1996)[1]	5,000 ind. (1993)[5] *- practically no breeders* (1992)[5] *- few thousand* (1990)[2] 25,000 (1980)[3]

[1] Frich 1997, [2] K. Kampp unpubl. 1990, [3] K. Kampp unpubl. 1980, [4] Jepsen 1993, [5] Boertmann et al. 1996, [6] Hjarsen 2000.

Other breeding waterbirds

Kitsissunnguit may be the only known breeding ground for the very rare Ross's gull (*Rhodostethia rosea*) in West Greenland (4 birds and mating observed in 1996 and one pair in 1979). Furthermore, the site is known as one of the very few breeding grounds for long-tailed skua (*Stercorarius longicaudus)* in West Greenland.

Mallard (*Anas platyrhynchos*), long-tailed duck (*Clangula hyemalis*), red-breasted merganser (*Mergus serrator*), purple sandpiper (*Calidris maritima*), great ringed plover (*Charadrius hiaticula*), Arctic skua (*Stercorarius parasiticus*), glaucous gull (*Larus hyperboreus*) and razorbill (*Alca torda*) breed in small numbers (Frich 1997).

Staging and moulting waterbirds

The islands are staging area for several species of shorebirds in both spring and autumn (Frich 1997).

Other birds

Raven (*Corvus corax*), redpoll (*Carduelis flammea*), snow bunting (*Plectrophenax nivalis*), lapland bunting (*Calcarius lapponicus*) and wheatear (*Oenanthe oenanthe*) are breeding on the islands, and peregrine (*Falco peregrinus*) and gyr falcon (*F. rusticolus*) are frequently seen (Frich 1997).

Habitats

The site is a group of low and more or less level islands. The coasts are generally rocky, but pocket beaches and lagoons are found here and there as well as some shallow bays. On the four larger islands (Angissat, Innarsuatsiaaq, Basisø and Niaqornaq) there are some ponds and fens. The waters to the north of the islands are rather shallow.

Protection

Partial: The westernmost small islands "Saattuarsuit" are a reserve for breeding birds, where all activities, disturbance etc. are illegal from 1 June to 31 August (Anonymous 1989). The protected area covers, however only a small fraction (1,8% of the total site) of the site.

The seabird breeding colonies are designated as "Areas important to wildlife" by the Bureau of Minerals and Petroleum (Box IV, page 78).

Comments

The site is a popular recreation area and tern eggs for consume are collected in large scale. Frich (1997) counted 150-200 persons visiting the islands during an 18-day period and estimated a total of 3,000-6,000 eggs collected in 1996. The high number of visitors means that even though the islands are uninhabited, people were present continuously on the islands during this 18-day period.

Gill-net fishery for lumpsucker (*Cyclopterus lumpus*) takes place in spring/early summer (Nielsen et al. 2000). A couple of huts on the islands are used mainly during winter hunts.

Status
The tern colony of Kitsissunnguit has undergone large annual variations in number of breeding pairs between several thousands to none. This is a feature generally observed among tern colonies in the Arctic, and the variation is probably governed by climatic conditions as f. ex the onset of the spring. Therefore a direct comparison of breeding numbers over a short period of years (with different methods of investigation) is extremely difficult and should be treated with care. However, the general trend in Kitsissunnguit seems to be a decrease, a trend also recorded elsewhere in West Greenland (Boertmann et al. 1996). Whether the Arctic terns in Greenland are capable of raising a replacement clutch (like in lower latitudes), in case of removal of their eggs before 1 July, is not known, but considered unlikely (Cramp 1985). According to local people, the terns (like gulls) lay replacements clutch if the first is collected (Frich 1997).

In 1980, 8000 pairs of Arctic tern bred on the island Angissat (K. Kampp unpubl.), in recent years this island has been completely abandoned by the terns (Frich 1997, Hjarsen 2000).

There is no doubt that the extensive collection of egg has a severe effect on the breeding success, and thereby the population size. Adult Arctic terns have a long life expectancy and relatively little energy is put into a single years breeding attempt. Terns are therefore able to cope with poor or no breeding success in shorter periods, but longer periods with continuous removal of the reproductive outcome will obviously have a profound effect on the population.

New criteria applied (Box III, page 60): A1 for the many wetlands on the islands; B3 for the many different waterbirds occurring on the islands; B4 for the colonies of breeding waterbirds and B6 for the number of Arctic terns breeding on the islands. The latter criterion has however, not been fulfilled in recent year.

Threats
Egg collection and disturbance are the most obvious threat to the waterbird populations in this site. By-catch of seabirds in lumpfish nets may occur, but this issue has not been studied. As everywhere in West Greenland general hunting and related disturbance as well as helicopter flying occur.

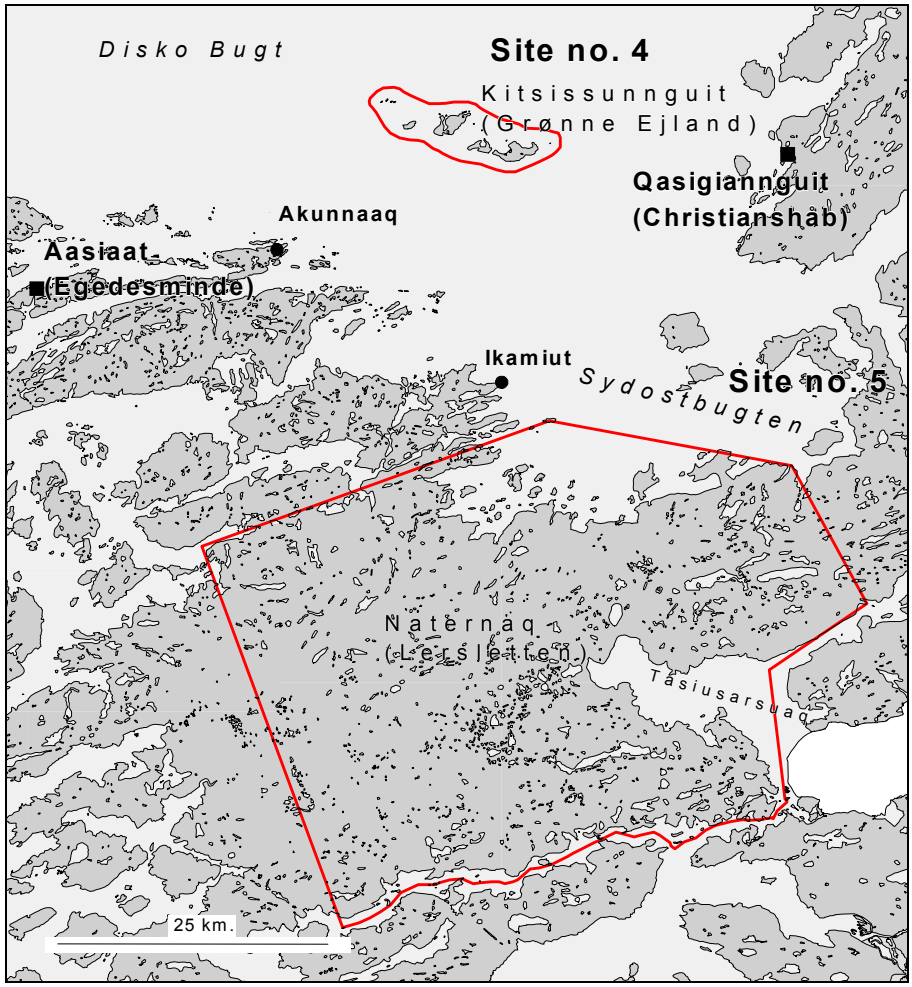
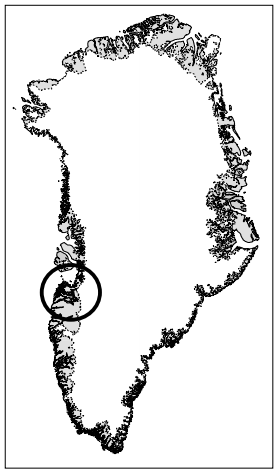


Figure 4: Map of Ramsar sites number 4 and 5 in the southern part of the Disko Bay. Black dot = settlement, black square = town.

Site no. 5 (Figure 4)



Name: **Naternaq**
Danish name: **Lersletten**

International no.: 389
IBA no.: 031
Municipality: Qasigiannguit and Kangaatsiaq
Coordinates: 68°20'N, 52°00'W
Size: 1840 km²
Terrestrial/marine: 84/16%
Altitude: 0-450 m
Ramsar criteria: 1.b, 1.c and 2.b
Updated criteria: A1, B4, B6
Seabird colonies: 68014, 68015, 68016, 68072, 68073, 68074, 68075, 68081, 68083, 68099, 68105, 68106, 68107, 68108, 68111, 68146.

International and national importance

The site is the most important area for moulting white-fronted geese in Greenland holding a minimum 10% of the World population of this sub-species.

Staging and moulting waterbirds at site no. 5

Species	Updated figures	Other figures
Red-throated diver *Gavia stellata*	19 (1995)[4]	
Great northern diver *Gavia immer*	19 (1995)[4]	
White-fronted goose *Anser albifrons flavirostris*	2,569 (1995)[1]	2,588 (1992)[1] approx. 6,000 (1988)[2] *
Canada goose *Branta canadensis*	117 (1995)[1]	11 (1992)[1]
Mallard *Anas platyrhynchos*	31 (1995)[4]	- *large numbers* (1989)[2]
Common eider *Somateria mollissima*	350 (1997)[3]	287 (1995)[4]
Long-tailed duck *Clangula hyemalis*	121 (1995)[4]	

[1] Glahder 1999a, [2] Fox & Stroud 1988, [3] Frich et al. 1997, [4] C. Glahder unpubl. 1995
** = Estimated numbers extrapolated from few hours of flight[2].*

Other staging waterbirds

Northern pintail (*Anas acuta*), red-breasted merganser (*Mergus serrator*) and small numbers of shorebirds (Frich et al. 1997, C. Glahder unpubl. 1995).

Breeding waterbirds (pairs) at site no. 5

Species	Updated figures	Other figures
Red-throated diver *Gavia stellata*	3 (1995)[3]	
Great northern diver *Gavia immer*	2 (1995)[3]	
Great cormorant *Phalacrocorax carbo*	54 ind.- *One colony* (1995)[3]	
White-fronted goose *Anser albifrons flavirostris*	34 (1995)[1]	10 (1992)[1]
Canada goose *Branta canadensis*	6 (1995)[1]	0 (1992)[1]
Common eider *Somateria mollissima*	174 (1997)[2]	12 (1995)[3]
Glaucous-/Iceland gull *Larus hyperboreus/ Glaucoides*	15 colonies (1995)[3]	
Arctic tern *Sterna paradisaea*	80-100 (1995)[3] - one colony	

[1] *Glahder 1999a,* [2] *Frich et al. 1997,* [3] *C. Glahder unpubl. 1995,*

Other breeding waterbirds

Long-tailed duck (*Clangula hyemalis*), red-breasted merganser (*Mergus serrator*), red-necked phalarope (*Phalaropus lobatus*), Arctic skua (*Stercorarius parasiticus*) and black guillemot (*Cepphus grylle*) (Frich et al. 1997, C. Glahder unpubl. 1995.)

Habitats

A unique landscape mainly made up of open plains on recently (8,000-10,000 years ago) exposed marine sediments intersected by many rivers and streams. Here and there "islands" of bedrock rise above the plain. The are numerous small and shallow lakes in the area, and the majority of these have turbid water from suspended clay. The site shows a high diversity of plants. Marshes and fens are found at lakes and along rivers and streams, and here the vegetation is dominated by sedges (mainly *Carex stans*), common cotton grass (*Eriophorum angustifolium*) and mats of mosses (*Sphagnum ssp., Aulacomnium turgidum*). The drier areas are mainly fell fields here and there with dwarf scrub heaths made up by dwarf birch (*Betula nana*), Arctic blueberry (*Vaccinium uliginosum*) and locally northern willow (*Salix glauca*).

Other species
The site has a low density of predators (Arctic fox) and predation on geese is probably very low (D. Stroud unpubl. 1993).

Muskoxen (*Ovibos moschatus*) have been introduced to this part of Greenland, and small numbers are frequently recorded within the site. Furthermore occur caribou (*Rangifer tarandus*), although in small numbers.

Protection
The fjord Tasiussarssuaq in the eastern part of the site is designated as a breeding bird reserve (Anonymous 1989), where all traffic is prohibited between 1 June and 31 August. This reserve constitutes however only a small fraction (c. 4%) of the Ramsar site.

The site has been designated an "Area important to wildlife" (geese) by the Bureau of Minerals and Petroleum (Box IV, page 78).

Comments
There are signs of former mineral exploration activities in the terrain. Some winter hunting and summer camps are located along the coasts of the site.

Status
The site is the most important moulting area for the Greenland white-fronted goose.

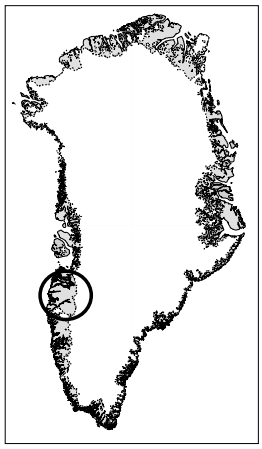
The breeding common eiders in the inner, most undisturbed part of the site has, like most other places in West Greenland, been subject to a major decline. The breeding population of eiders in the fjord Tasiussarssuaq has been reduced to one third (Frich et al. 1997) compared to counts in the early 1950ies (Salomonsen unpubl.).

New criteria applied (Box III, page 60): A1 for the many wetlands on this extensive lowland area; B4 for the moulting and breeding white-fronted geese and B6 for the number of white-fronted geese utilising the area.

Threats
This site is, except for the northern and western coasts, relatively undisturbed, but intensive low level helicopter flights is a threat to the moulting and breeding geese. Also human activities like campsites and extensive hiking are a threat to particularly moulting and breeding geese in areas where these concentrate.

Site no. 6 (Figure 5)

Name: **Eqalummiut Nunaat and Nassuttuup Nunaa**



International no.: 390
IBA no.: 032
Municipality: Kangaatsiaq and Sisimiut
Coordinates: 67°25N, 50°30'W
Size: 5795 km²
Terrestrial/marine: 95/5%
Altitude: 0-650 m
Ramsar criteria: 1.b, 1.c, 2.a, 2.b and 3
Updated criteria: A1, B3, B4, B6
Seabird colonies: 67027, 67028, 67029, 67030, 67033, 67036, 67038, 67039, 67035, 67034, 67040, 67041, 67042, 67043, 67045, 67046, 67047, 67076, 67078.

International and national importance

The large number of moulting Greenland white-fronted geese in July and August makes this site of international importance with approximately 6% of the population moulting there. The site is also a very important breeding area for these geese and the most important spring staging areas in Greenland are located within the site. Furthermore this large site holds a large variety of habitats and many water bird species have been recorded.

Staging and moulting waterbirds at site no. 6

Species	Updated figures	Other figures
Red-throated diver *Gavia stellata*	14 (1995)[2]	*- unknown numbers*[3]
White-fronted goose *Anser albifrons flavirostris*	1,822 (1995)[1]	1,158 (1992)[1]* 2,500 (1988)[3] **
Canada goose *Branta canadensis*	181 (1995)[1]	0 (1992)[1]
Long-tailed duck *Clangula hyemalis*	138 (1995)[2]	*- large numbers*[3]

[1] Glahder 1999a, [2] C. Glahder unpubl. 1995, [3] Fox & Stroud 1988
**= Arial survey covered only part of part of the area (Eqalummiut Nunaat)*
*** = Estimate based on aeroplane counts[3].*

Other staging waterbirds

Some rare waterbirds have been recorded: Tundra swan (*Cygnus columbianus*), teal (*Anas crecca*), northern pintail (*Anas acuta*), showler (*Anas clyeata*) and common snipe (*Gallinago gallinago*).

Recent surveys (Glahder 1999b) have shown that the northern part of the site holds large numbers of staging white-fronted goose in the spring. Due to a low snow cover in the pre-breeding period this area is very attractive to the geese. Probably the most important spring staging areas in Greenland with as much as 25% of total numbers of staging birds in the springtime are located within the Ramsar site.

Breeding waterbirds (pairs) at site no. 6

Species	Updated figures	Other figures
Red-throated diver *Gavia stellata*	2 (1995)[2]	8 (1979) [4]
Great Northern diver *Gavia immer*	15 ind. (1995)[2]	3 (1979) [4]
Great cormorant *Phalacrocorax carbo*	one colony (1995)[2]	
White-fronted goose *Anser albifrons flavirostris*	30 (1995)[1]*	*at least* 100[3] **
Mallard *Anas platyrhynchos*	20 (1979) [4]	
Long-tailed duck *Clangula hyemalis*	15 (1979) [4]	
Canada goose *Branta canadensis*	3 (1995)[1]*	
Common eider *Somateria mollissima*	45 (1995)[2]	*- unknown numbers*[3]
Arctic tern *Sterna paradisaea*	> 100 ind. (1995)[2] one colony	

[1] Glahder 1999a, [2]C. Glahder unpubl. 1995, [3] Jepsen 1993, [4] Fox & Stroud 1981 only covering 1/3 of the Ramsar site.
** = Actual counts, breeding population most likely larger (C. Glahder pers. comm.)*
*** = Estimate of unknown origin.*

Other breeding waterbirds

Red-breasted merganser (*Mergus serrator*), purple sandpiper (*Calidris maritima*), great ringed plover (*Charadrius hiaticula*) and red-necked phalarope (*Phalaropus lobatus*) (C. Glahder unpubl. 1995, D. Stroud unpubl. 1993, Fox & Stroud 1981).

Other birds
Other breeding bird species include peregrine falcon (*Falco peregrinus*), gyr falcon (*F. rosticolus*) and perhaps white-tailed eagle (*Haliaeetus albicilla*) (D. Stroud unpubl. 1993).

Habitats
This large inland area has a diverse topography. It is largely composed of a plateau (400-700 a.s.l.) subdivided by two large rivers draining the Greenland ice cap. The vegetation varies from extensive grass steppes, over dense northern willow (*Salix glauca*) scrub in the south-facing lowlands, to moss-mat communities and to barren grounds in exposed high-altitude areas. Wetlands, marshes and numerous lakes, of varying size are situated within the site both in the low- and highlands. Limited summer precipitation and relatively high temperatures result in a seasonal drying out of many wetland areas in the southern part of the site.

Protection
The site has been designated an "Area important to wildlife" (geese) by the Bureau of Minerals and Petroleum (Box IV, page 78).

An area in the southern part of the site is a caribou calving ground, and this was formerly designated as a caribou reserve, but this protection is now cancelled. This designation was based on a local municipality regulation, which still is in force.

Comments
Muskoxen (*Ovibos moschatus*) have been introduced further south and a few are occasionally seen within the Ramsar site.

This Ramsar site is situated within just 8 km to the north of the international airport of Kangerlussuaq, and hiking tourist may occasionally visit particularly the southern part of the site.

Mineral exploration activities have taken place in the area in recent years, e.g. for diamonds.

Status
The number of white-fronted geese using the area seems to be stable, while the population of Canada geese has increased considerable in numbers, as seen all over West Greenland (Fox et al. 1996, Boertmann & Glahder 1999). There are no permanent settlements, and although there are a few hunting and fishing summer campsites along the western coasts, there is a minimum of human activity in this large area.

New criteria applied (Box III, page 60): A1 for the many wetlands in this inland area; B3 for the high diversity of waterbirds occurring in the area; B4 for the moulting and breeding white-fronted geese and B6 for the number of white-fronted geese utilising the area.

Threats
Except for helicopter flying, no current threats. An increase in tourism and in mineral exploration activities may increase the disturbance and pose a threat to the waterbird populations in the area.

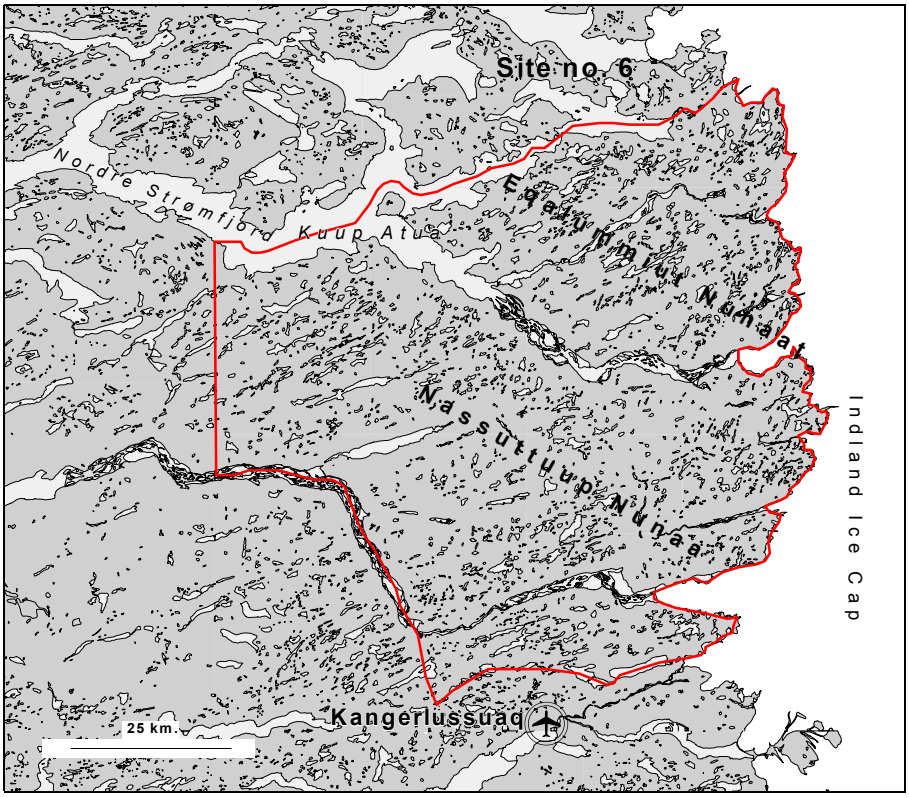
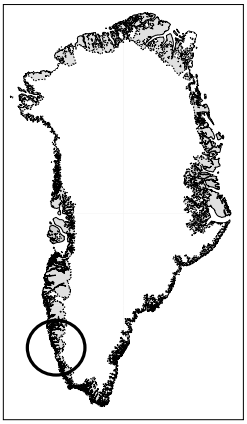


Figure 5: Map of Ramsar site no. 6, Eqalummiut Nunaat and Nassuttuup Nunaa.

Site no. 7 (Figure 6)

Name: **Ikkattoq and adjacent archipelago**

International no.: 391
IBA no.: 040
Seabird colonies: 62011, 62012, 62013, 62014
Municipality: Nuuk
Coordinates: 62°40'N, 50°15'W
Size: 449 km²
Terrestrial/marine: 50/50%
Altitude: 0-500 m
Ramsar criteria: 1.b and 3
Updated criteria: B4, B6



International and national importance

The site is the largest known moulting area for red-breasted merganser in Greenland. Furthermore, a significant proportion (more than 1%) of the breeding white-tailed eagles in Greenland breed within this site.

Staging and moulting waterbirds at site no. 7

Species	Updated figures	Other figures
Common eider *Somateria mollissima*		500 (1985)[1]
Harlequin duck *Histrionicus histrionicus*	147 (1999)[2]	
Long-tailed duck *Clangula hyemalis*		500 (1985)[1]
Red-breasted merganser *Mergus serrator*	474 (1999)[2]	up to 1,000 (1985)[1]

[1] *F. Wille unpubl. 1985,* [2] *Boertmann & Mosbech in prep.*

Breeding waterbirds (pairs) at site no. 7

Species	Updated figures	Other figures
Common eider *Somateria mollissima*		*- unknown numbers*[1]
Long-tailed duck *Clangula hyemalis*		*- unknown numbers*[1]
White tailed eagle *Haliaeetus albicilla*		3-4 (1985)[1]
Great black-backed gull *Larus marinus*		*- unknown numbers*[2]
Arctic tern *Sterna paradisaea*	2 colonies: 100 (1985) + 15 (1999)[2]	*- some hundred*[1]
Arctic skua *Stercorarius parasiticus*		*10-20 (1985)* [1]

[1] F. Wille unpubl. 1985, [2] NERI-AE & OC 2000

Habitats

Shallow fjord area with muddy and silty seabeds, numerous small islands surrounded by shallow waters and large mudflats exposed at low tide. The coasts are generally rocky, with small pocket beaches and off Frederikshåbs Isblink with extensive sand beaches.

The melt water from the glacier Frederikshåbs Isblink drain for a large part into this Ramsar site, and all marine waters have an intensive turquoise colour.

Protection

The interior parts of the fjord Ikkattoq has been designated an "Area important to wildlife" (eiders and other seaducks) by the Bureau of Minerals and Petroleum (Box IV, page 78). No further protection exists.

Comments

Data from this site is rather scarce and fragmented. The site is, despite its location in a relatively densely populated part of the country, rather remote. The major part of the traffic in the site takes place along the in shore route, which is situated in the archipelago off the fjord mouth.

The moulting mergansers stay in the innermost parts of the fjord and in the inlet Tasiussarsuaq.

The difference between the two counts performed on red-breasted merganser is not necessary an indication of a decline in numbers, but may simply reflect a difference in counting methods (boat contra aeroplane).

Status
The most important moulting site for red-breasted merganser. This species usually occurs in pairs or small flocks, and the total West Greenland population, which probably is discrete, is low numbered, but not threatened.

New criteria applied (Box III, page 60): B4 for the moulting red-breasted mergansers and B6 for the number of breeding white-tailed eagles.

Threats
Apart from the general hunting and related disturbances, no serious threat are known at the site at present. An increase in boat traffic, especially in the inner parts of the fjord, may affect the moulting birds.

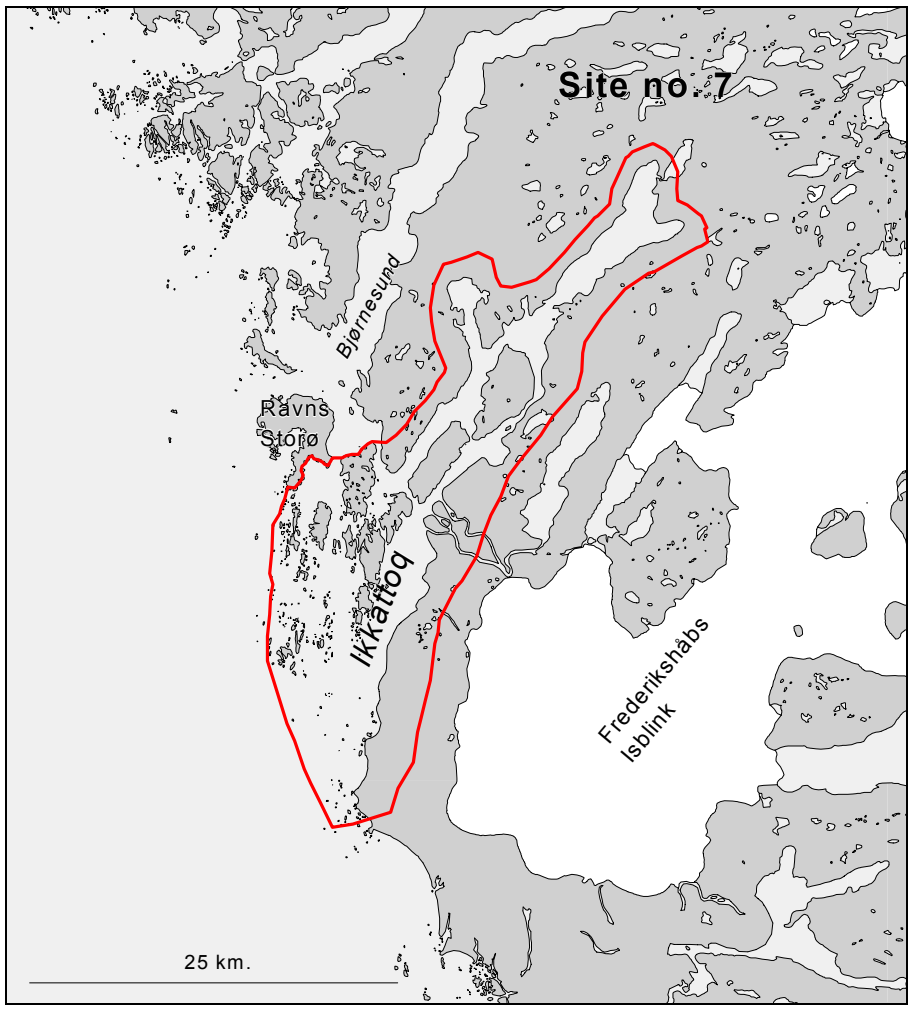


Figure 6: Map of Ramsar site no. 7, Ikkattoq Fjord.

Site no. 8 (Figure 7)

Name: **Kitsissut Avalliit**
Danish name: **Ydre Kitsissut**

International no.: 392
IBA no.: 041
Seabird colony: 60012
Municipality: Qaqortoq
Coordinates: 60°45'N, 48°30'W
Size: 45 km²
Terrestrial/marine: 4/96%
Altitude: 0-116 m
Ramsar criteria: 1.a, 1.c, 2.a and 2.b
Updated criteria: A1, B3, B4

International and national importance

The site holds a high diversity of breeding seabirds including an important colony of Brünnich's guillemots and the largest numbers of common guillemots known to breed in Greenland.

Staging and moulting waterbirds at site no. 8

Species	Updated figures	Other figures
Common eider *Somateria mollissima*		500-1,000 (1992)[1]
King eider *Somateria spectabilis*		100-130 (1992)[1]
Harlequin duck *Histrionicus histrionicus*	c. 100 (1999)[2]	20 (1992)[1] 15 (1987)[1] 6 (1983)[1]

[1] *Kampp & Falk 1994,* [2] *K. Falk pers. comm. 2000*

Other staging waterbirds

The islands are probably used by migrating shorebirds like purple sandpiper (*Calidris maritima*) and red-necked phalarope (*Phalaropus lobatus*) in unknown numbers (Kampp & Falk 1994). Harlequin ducks (*Histrionicus histrionicus*) have also been recorded during the winter (NERI-AE unpubl.)

Breeding waterbirds (pairs) at site no. 8		
Species	Updated figures	Other figures
Fulmar *Fulmar glacialis*	180 (1999)[2]	116 (1992)[1]
Common eider *Somateria mollissima*		25 (1992)[1]
Great Black-backed gull *Larus marinus*	6 (1999)[2]	2 (1992)[1] 11 (1985)[1]
Glaucous gull *Larus hyperboreus*	31 (1999)[2]	23 (1992)[1]
Kittiwake *Rissa tridactyla*	12 (1999)[2]	23 (1992)[1]
Brünnich's guillemot *Uria lomvia*	5,450 ind. (1999)[2]	9,000 ind. (1992)[1]
Guillemot *Uria aalge*	550 ind. (1999)[2]	900 ind. (1992)[1]
Black guillemot *Cepphus grylle*	*no change* (1999)[3]	175 ind. (1992)[1]
Razorbill *Alca torda*	*probably no change* (1999)[3]	486 ind. (1992)[1]
Puffin *Fratercula arctica*	*no change* (1999)[3]	200 ind. (1992)[1]

[1] *Kampp & Falk 1994,* [2] *NERI-AE & OC 2000,* [3] *K. Falk pers. comm. 2000.*

Other birds

Peregrine falcon (*Falco peregrinus*) and snow bunting (*Plectrophenax nivalis*) breeds regularly on the islands (Kampp & Falk 1994).

Habitats

Kitsissut Avalliit is a group of rocky islands situated about 10-km. west off the mainland coast. There are two main islands (Tupersuartuut and Thorstein Islænder) and a large number of smaller islands and skerries. Most of the islands are wind exposed and almost bare rock with only small patches of vegetation. In the sheltered areas it is possible to find vegetation like grasses, willow (*Salix* ssp.), crowberry (*Empetrum nigrum*) and cloudberry (*Rubus chamaemorus*) - otherwise rare in Greenland. On Tupersuartut rose root (*Sedum rosea*) is found and in some of the seabird colonies scurvy grass (*Cochlearia officinalis*) is common.

Protection

The site was recognised for its importance for seabirds and designated as a breeding reserve for birds in 1988, with a ban against approaching the islands closer than 500 m between 1 June and 31 August (Anonymous 1989).

The seabird colonies are included in the "Areas important to wildlife" designated by the Bureau of Minerals and Petroleum (Box IV, page 78).

Comments
Earlier Ramsar reports (Jepsen et al. 1990, 1993, 1996) mention little auk as breeding on the islands. This is not correct and may be due to confusion with another Kitsissut close to Nanortalik, where little auks are known to breed (Salomonsen 1950).

The Danish Meteorological Institute runs an automatic weather station on the island Tupersuartuut.

This site can hardly be described as a wetland in a strict sense. However, also rocky coasts are included as a marine/coastal wetland by the Ramsar habitat classification system (Appendix II, page 94), why there are no obstacles to the designation of this archipelago as a Ramsar site.

Status
Salomonsen (1979) mentions more than 60,000 guillemots (*Uria* sp.) breeding on the islands in 1971. These numbers may be a gross overestimate (Kampp & Falk 1994), but nevertheless indicating that the numbers were somewhat higher just three decades ago.

The numbers of breeding common- and Brünnich's guillemots have decreased with approximately 37% over a 7-year period. Falk et al. (2000) found several traces after human visitors on the islands indicating that egg collection is still widely practised in spite of the ban on disturbances in the breeding time (see also Kampp & Falk 1994). The collection of eggs may have an effect beyond the direct effect of the lost eggs: It may also weaken the anti-predator response among the breeding birds making the eggs/young more vulnerable to predators (Falk et al. 2000).

New criteria applied (Box III, page 60): A1 for the extensive archipelago far from the mainland; B3 for the diversity of breeding birds and B4 for the breeding waterbirds. Criteria B3 and B4 consider plant and animal species, and not only waterbirds as in the specific criteria.

Threats
Egg collection and disturbance is a major threat to the breeding bird populations and particularly the guillemots. This takes place despite the fact that the site is protected as a breeding bird reserve. Helicopter flying is also a threat to the breeding guillemots.

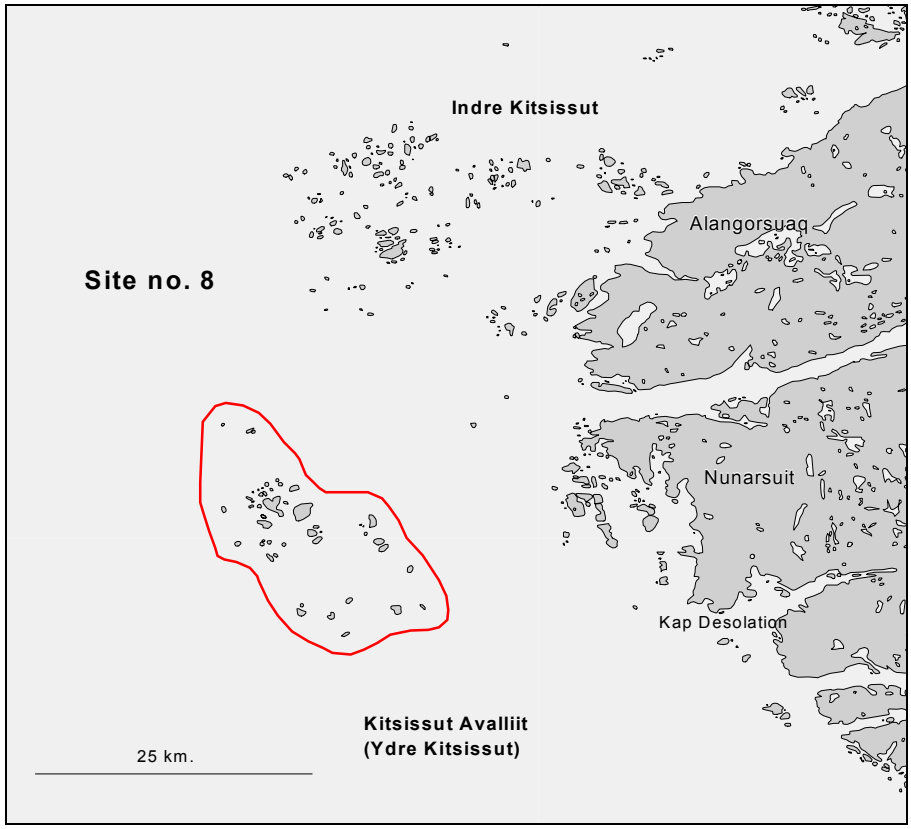
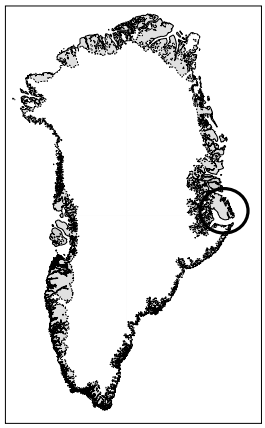


Figure 7: Map of Ramsar site no. 8, Kitsissut Avalliit.

Site no. 9 (Figure 8)

Name: **Heden (Jameson Land)**



International no.: 393
IBA no.: 044
Seabird colony: -
Municipality: Ittoqqortoormiit
Coordinates: 71°00′N, 24°00′W
Size: 2524 km²
Terrestrial/marine: 95/5%
Altitude: 0-250 m
Ramsar criteria: 1.b, 2.a and 3
Updated criteria: A1, B3, B4, B6

International and national importance

The site holds significant numbers of moulting pink-footed geese and barnacle geese as well as large numbers of breeding pink-footed geese. Furthermore, Jameson Land (of which site no. 9 covers a large part) is considered *the* most important moulting area for barnacle goose (c. 7% of flyway pop.) and one of the most important for pink-footed goose (c. 2% of flyway pop.) in Greenland (Boertmann 1991). Finally the site is known as a breeding and staging area for the rare Sabine's gull. The only site in Greenland where whimbrel breeds.

Staging and moulting waterbirds at site no. 9

Species	Updated figures	Other figures
Pink-footed goose *Anser brachyrhynchus*		3,600 (1988)[1]
Barnacle goose *Branta leucopsis*		2,350 (1988)[1]

[1] *Mosbech et al. 1989.*

Other staging and moulting waterbirds

Sabine's gull (*Larus sabini*) with up to 35 birds (Boertmann et al. 1985).

Breeding waterbirds (pairs) at site no. 9

Species	Updated figures	Other figures
Pink-footed goose *Anser brachyrhynchus*		c. 300 (1988)[1] *
Barnacle goose *Branta leucopsis*		*- relatively few* [1] **
Long-tailed duck *Clangula hyemalis*		18 (1984-87)[3] ***
Great ringed plover *Charadrius hiaticula*		11 (1984-87)[3] ***
Red knot *Calidris canutus*		38 (1984-87) [3] ***
Sanderling *Calidris alba*		19 (1984-87) [3] ***
Dunlin *Calidris alpina*		27 (1984-87) [3] ***
Ruddy turnstone *Arenaria interpres*		21 (1984-87) [3] ***
Whimbrel *Numenius phaeopus*		11 (1982-84)[2]
Long-tailed skua *Stercorarius parasiticus*		16 (1984-87)[3] ***
Sabine's gull *Larus sabini*		4 (1982-84)[2]

[1] Mosbech et al. 1989, [2] Boertmann et al. 1985, [3] Mortensen 2000
** = Extrapolated from the number of breeding birds counted.*
*** = A total of 300-400 pairs of barnacle geese breeds on Jameson Land, but few within the boundaries of site no. 9[1].*
**** = Breeding birds counted in two study areas covering c. 30 km[2] of Heden.*

Other breeding waterbirds

Red-throated diver (*Gavia stellata*), probably northern pintail (*Anas acuta*), red-necked phalarope (*Phalaropus lobatus*), red phalarope (*P. fulicarius*), whimbrel (*Numenius phaeopus*), Arctic skua (*Stercorarius parasiticus*) and Arctic tern (*Sterna paradisaea*) (Madsen & Boertmann 1982, Boertmann et al. 1985).

Habitats

An extensive level tundra area, which gently slopes from a plateau at about 400 m asl. towards the sea. Many rivers traverse, some in deep canyons, the site and lakes and ponds are numerous. Dwarf shrub heath, grasslands and large areas of bare ground dominate the higher parts of the site while moist dwarf shrub heath and marshes are found in the lower parts and along rivers and lake shores. The coast of the central part has extensive saltmarshes and large mudflats are exposed

at low tide there. Elsewhere, there are narrow beaches with more or less coarse sediments. The geese are mainly found on marshes adjacent to lakes and streams and on the coastal saltmarshes.

Protection
The site has been designated an "Area important to wildlife" by the Bureau of Minerals and Petroleum (Box IV, page 78). The entire area is important to geese and the northern part to calving muskoxen. No further protection exists.

Comments
Jameson Land holds a large population of muskoxen (*Ovibos moschatus*) estimated at 3,000 - 3,600 animals (Boertmann & Forchhammer 1992). Other mammals occurring regularly in the Ramsar site include Arctic fox (*Alopex lagopus*), stoat (*Mustela erminea*), collared lemming *(Dicrostonyx torquatus)*, Arctic hare (*Lepus arcticus*) and occasionally Arctic wolf (*Canis lupus*).

The Ramsar site is situated just south of the North and Northeast Greenland National Park and relatively near (c. 60 km.) the town of Ittoqqortoormiit. Subsistence hunting mainly aimed at muskoxen is carried out in the Ramsar site.

Status
New criteria applied (Box III, page 60): A1 for the extensive level tundra with numerous wetlands; B3 for the high diversity of breeding waterbirds; B4 for the moulting pink-footed and barnacle geese and B6 for the number of pink-footed and barnacle geese utilising the area.

Threats
Except for some hunting mainly along the coast and helicopter flying, no current threats. However, during the 1980ies extensive oil exploration including seismic surveys was carried out in most of Jameson Land. The results were not encouraging, but the area is still promoted by the Greenland authorities, and future exploration is a possibility. This or an increase in hunting and traffic may reduce the present quality of the site as a moulting area for geese.

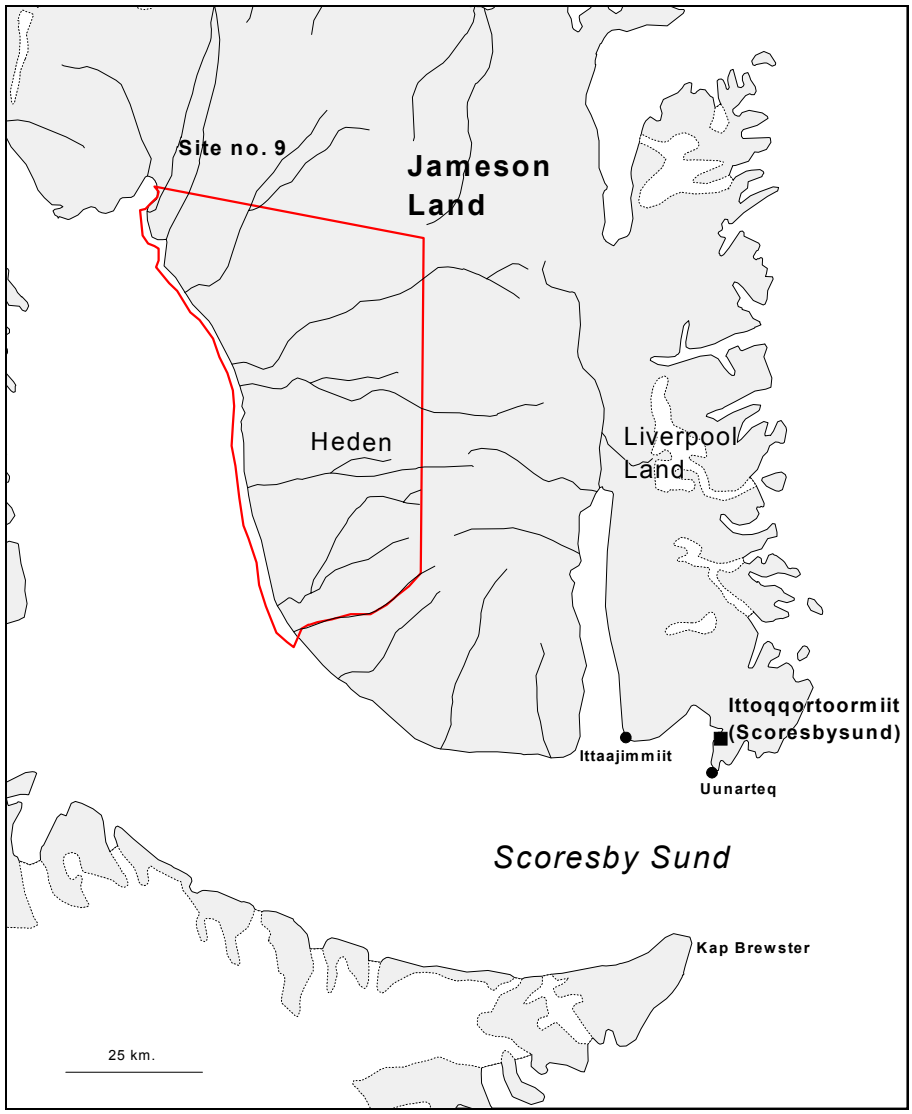
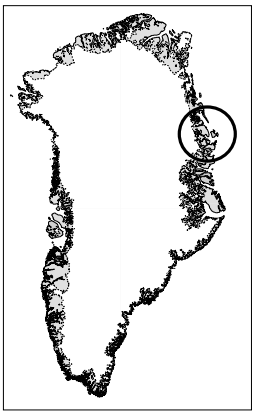


Figure 8: Map of Jameson Land with Ramsar site no. 9, Heden. Black dots = settlements, black square = town.

Site no. 10 (Figure 9)

Name: **Hochstetter Forland**



International no.: 394
IBA no.: 051
Seabird colony: -
Municipality: Within the National Park of N and NE Greenland
Coordinates: 75°30'N, 20°00'W
Size: 1848 km²
Terrestrial/marine: 93/7%
Altitude: 0-400 m
Ramsar criteria: 1.b
Updated criteria: A1, B3, B4, B6

International and national importance
The site is one of the most important moulting areas for pink-footed goose in Greenland and holds more than two percent of the flyway population. Furthermore the site contains a rich diversity of breeding high-arctic waterbirds.

Staging and moulting waterbirds at site no. 10

Species	Updated figures	Other figures
Pink-footed goose *Anser brachyrhynchus*		6,500 (1988)[1]
Barnacle goose *Branta leucopsis*		230 (1988)[1]
Common eider *Somateria mollissima*		*- small numbers*[2]
King eider *Somateria spectabilis*		*- small numbers*[2]

[1] *Boertmann 1991,* [2] *Bay & Boertmann 1988.*

Breeding waterbirds (pairs) at site no. 10		
Species	Updated figures	Other figures
Pink-footed goose *Anser brachyrhynchus*		min. 30 (1976)[1]*
Barnacle goose *Branta leucopsis*		min. 10 (1976)[1]*
Common eider *Somateria mollissima*		*- very small numbers*[1]
King eider *Somateria spectabilis*		10-15 (1976)[1]*
Long-tailed duck *Clangula hyemalis*		30-35 (1976)[1]
Ruddy turnstone *Arenaria interpres*		36-39 (1976)[1]*
Long-tailed skua *Stercorarius longicaudus*		14-15 (1976)[1]*

[1] *Meltofte et al. 1981*
* = *Breeding numbers only in the southernmost part of Hochstetter Forland*

Other breeding species
Red-throated diver (*Gavia stellata*), great ringed plover (*Charadrius hiaticula*), red knot (*Calidris canutus*), purple sandpiper (*Calidris maritima*), dunlin (*Calidris alpina arctica*), sanderling (*Calidris alba*), red phalarope (*Phalaropus fulicarius*), Arctic tern (*Sterna paradisaea*) (Meltofte et al. 1981).

Habitats
Hochstetter Forland is an extensive lowland area gently sloping towards the sea. The higher parts are dominated by dwarf scrub heaths and fell fields while the lower coastal parts have grasslands, marshes and numerous ponds. The coasts are generally low with narrow sedimentary beaches. A couple of large rivers intersect the site. The coastal waters are shallow, but covered by ice throughout most of the year.

Other species
The mammal fauna includes Muskoxen (*Ovibos moschatus*), Arctic fox (*Alopex lagopus*), stoat (*Mustela erminea*), collared lemming *(Dicrostonyx torquatus)*, Arctic hare (*Lepus arcticus*), Arctic wolf (*Canis lupus*) and polar bear (*Ursus maritimus*), the latter mainly along the coast. The flora include some rare species, such as *Saxifraga nathorstii*, *Luzula wahlenbergii* and *Puccinella bruggemanni* (Due & Ingerslev 2000).

The muskox population of Hochstetter Forland decreased dramatically between 1976 and 1988 (Boertmann et al. 1991) and a recovery has not been reported.

Protection
The site is within the National Park of North and Northeast Greenland.

The site has been designated an "Area important to wildlife" (geese) by the Bureau of Minerals and Petroleum (Box IV, page 78).

Status
New criteria applied (Box III, page 60): A1 for the extensive level tundra with numerous wetlands; B3 for the high diversity of breeding waterbirds; B4 for the moulting pink-footed geese and B6 for the number of pink-footed geese utilising the area.

Threats
No current threats are recognised, but intensive low level helicopter flying could be a threat to the geese.

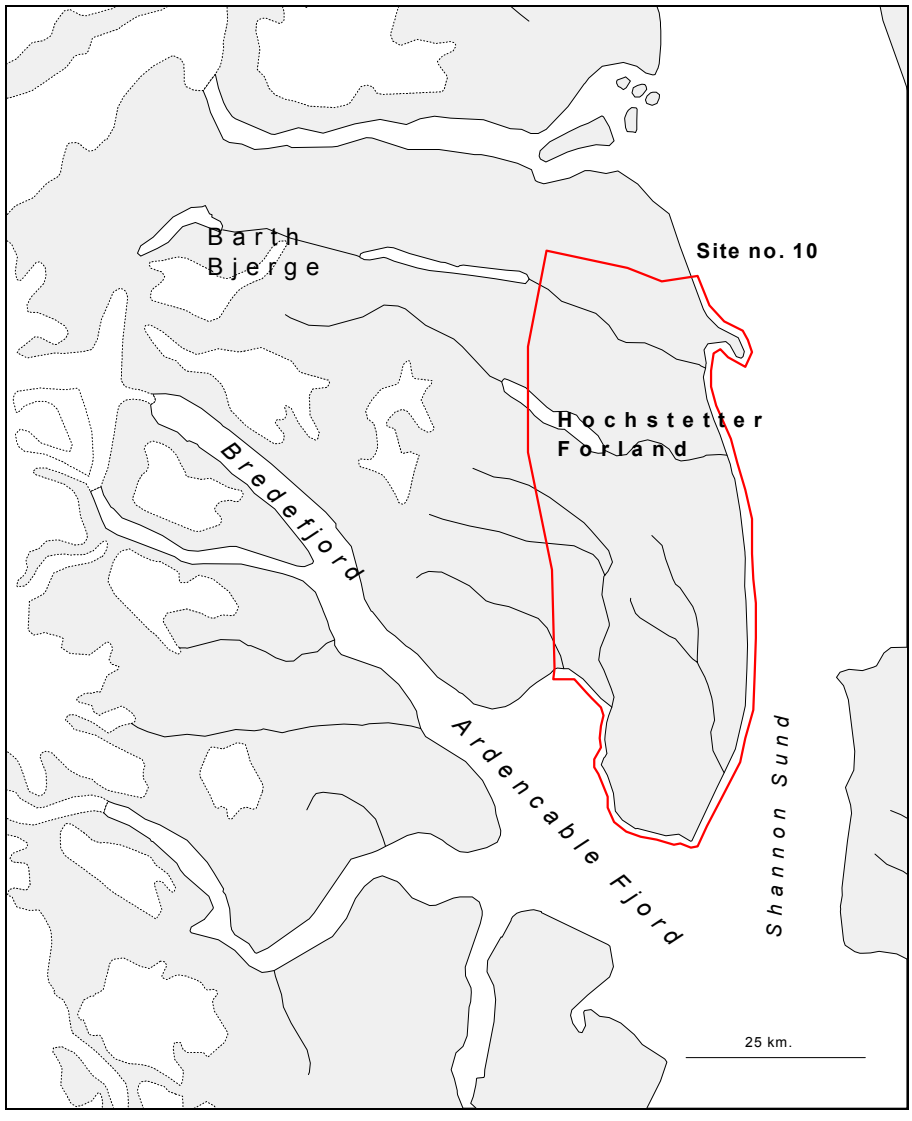
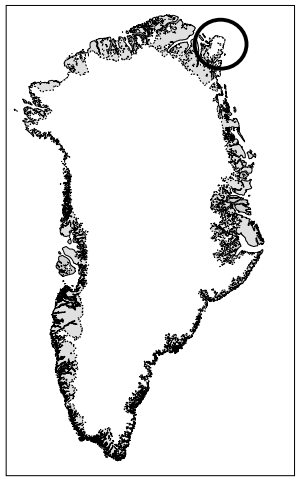


Figure 9: Map of Ramsar site no. 10, Hochstetter Forland.

Site no. 11 (Figure 10)

Name: **Kilen**



International no.: 395
IBA no.: 055
Seabird colony: -
Municipality: Within the National Park of N and NE Greenland
Coordinates: 81°15N, 13°30'W
Size: 513 km²
Terrestrial/marine: 72/28%
Altitude: 0-300 m
Ramsar criteria: 1.b, 1.c, 2.a and 2.b
Updated criteria: A1, B3, B4, B6

International and national importance

Kilen is by far the most important moulting area for the light-bellied brent goose in Greenland and may be the most important moulting area for the population as a whole.

Staging and moulting waterbirds at site no. 11

Species	Updated figures	Other figures
Light-bellied brent goose *Branta bernicla hrota*	1,100 (1998)[1]	850 (1985)[2] 555 (before 1980)[3]
Common eider *Somateria mollissima*	2,500 (1993)[4] *	
King eider *Somateria spectabilis*	1,000 (1993)[4] *	
Sanderling *Calidris alba*		100-150 (1985)[5]
Red phalarope *Phalaropus fulicarius*		22 (1985)[5]
Long-tailed skua *Stercorarius longicaudus*	45 (1993)[6]	

[1] *Clausen & Laubek 1999,* [2] *Håkansson et al. 1993,* [3] *Hjort et al. 1987,*
[4] *Elander & Ericson 1994,* [5] *Hjort et al. 1988,* [6] *Falk et al 1997*
* = *pre-breeding congregations at "the southernmost tip of Kilen"*

Breeding waterbirds (pairs) at site no. 11		
Species	Updated figures	Other figures
Snow goose *Anser caerulescens*		2 (1985)[1]
Light-bellied brent goose *Branta bernicla hrota*		min. 9 (1985)[1]
Sabine's gull *Larus sabini*		20-30 (1985)[2]
Ivory gull *Pagophila eburnea*		75 ind. (1980)[3] *- one colony*
Arctic tern *Sterna paradisaea*		c. 50 (1985)[2]

[1] Hjort et al. 1987, [2] Hjort et al. 1988, [3] Hjort et al. 1983

Other breeding waterbirds
Small numbers of common eider (*Somateria mollissima*) and sanderling (*Calidris alba*) (Hjort et al. 1988).

Other species
The coast of Kilen is to some extent used as a terrestrial haul-out site for walrus (*Odobenus rosmarus*) (Born et al. 1987). Arctic foxed are absent or extremely rare (Hjort et al. 1987, Clausen & Laubek 1999).

Habitats
Kilen is an extreme high-arctic area, which comprises large flat gravel plains, surrounded by glaciers to the three sides and the Greenland Sea on the fourth. The area is characterised as a coastal polar desert, but although the landscape is rather barren, Kilen supports a relatively rich (compared to surrounding areas) vegetation which provide the many geese with foraging opportunities during the moulting period.

The waters off Kilen is part of the polynya "The Northeast Water".

Protection
The site is within the boundaries of the National Park of North and Northeast Greenland.

The site has been designated an "Area important to wildlife" (geese) by the Bureau of Minerals and Petroleum (Box IV, page 78).

Comments
The northernmost Ramsar site in the World.

Status
New criteria applied (Box III, page 60): A1 for the extreme habitats on the coast of the important North East Water polynya; B3 for the relatively high diversity of breeding waterbirds; B4 for the moulting

and breeding light-bellied brent geese and B6 for the number of light-bellied brent geese utilising the area.

Threats
Presently, there are no threats to the site. But low level flights with helicopters may be a threat to the geese.

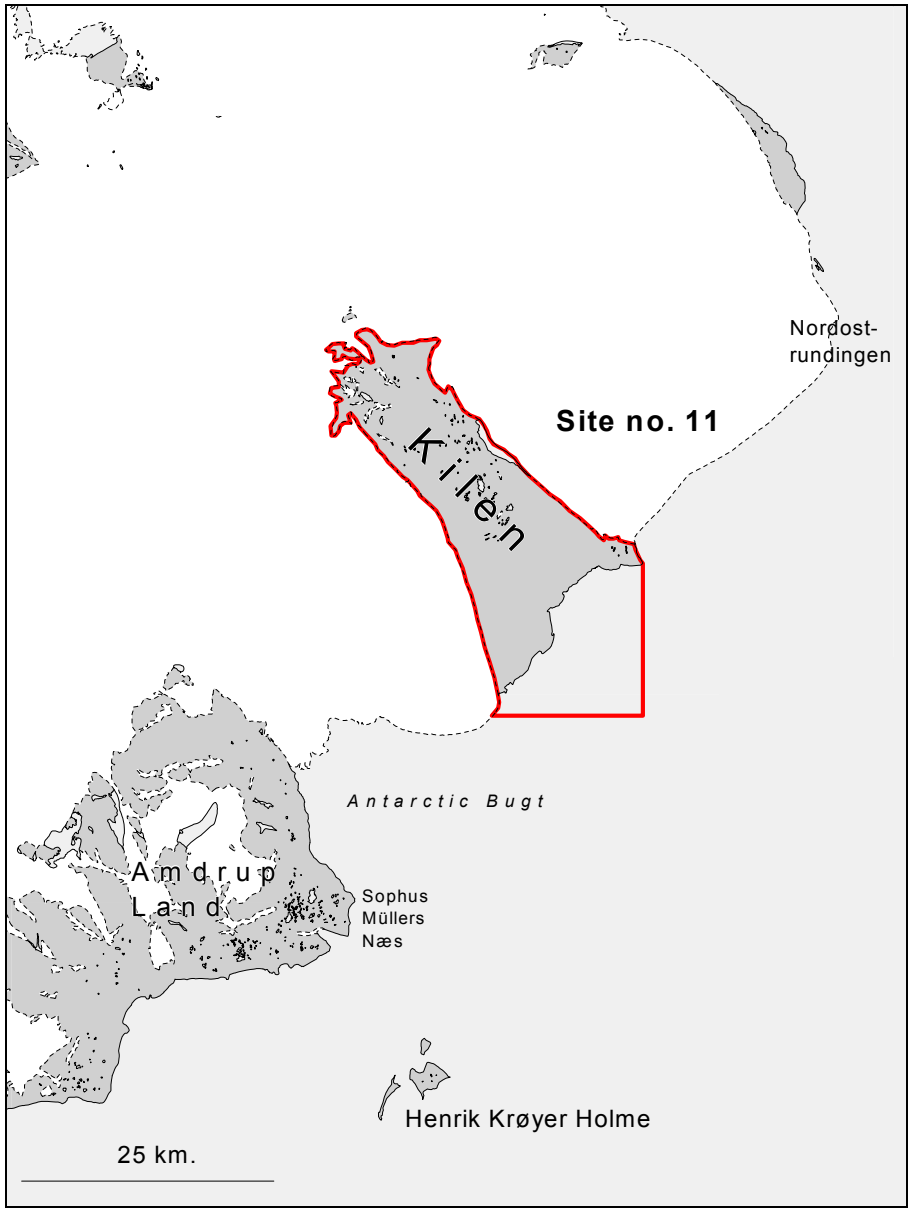


Figure 10: Map of the northernmost Ramsar site no. 11, Kilen.

Revision of the Greenland Ramsar sites

This section describes proposals to revisions of the Greenland Ramsar sites in order to make the designations up-to-date with respect to the new information on their natural history acquired since the designation in 1988.

In the Ramsar Convention (Article 2.5) it is clearly stated that:

> ***"Any Contracting Party shall have the right to add to the List (Ramsar list of wetlands of international importance) further wetlands situated within its territory, to extend the boundaries of those wetlands already included by it in the List, or, because of its urgent national interests, to delete or restrict the boundaries of wetlands already included by it in the List and shall, at the earliest possible time, inform the organisation or government responsible for the continuing bureau duties specified in Article 8 of any such changes."***

Furthermore, (Article 4.2) states that:

> ***"Where a Contracting Party in its urgent national interest, deletes or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat."***

A deletion of a site should therefore be followed by designation of new appropriate sites.

Since the designation of the Ramsar sites in the mid-eighties several surveys and studies have been conducted and the knowledge on distribution and temporary seasonal habitat use of Greenland waterbirds have improved noticeably. Some surveys of significant importance for Greenland Ramsar sites can be mentioned:

The zoological-botanical-archaeological surveys in Northeast Greenland in 1988-90 (Bay & Boertmann 1988, Boertmann et al. 1990).

The international research programmes in the North East Water polynya 1992-93 (Falk et al. 1997).

Aerial surveys in West Greenland through the nineties for seaducks and geese (Mosbech & Boertmann 1999, Glahder 1999a).

Moreover, a revision of the Important Bird Areas (IBA's) in Europe including Greenland has been published recently (Heath & Evans 2000.

There are some disagreements about the borders between the official publications. There is one edition in the information folder (Anonymous 1990) also printed in the first two status reports (Jepsen et al. 1990, 1993) and another edition in the most recent status report

(Jepsen et al. 1996). However, both these two sets deviate from the original maps prepared in 1987 by the authorities in Greenland and presented to the Ramsar secretariat in 1988. The borders presented in the maps of this report are copied from the original maps kept in the Department of Environment and Nature of the Greenland Government. As the official publications show deviating borderlines, these may be difficult interpret and recognise in the field. To prevent future discussions of the exact borderlines, all borders necessarily have to be revised and fixed to recognisable features in the field.

Site no. 1
No proposed revisions.

Site no. 2
The northwestern coast of Disko Island is without doubt the most important site for moulting king eiders in Greenland (Mosbech & Boertmann 1999). Especially the area around Nordfjord holds large numbers in late summer/early autumn. The majority of the birds are, however, not situated within the borders of site no. 2, but are distributed throughout the entire fjord including the mouth of the fjord. By extending the present borders of the site to include the entire fjord (Figure 11), a very large proportion of the more than 10,000 birds that uses the area will be included in the Ramsar site. The proposed extension will increase the area of site no. 2 with 125 km^2 resulting in a total area of 190 km^2.

The proposed extension follows the 150 meter contour line along the fjord and meets the coastline south of the fjord mouth at the small point at about 69°56'N, and to the north at Rink Dal just north of the ancient and abandoned settlement Illuluarsuit at about 70°04'N.

Site no. 3
This site was originally designated because it seemed to be important to white-fronted geese late in the summer. The numbers of geese using site no. 3 was estimated (presumably) to 200 birds in earlier Ramsar reviews (Jepsen 1993), but recent counts (Glahder 1999a) show that the number of geese in the area is somewhat lower (maximum 74 in 1995) and only 0-2 breeding pairs were discovered. The most recent estimate on population numbers of white-fronted geese is 33,000 individuals (Fox et al. 1999). To meet the "one-percent-criterion" (Criterion 6) the site has to support more than 300 white-fronted geese, but numbers of this magnitude have never been recorded at the site. The occurrence of other bird species in the area is rather poorly documented, but nothing indicates that the site is of special importance to breeding or staging waterbirds. Aerial surveys in the area in 1992 and 1995 (Glahder 1999a, C. Glahder unpubl.) only showed small numbers of other staging birds.

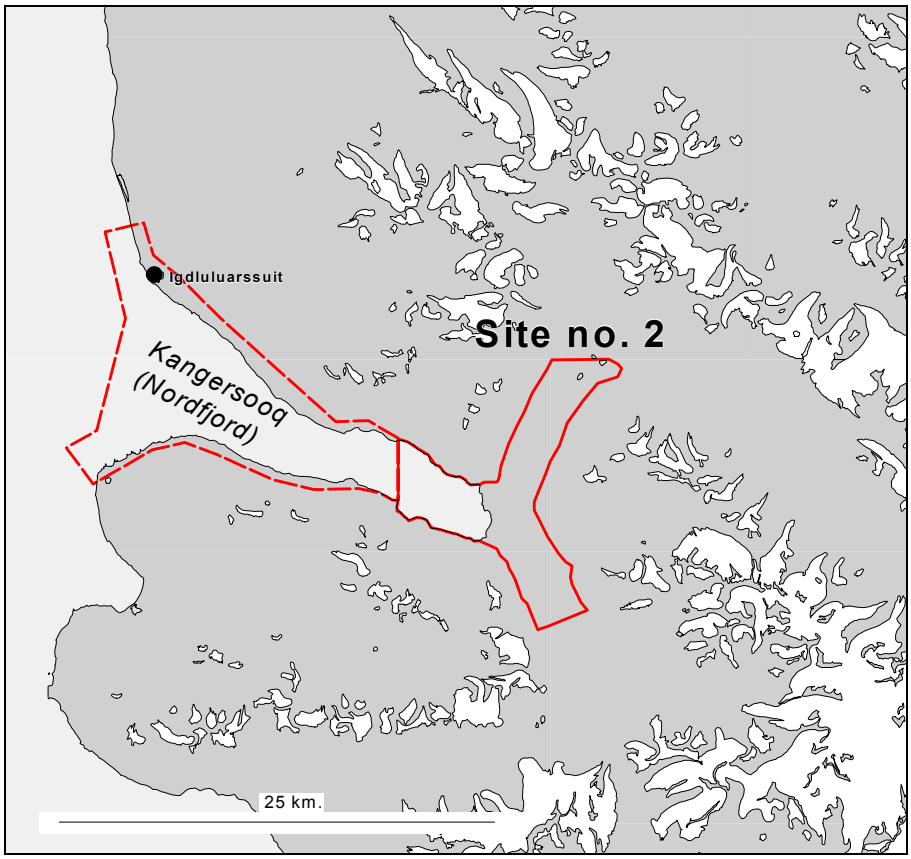


Figure 11: Proposed extension to site no. 2. The existing borders (solid line) are extended (punctured line) to include the entire Nordfjord.

Site no. 3 does not contain rare or unique wetland types, so unless future surveys in the area reveal higher numbers of white-fronted geese or other birds at the site, it is reasonable to suggest the site to be deleted from the Ramsar list of wetlands of international importance.

However, the glacier at Sorte Hak in the head of the valley, recently performed a dramatic surge, moving the front about 10 km down the valley during four years (Nielsen 2000). This significant glacial event clearly makes the site highly internationally important, although not in a Ramsar context.

It should be noted that Article 4.2 does not mention anything about deletion of a site because it was prematurely designated. The question is then, if it is possible at all to delete a site when no "urgent national interests" are at hand. This issue needs to be discussed with the Ramsar secretariat before a formal deletion.

Site no. 4
No proposed revisions.

Site no. 5
The present western border of site no. 5 is drawn as a straight line (Figure 12) without further consideration to the actual topography and natural history of the area. However, west of the border spring staging areas and moulting/breeding areas has recently been discovered (Glahder 1999a, 1999b). If this area is included in the Ramsar site two

seabird breeding colonies (nos 68059, 68060) will also be included. In these colonies razorbill (*Alca torda*), black guillemot (*Cepphus grylle*), kittiwake (*Rissa tridactyla*), glaucous gull (*Larus hyperboreus*) and Iceland gull (*Larus glaucoides*) breed (Boertmann et al. 1996). Moreover could the site be enlarged to the east in order to include nine colonies of breeding common eiders holding c. 450 pairs (Frich et al 1997).

The proposed extension to the west (Figure 12), extends the northern border to the south of the island Aajat (68°27′ N, 52°42′ W), further on to Kangerluluk (68°23′ N, 52°45′ W) and then south to the point Sarfarsuup Nuua (68°10′ N, 52°28′ W) to meet the existing southern border. The eastward extension elongates the southern borders to include the area south and north (Sofia Havn) of the Nordenskiölds Glacier. The western extension covers 480 km^2, the eastern 83 km^2, which combined enlarge the total size of the site to 2403 km^2

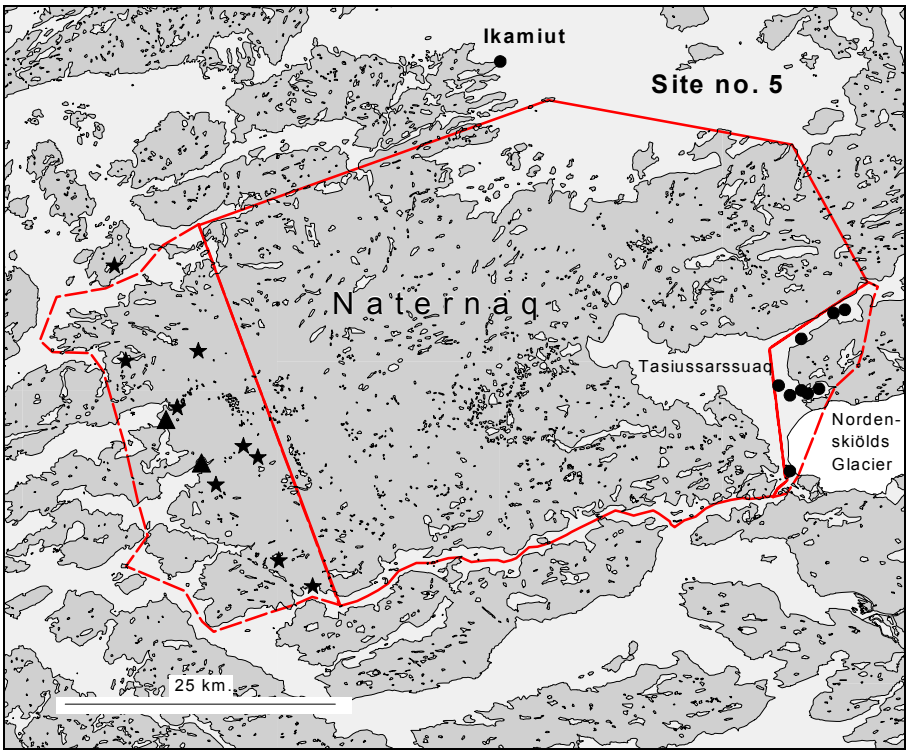


Figure 12. Extensions (punctuated line) to site no. 5. Sites with more than 10 moulting white-fronted (stars), spring staging areas for white-fronted geese (triangles) an breeding colonies for common eider (dots) are shown. Based on Glahder (1999b and Frich 1997).

Site no. 6 to 10
No proposed revisions.

Site no. 11
The area south of Kilen represents unique natural values in an extreme high-arctic environment and is of very high importance for breeding and staging birds together with marine mammals in the area. We recommend that Henrik Krøyer Holme (IBA no. 054) and the coastal polynya area between is included in Ramsar site no. 11 (Figure 13).

The following is a listing of the known numbers of birds and marine mammals utilising the area (not including the already listed numbers reviewed from Kilen, page 51).

The revision of the existing borders will prolong the southern limit (Figure 13) and add an additional 1382 km^2 to site no. 11. The proposed expansion of the existing borders will merge the unique and international important Henrik Krøyer Holme into site no. 11. Furthermore, a biological very important part of the North East Water polynya (the part which opens early) will be included in the Ramsar site.

The total area of the new site is 1895 km^2.

International and national importance

The large numbers of the rare and little known ivory gull breeding and foraging in the area make the site of international importance. The ivory gull colony on Henrik Krøyer Holme is one of the largest known in the World.

Breeding waterbirds (pairs) at Henrik Krøyer Holme

Species	Numbers
Ivory gull *Pagophila eburnea*	300 (1993)[1]*
Sabine's gull *Larus sabini*	50 (1993) [1] 200-300 ind. (1992)[1]
Glaucous gull *Larus hyperboreus*	*Several small colonies*[1]
Arctic tern *Sterna paradisaea*	c. 200 (1993)[1] - two colonies

[1] *Falk et al. 1997*

* = *Estimated from c. 500 individuals counted and min. 125 broods found.*

Other breeding waterbirds

Red-throated diver (*Gavia stellata*), common eider (*Somateria mollissima*), long-tailed duck (*Clangula hyemalis*), red phalarope (*Phalaropus fulicarius*), black guillemot (*Cepphus grylle*) and occasionally Ross's gull (*Rhodostethia rosea*) (confirmed breeding in 1993, Falk et al. (1997).

Furthermore, a small Arctic tern colony is located at Sophus Müllers Næs and small numbers of ivory gull also breed here.

Staging waterbirds in the NEW area

Sabine's gull (*Larus sabini*), Ross's gull (*Rhodostethia rosea*), long-tailed skua (*Stercorarius longicaudus*) and more infrequently: Arctic (*S. parasiticus*) and pomarine skua (*S. pomarimus*) (Falk et al. 1997).

The fulmars and kittiwakes breeding in Holm Land just south of the Ramsar site use the open waters of the polynya area as a foraging area.

As mentioned under the review of site no. 11 large numbers of king eider (*Somateria spectabilis*) and common eider (*S. mollissima*) occur in pre-breeding concentrations in the coastal parts of the polynya just south of Kilen.

Other species
The area between Kilen and Henrik Krøyer Holme is very important for walrus (*Obobenus rosmarus*) and the NEW area is the only site in East Greenland where females and calves are reported in fair numbers.

Furthermore, polar bear (*Ursus maritimus*), narwhal (*Monodon monoceros*) and ringed seal (*Phoca hispida*) are fairly common, while bearded seal (*Erignathus barbatus*), hooded seal (*Cystophora cristata*) and harp seal (*Phoca groenlandica*) are rare visitors to the area.

On the coast just south of Kilen in Antarctic Bugt maternity dens of polar bear has been located (Born et al. 1997).

Habitats
Henrik Krøyer Holme consist of three small, low-lying islands hardly exceeding 20 m asl. The islands are barren and rocky and vegetation is scarce.

The marine area between Kilen and Henrik Krøyer Holme is characterised by relatively shallow water (most under 50 m deep) being ice-free in the period from May to September (polynya) while the surrounding areas usually are covered with heavy polar drift ice.

Protection
The islands and the coastal parts of the polynya are within the boundaries of the National Park of East and Northeast Greenland. The seabird colony on Henrik Krøyer Holme is designated as an "Area important to wildlife" by the Bureau of Minerals and Petroleum (Box IV, page 78).

Threats
The site is extremely remote, and almost never visited, why threats are currently not known to the site. Low level helicopter flights may pose a threat to the breeding seabirds.

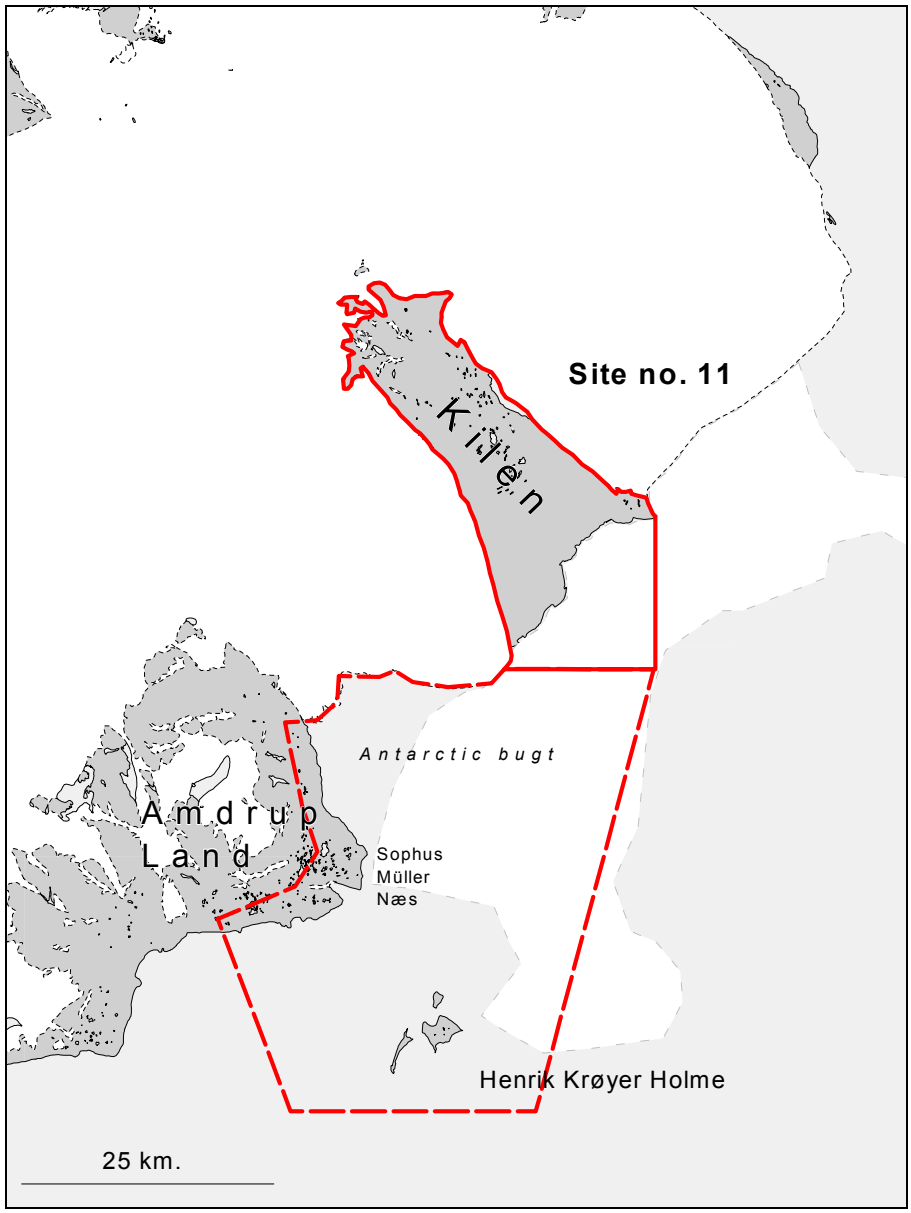


Figure 13: Map of the NEW area with new proposed borders (dotted line) to site no. 11. The location of open water in late May 1993 (Falk et al. 1997) is indicated as the light area.

Potential new Ramsar sites

According to the new knowledge on waterbirds etc. in Greenland many new areas fulfil some of the Ramsar criteria. Among such sites we here present four, which very well could be designated as Ramsar sites, either as an exchange to deleted or reduced sites or as completely new sites.

Box III:

The Criteria for Identifying Wetlands of International Importance

as adopted by the 4th, 6th, and 7th Meetings of the Conference of the Contracting Parties to the Convention on Wetlands (Ramsar, Iran, 1971) to guide implementation of Article 2.1 on designation of Ramsar sites

NOTE: This is a simple list of criteria used when identifying a wetland of international importance. Further guidelines are found on http://www.ramsar.org/.

Group A of the criteria.
Sites containing representative, rare or unique wetland types

Criterion 1: A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region.

Group B of the criteria.

Sites of international importance for conserving biological diversity criteria based on species and ecological communities

Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.
Criterion 3: A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.
Criterion 4: A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.

Specific criteria based on waterbirds

Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.
Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.

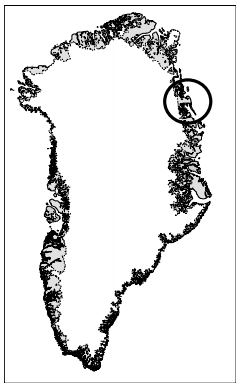
Specific criteria based on fish

Criterion 7: A wetland should be considered internationally important if it supports a significant proportion of indigenous fish subspecies, species or families, life-history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity.
Criterion 8: A wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend.

Further other potential Ramsar sites are briefly presented in Table 1 (page 73).

A new set of criteria for identification of potential new Ramsar sites has been introduced since the first designation in the mid-eighties (se Box III). These will be applied in the presentation of the new sites.

Name: **Western part of Germania Land**



IBA no.: 053
Seabird colony: -
Municipality: Within the National Park of N and NE Greenland
Coordinates: 77°15′ N, 22°00′ W
Size: 1210 km²
Terrestrial/marine: 100/0%
Altitude: 0-300 m
Updated criteria: A1, B3, B4, B6

International and national importance

The large numbers of moulting pink-footed geese make this site amongst the most important moulting areas in Greenland. Furthermore, are the highest densities of breeding waders in high arctic Greenland found within this part of Northeast Greenland (Meltofte 1985), and the site holds many breeding waders.

Staging and moulting waterbirds at Germania Land

Species	Numbers
Pink-footed goose *Anser brachyrhynchus*	*min*. 7,000 (1988)[1]
Barnacle goose *Branta leucopsis*	900 (1988)[1]

[1] *Boertmann 1991*

Other breeding waterbirds

Red-throated diver (*Gavia stellata*), king eider (*Somateria spectabilis*) and Red phalarope (*Phalaropus fulicarius*) breed in small numbers (Boertmann et al. 1990).

Other breeding birds

Rock ptarmigan (*Lagopus mutus*), Arctic redpoll (*Carduelis hornemanni*) and snow bunting (*Plectrophenax nivalis*) are common breeders in the area while gyr falcon (*Falco rusticolus*) is scarce and snowy owl (*Nyctea scandiaca*) occurs only in lemming peak years (Boertmann et al. 1990).

Habitats

The proposed site is a long and narrow strip of lowland in Daniel Bruun Land, the western part of Germania Land (Okselandet) and Søndermarken. The western border of the site is made up by the edge of the Inland Ice, along which extensive moraines, almost devoid of

Breeding waterbirds (pairs) at Germania Land

Species	Numbers
Barnacle goose *Branta leucopsis*	*common* (1989)[1]
Long-tailed duck *Clangula hyemalis*	*common* (1989)[1]
Great ringed plover *Charadrius hiaticula*	*0-2.5 pairs/km²* (1989)
Sanderling *Calidris alba*	*0.2-3.2 pairs/km²* (1989)[1]
Dunlin *Calidris alpina*	*0-2.3 pairs/km²* (1989)[1]
Red knot *Calidris canutus*	*0-0.9 pairs/km²* (1989)[1]
Ruddy turnstone *Arenaria interpres*	*1.9-3.5 pairs/km²* (1989)[1]
Long-tailed skua *Stercorarius longicaudus*	*0.6-1.4 pairs/km²* (1989)[1]

[1] *densities in four selected survey areas within the proposed Ramsar site (Boertmann et al. 1990).*

vegetation are located. Further east the topography of the land is gently rolling and generally sloping towards west. Here grasslands, dwarf scrub heaths and marshes are mixed with rocky outcrops and fell fields. There are numerous small lakes, and a large melt water river along the ice edge.

Other species

Muskoxen (*Ovibos moschatus*) were previously common in Germania Land, but the population has declined over the last decades and now 150-200 animals are estimated to live there (Boertmann & Forchhammer 1992).

Stoat (*Mustela erminea*), Arctic fox (*Alopex lagopus*), Arctic hare (*Lepus arcticus*) and collared lemming (*Dicrostonyx torquatus*) are common in the area and occasionally Arctic wolf (*Canis lupus*) and polar bear (*Ursus maritimus*) occur.

Protection

The site is within the boundaries of the National Park of North and Northeast Greenland Park, and is designated as an "Area important to Wildlife" (geese and muskoxen) by the Bureau of Minerals and Petroleum (Box IV, page 78).

Threats
Low level helicopter flights are the most apparent threat to the moulting geese.

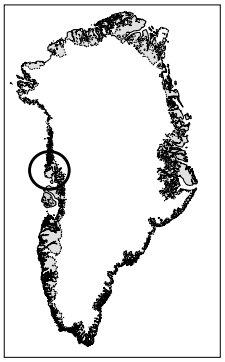
Borders
The proposed borders (Figure 14) follow to the west the Inland Ice, and to the east relatively high altitude areas between 76°45′ N and 77°35′ N. This ensures that the most important localities for moulting pink-footed geese, mapped in 1988 (Bay & Boertmann 1988; Boertmann 1991), are included in the site.

Status
New criteria applied (Box III, page 60): A1 for the extensive moraine and lowland area with numerous wetlands; B3 for the high diversity of breeding waterbirds; B4 for the moulting pink-footed and B6 for the number of pink-footed geese utilising the area.

Comments
This area has only been surveyed in 1988 and 1989 (Bay & Boertmann 1989, Boertmann et al. 1990), and more recent information is highly needed.

Figure 14: Map of the Germania Land area with the proposed new site shown. Black dot = weather station.

Name: **Itsako**



IBA no.: 018
Seabird colony: -
Municipality: Uummannaq
Coordinates: 71°45′ N, 54°05′ W
Size: 254 km²
Terrestrial/marine: 83/13%
Altitude: 0-150 m
Updated criteria: A1, B3, B4, B6

International and national importance

Significant numbers (more than 1% of the total population) of white-fronted geese moult, and large numbers breed at Itsako.

Staging and moulting waterbirds at Itsako

Species	Numbers
White-fronted goose *Anser albifrons flavirostris*	156 (1998)[1]* 680 (1995)[3] 423 (1992)[3] 141 (1994)[1]* 182 (1989)[2]
Canada goose *Branta canadensis*	271 (1998)[1] 260 (1995)[3] 150 (1994)[1] 233 (1992)[3]

[1] NERI unpubl. 2000, [2] Ettrup & Thing unpubl. 1989, [3] C. Glahder pers. comm. 1995
** = Sporadic counts, not covering the total area.*

Other staging waterbirds

Mallard (*Anas platyrhynchos*), long-tailed duck (*Clangula hyemalis*), common eider (*Somateria mollissima*) and ruddy turnstone (*Arearia interpres*) use the area in small numbers. Furthermore, an unknown number of shorebirds probably use the site as stop-over on migration.

Other breeding waterbirds

Red-throated diver (*Gavia stellata*), long-tailed duck (*Clangula hyemalis*), Arctic skua (*Stercorarius parasiticus*), red-necked phalarope (*Phalaropus lobatus*), black guillemot (*Cepphus grylle*).

Breeding waterbirds (pairs) at Itsako	
Species	Numbers
White-fronted goose *Anser albifrons flavirostris*	19 (1989)[1]
Canada goose *Branta canadensis*	8 (1995)[2] 2 (1992)[2]

[1] *Ettrup & Thing unpubl. 1989,* [2]*C. Glahder pers. comm. 1995.*

Furthermore tundra swan (*Cygnus columbianus*) has been recorded breeding in the site several times in the late eighties and during the nineties as the only known place in Greenland.

Other birds
Raven (*Corvus corax*), ptarmigan (*Lagopus mutus*), redpoll (*Carduelis flammea*), snow bunting (*Plectrophenax nivalis*), Lapland bunting (*Calcarius lapponicus*) and wheatear (*Oenanthe oenanthe*) breed in the area, and peregrine (*Falco peregrinus*) and gyr falcon (*F. rusticolus*) are frequently seen (Ettrup & Thing unpubl. 1989).

Habitats
The site consists of the outlets of three large and braiding rivers and the adjacent two shallow marine bays. The deltas are extensive with salt marshes and mudflats exposed at low tide. In land in the moist parts the vegetation is lush (for an Arctic area) with extensive Carex marshes, numerous lakes and ponds. The drier parts are dominated by dwarf scrub heath.

Other species
Muskoxen (*Ovibos moschatus*) have been introduced to Svartenhuk and they are occasionally seen at Itsako.

Protection
The area has been designated as an "Area important to wildlife" (geese) by the Bureau of minerals and petroleum (Box IV, page 78). No further protection exists.

Threats
General hunting and related disturbances and low level helicopter flying are the most immediate threats.

Borders
The border of the site largely follows the 150 m contour around the large delta located between Firefjeld and Itsako (Figure 15). The inner parts of the fjords Umiiviup Kangerlua and Kangiussap Imaa are also included.

Status
New criteria applied (Box III, page 60): A1 for the extensive and lush wetlands; B3 for the high diversity of waterbirds; B4 for the moulting and breeding white-fronted geese and B6 for the number of white-fronted geese utilising the area.

Comments
Hydrocarbon exploration has taken place immediately south of the site.

The Svartenhuk area has only been visited by biologists few times: Ettrup & Thing (1989) stayed at Svartenhuk for a week in August 1989 surveying the possibilities for a reindeer/muskox introduction. Furthermore several aerial surveys for geese and seaducks has been performed during the 1990ies (Glahder 1999a, Mosbech & Boertmann 1999; Boertmann & Mosbech *in prep*.).

The knowledge on the occurrence of moulting geese in the Svartenhuk area is reasonable, and the Itsako area seems to be the most important site for geese on Svartenhuk. However, the occurrence and distribution of other birds at Itsako (and the remaining parts of Svartenhuk) is poorly documented and future studies are in demand.

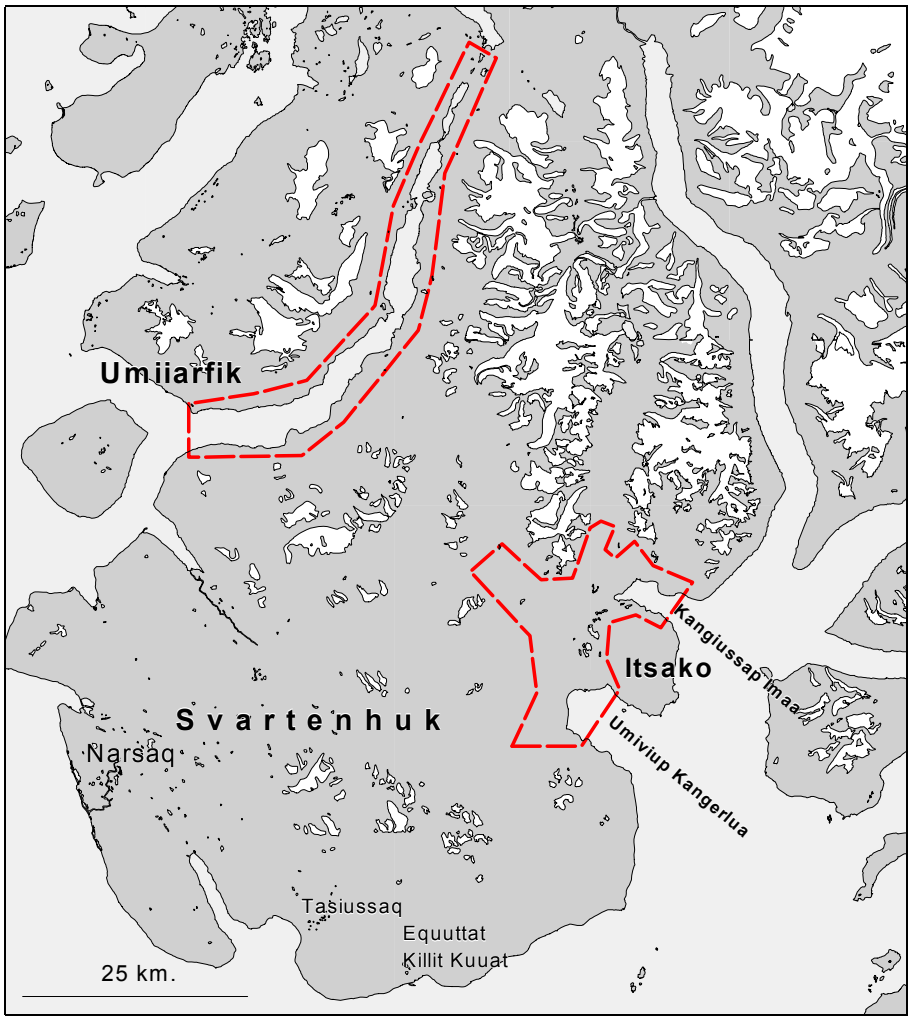
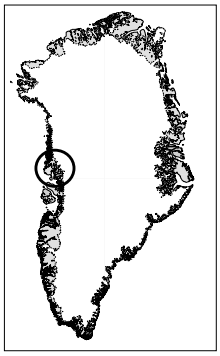


Figure 15: Map of the Svartenhuk area with the location of two potential new Ramsar sites Itsako and Umiiarfik shown.

Name: **Umiiarfik**



IBA no.: 017
Seabird colony: 72088
Municipality: Upernavik
Coordinates: 72°05′ N, 54°60′ W
Size: 290 km²
Terrestrial/marine: 55/45%
Altitude: 0-100 m
Updated criteria: A1, B4, B6

International and national importance

The large numbers of moulting king eiders makes the Umiiarfik Fjord the second most important area in Greenland with as much as 15% of total moulting population in late August using the area.

Staging and moulting waterbirds at Umiiarfik

Species	Numbers
White-fronted goose *Anser albifrons flavirostris*	300 (1994)[1]
Mallard *Anas platyrhynchos*	38 (1994)[1]
King eider *Somateria spectabilis*	750 (1999)[1] * 390 (1998)[1] * 1370 (1995)[2] 2280 (1994)[2]
Common eider *Somateria mollissima*	551 (1998)[3]
Long-tailed duck *Clangula hyemalis*	100 (1999)[1] 180 (1998)[1]
Red-breasted merganser *Mergus serrator*	120 (1994)[1]

[1] NERI unpubl. 2000, [2] Mosbech & Boertmann 1999, [3] Boertmann & Mosbech in prep.
** = These counts were conducted in July before moulting birds had arrived.*

Other breeding waterbirds

Peregrine falcon (*Falco peregrinus*) breeds in the valley.

Other species

The rare harbour seal *(Phoca vitulina*) is occasionally seen resting on the sand-flats in the fjord (NERI-AE *unpubl.*).

Habitats

A more than 50 km long shallow fjord in a large U-shaped valley. Numerous small steams run down the valley sides. Rivers with meltwater creates many alluvial fans along the coast of the fjord.

Breeding waterbirds (pairs) at Umiiarfik

Species	Numbers
White-fronted goose *Anser albifrons flavirostris*	2 (1999)[1]
Common eider *Somateria mollissima*	- few (1999)[1]
Glaucous-/ Iceland gull *Larus hyperboreus/ glaucoides*	50 ind. (1999)[1] (two colonies)
Black guillemot *Cepphus grylle*	- *few* (1999)[1]

[1] *NERI unpubl. 2000, C. Glahder pers. comm. 1995*

There are also a few barrier beaches with lagoons behind. Elsewhere the coasts are low with beaches made from more or less coarse sediments intermixed with rocky outcrops. Further up along the river and valley there are some marshes and lakes.

Protection
The area has been designated as an "Area important to wildlife" (eiders and other seaducks) by the Bureau of minerals and petroleum (Box IV, page 78). No further protection exists.

Comments
The fjord has been surveyed by NERI-AE several times from the air during summer, when the king eiders moult. In 1999 the fjord was also visited by boat.

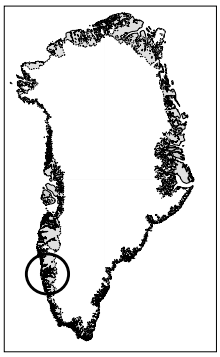
Surveys in the area show that the above mentioned birds are distributed throughout the entire fjord, although the white-fronted geese in 1994 was located in the inner part.

Threats
Hunting may cause some disturbance to the moulting king eiders, but the extent is largely unknown. Moreover may intensive low level helicopter flights pose a threat to the moulting king eiders.

Borders
The southwestern border is drawn at the mouth of the fjord (Figure 15) from the small point (Nugarsuk) on the northern coast with a straight line to the south coast of the fjord. The border then follows the 100-metres height curve on both sides of the valley to the upper part of the fjord were it includes the wetlands south of the large lake Qajartoriarsuaq.

Status
New criteria applied (Box III, page 60): A1 for the shallow fjord with low coasts; B4 for the moulting king eiders and B6 for the number of king eiders utilising the area.

Name: **Qilangaarsuit and adjacent islands**



International no.: -
IBA no.: 038
Municipality: Nuuk
Coordinates: 63°55′ N, 51°40′ W
Size: 328 km²
Terrestrial/marine: 14/86%
Altitude: 0-135 m
Updated criteria: B3, B4, B6
Seabird colonies: 63010, 63011, 63012, 63013, 63014, 63015, 63016, 63020, 63026, 63029, 63030, 63033, 63034, 63041, 63200, 63201, 63202

International and national importance

The large numbers of moulting harlequin ducks makes this site of international importance and represent one of the largest known congregations in the Atlantic. At least 5-10% of the total moulting population in Greenland stay the area in the late summer period. Furthermore are the large numbers of breeding seabirds of national importance. The site is especially important for breeding puffins with c. 15% of the Greenland population nesting there.

Staging and moulting waterbirds at Qilangaarsuit

Species	Numbers
Harlequin duck *Histrionicus histrionicus*	112 (2000)[3] *** 896 (1999)[1] * 867 (1999) [2] **

[1] NERI-AE 2000, [2] Greg Robertson (Canadian Wildlife Service) pers. comm. 2000, [3] NERI-AE unpubl.
** survey from aeroplane in late July covering the entire site.*
*** survey from boat in late August covering only the northern half of the site.*
**** birds seen in March, indicating that the site is a wintering area too.*

Other staging waterbirds

Large numbers of common eider (*Somateria mollissima*) and long-tailed duck (*Clangula hyemalis*) use the area especially in the wintertime.

Other breeding waterbirds

White-tailed eagle (*Haliaeetus albicilla*) is nesting at least on the island Qilangaarsuit.

Breeding waterbirds (pairs) at Qilangaarsuit

Species	Numbers
Common eider *Somateria mollissima*	20 (1992)[1]
Lesser black-backed gull *Larus fuscus*	10 (1999)[1]
Great Black-backed gull *Larus marinus*	100 (1992)[1] *- 5 colonies*
Glaucous gull *Larus hyperboreus*	20 (1992)[1]
Arctic tern *Sterna paradisaea*	900 (1992)[1] *- 4 colonies*
Brünnich's guillemot *Uria lomvia*	3000 ind. (1992)[1]
Common guillemot *Uria aalge*	30 ind. (1992)[1]
Black guillemot *Cepphus grylle*	220 (1992)[1]
Razorbill *Alca torda*	160 (1992-98)[1] *- 6 colonies*
Puffin *Fratercula arctica*	819 (1992)[1] *- 5 colonies*

[1] *NERI-AE & OC 2000*

Habitats

The site consists of a large number of small rocky islands surrounded by shallow waters. There are three larger islands: Qilangaarsuit, Angissorsuaq and Ravneøer. The shores of the islands are rocky and here and there are pocket beaches or coarse grained sediment beaches found. Many small islands are almost devoid of vegetation, while the larger mainly are covered by dwarf scrub heath, grasslands and small wetlands.

Other species

The western side of the islands Angissorsuaq and Ravneøer is an important fishing area for capelin (*Mallotus villosus*) (Nielsen et al. 2000).

Comments

The congregations of moulting harlequin ducks are the largest known in Greenland. The birds are distributed along the coastlines mainly of the western side of the islands.

The most important islands for the breeding puffin are Ravneøer and Innersuartuut while the guillemots are found on one of the islets of Nunngarussuit.

The areas was intensively surveyed form the air in July 1999 (Boertmann & Mosbech *in prep*.) in order to count moulting harlequin ducks. Later the same year Canadian Wildlife Service (G. Robertson pers. comm.) studied harlequin ducks based on boat surveys. The seabird colonies were surveyed in 1992 (Boertmann et al. 1996).

Protection
Partial. The island Akilia is protected as a nature reserve (Anonymous 1998) because of its geological importance. Admittance is allowed, but all mineral exploration is prohibited.

Some of the seabird breeding colonies are designated as "Areas important to wildlife" by the Bureau of Minerals and Petroleum (Box IV, page 78).

Threats
The location close to Nuuk makes the site rather heavily trafficked and hunting, and presumably egg collection, are practised widely. Several recreational huts are located on the larger islands.

The most serious threat to the site is hunting and human disturbance. Regulation of the boat traffic (like in the "Areas important to wildlife", Box IV, page 78) is recommended, and perhaps also a regulation in the development of the recreational huts.

Borders
The northern limit of the site is at 64°00′ N and the southern at 63°45′ N (Figure 16). The border coincide on the eastern side of the site runs relatively close to the coast of the islands, while the large shallow areas west of the islands are included.

Status
New criteria applied (Box III, page 60): B3 for the high diversity of birds occurring in the site; B4 for the moulting harlequin ducks and B6 for the number of harlequin ducks utilising the area.

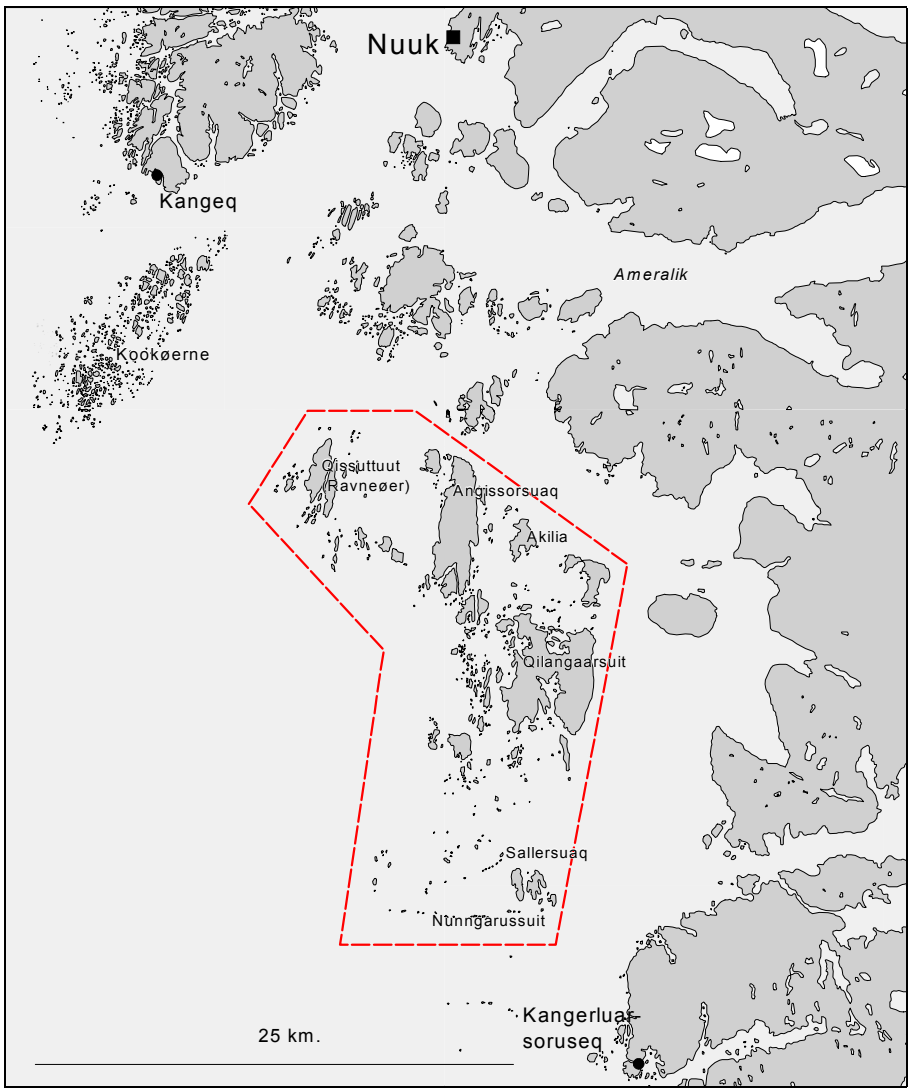


Figure 16: Map of potential new Ramsar site Qilangaarsuit. Black square = town, black dots = former settlements now used as summer camps and for recreational purposes.

Table 1. Summary of further potential new Ramsar sites

Name	Municipality	Description	Ramsar criteria
Foulke Fjord in Inglefield Land	Avanersuaq	Huge breeding colonies of little auks in a very scenic fjord	A1, B4, B5*
Haklyut Ø	Avanersuaq	Large breeding colonies of little auk and Brünnichs' guillemot, kittiwake and other alcids	A1, B3, B4 B5*
Saunders Ø	Avanersuaq	Huge breeding colony of Brünnich's guillemot	A1, B3, B4 B5*, B6*
Coast between Kap York and Kap Atholl	Avanersuaq	Huge breeding colonies of little auk, Brünnich's guillemot, kittiwakes, also other alcids	A1, B3, B4, B5*, B6*
Kap Schackleton and Kipakku	Upernavik	Huge breeding colonies of Brünnich's guillemot and other seabirds	A1, B3, B4, B5*, B6*
Søndre Isortoq	Maniitsoq	Several breeding colonies with Brünnich's guillemot, razorbill, kittiwakes and other gulls in narrow fjord	B3, B4, B5*
Evighedsfjorden	Maniitsoq	Several breeding colonies with Brünnich's guillemot, razorbill, great cormorant, kittiwake and other gulls in narrow fjord	A1, B3, B4, B5*
Sermilinnguaq	Maniitsoq	Several breeding colonies with Brünnich's guillemot, razorbill, kittiwake and other gulls in narrow fjord	A1, B3, B4, B5*
Nipisat Sund	Nuuk	Large concentrations of wintering common eiders	B6
Kap Brewster	Ittorqortormiit, East Greenland	Breeding colony of Brünnich's guillemot and kittiwake. Also little auk, black guillemot	A1, B3, B4, B5*
Østed Dal, Colorado Dal, Enhjørningens Dal and Pingel dal	Ittorqortormiit, East Greenland	Extensive arctic valleys with moulting and breeding barnacle geese and pink-footed geese	A1, B6
Storsletten, Wollaston Forland	N and NE Grl. National Park	Extensive tundra plain with moulting pink footed geese	A1, B6

* only if auks (alcids) are considered as waterbirds (see page 7).

Management

The Ramsar Convention states that:

> ***"The Contracting Parties shall formulate and implement their planning so as to promote the conservation of the wetlands included in the List, and as far as possible the wise use of wetlands in their territory"*** (Article 3.1).

and furthermore that:

> ***"Each Contracting Party shall promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands, whether they are included in the List or not, and provide adequately for their wardening"*** (Article 4.1).

The Convention clearly points out that merely designating a number of sites is not sufficient, but the designation must be followed by a conservation plan to ensure the site from future degradation of natural values and ecological character.

The Greenland Ramsar sites are mainly designated due to their importance to waterbirds. A general conservation plan to meet the needs of all of the sites combined seems difficult. Instead site-specific conservation suggestions are necessary.

Although some of/parts of some of the sites are protected according to the hunting regulations (Anonymous 1989, §§ 3 and 11), these regulations are rarely observed and even if they were enforced more strongly they are generally not adequate. This is particularly the case with §3, which only states that shooting and unnecessary noise prohibited in seabird breeding colonies. It is still allowed to stay and walk through these colonies, activities, which probably are at least as harmful as shooting 5 km from the colony.

Before specific management plans are prepared for each Ramsar site, it would be desirable to increase the level of information from the sites, not only with respect to the waterbirds, but also to the general natural history. This is most conveniently performed during field studies in the summer period.

A summary of the sites (including the potential new areas) demand for management is given in Table 2 (page 79) along side a summary of the potential with human activity.

Site no. 1, Aqajarua and Sullorsuaq

This site is situated in the Disko Bugt region, which is rather densely populated (in Greenland terms) and which has a high potential for conflicts between human activity and the occurrence of waterbirds and other fauna. The major threats to this site are disturbance from hunting, boat traffic and scallop fishery. The demand for management of this area is high. To ensure the birds the necessary peace in the

moulting period all kinds of hunting should be prohibited from 1 July to 15 October within the borders of the site. Furthermore, the scallop fishery should be reduced to the area outside the boundaries of the site (where most of the fishery in the nineties have taken place). Moreover should sailing and low level helicopter flying be regulated in the same period (Box IV, page 78). A protection effort for this site should be high.

Site no. 2, Qinnquata Marraa and Kuussuaq
This site is in the margin of the Disko Bugt area (see above) and is rather remote. However, the demand for management is high due to the occurrence of moulting king eiders and the conflict with human activities. The site should be extended to include the entire fjord. In order to prevent a similar large reduction in king eider numbers as seen in site no. 1, all kinds of hunting should be prohibited in the moulting period from 1 July until 15 October. At present, scallop fishery takes place mostly south of the fjord, but in recent years it has expanded north and some fishing grounds are now located at the month of the fjord (pers. comm. J.J. Engelstoft, Greenland Institute of Natural Resources). Scallop fishery should be prevented within the Ramsar site. Moreover should sailing and low level helicopter flying be regulated in the same period (Box IV, page 78).

Site no. 3, Kuannersuit Kuussuat
This site is like No. 2 situated in the margin of the Disko Bugt area (see above at site No. 1). The information from the site is scanty. The site seems to be prematurely designated, and may be (if possible) deleted from the Ramsar list, unless new studies reveal higher numbers of staging and breeding waterbirds.

Site no. 4, Kitsissunnguit
This group of islands is situated in Disko Bugt where the conflict potential with human activities is high. The quality of the site has been reduced over the last decades probably due to egg collection and disturbance, why the demand of management is high. To prevent this development we recommend that all the islands are included in the existing breeding bird reserve (at present only covering the westernmost islands) prohibiting all disturbances in the period from 1 June to 31 August. Moreover should low level helicopter flying be regulated in the same period (Box IV, page 78).

Along with the protection an increased effort to enforce the legislation in the area is needed.

Site no. 5, Naternaq
The site is situated at the margin of Disko Bugt (see above, site No. 1), although rather remote and little trafficked. Presently, there seems to be no serious threats. Except for the goose populations, the knowledge on fauna and flora is scanty and should be improved. The demand of management is assessed as middle. Helicopter and other kinds of traffic in the area should be regulated in the white-fronted goose staging and moulting period 1 to 31 May and 15 June to 10 August, respectively (Box IV, page 78).

Site no. 6, Eqalummiut Nunaat – Nassuttuup Nunaa
This large inland site is remote and little trafficked. The potential for conflicts with human activities is assessed as middle mainly due to the mineral exploration activities, which occurs. The demand of management is also assessed as middle. Low level helicopter flying should be regulated in the white-fronted goose staging and moulting periods 1 to 31 May and 15 June to 10 August, respectively (Box IV, page 78).

Site no. 7, Ikkattoq
Due to the relative remoteness of this area the conflict potential with human activities is assessed as middle. The demand of management is also assessed as middle and should include regulation of low level helicopter flying and sailing in the interior parts of this site (north of 62°45′ N, Figure 17) during the red-breasted merganser moulting period 1 July to 1 September (Box IV, page 78).

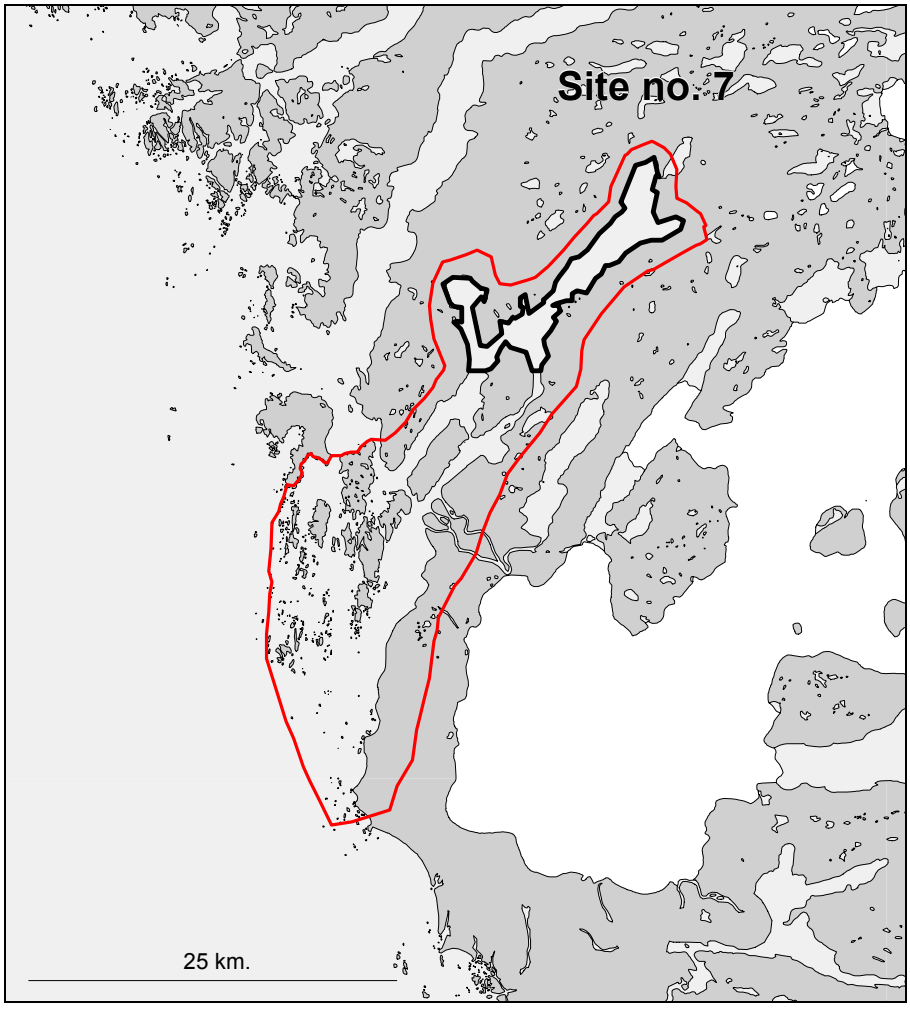


Figure 17. Map of Ramsar Site no. 7. Area where regulation in boat and helicopter traffic should be regulated is indicated (framed by heavy black line).

Site no. 8, Kitsissut Avalliit
Although this group of islands is remote and already protected as a reserve for breeding birds, conflicts with human activities occurs, and bird populations on the islands are still declining. The conflict potential is assessed as high, because the human activities at the site are focused

on the bird populations. The need for management is high and should at least include an increased effort to enforce the existing regulations.

Site no. 9, Heden
This site is rather close to one of the populated areas in East Greenland, and also a potential oil exploration area. Therefore the conflict potential with human activities is assessed as middle. The demand of management is for the time being low. But it should include regulation of low level helicopter traffic in the goose moulting period and in the northern part in the muskox calving period (Box IV, page 78). However, if oil exploration activities are resumed the need for management will increase.

Site no. 10, Hochstetter Forland
This site is within the National Park of North and Northeast Greenland and further protection should be unnecessary. Although flying at a height less than 500 m within the national park needs approval from the Greenland authorities (Order no. 16 of 16 June 1987, § 19), low level helicopter flying should be more tightly regulated in this site during the goose moulting period (Box IV, page 78).

Site no. 11, Kilen
The site is located within the National Park of North and Northeast Greenland in a very remote part of the country and further protection should be unnecessary. However, see the previous paragraph (site no. 10). Regulation of low level helicopter flying is recommended in the goose moulting period 15 June to 10 August (Box IV, page 78).

Management of other sites
The Convention also stresses that wise use also shall be promoted in wetlands not included in the list ("in their territory") and that changes in wetland not included in the list shall be reported to the organisation. See also Table 2 (page 79) for a summary of the conflict potential and management demands of the potential new Ramsar sites.

Box IV:

This is an extract from the regulations prepared by the Greenland Home Rule Government's Bureau of Minerals and Petroleum regarding activities in "areas important to wildlife". The regulations apply only to activities in relation to mineral exploration. Flying with fixed-wing aircrafts 500 m above the ground is not regulated.

Breeding sites for Brünnich's guillemot (thick-billed murre):
in an area within 5 km from the colony, activities (except navigating) need approval in the period 1 June - 15 Sept. Staying in the colony is not permitted.

Other seabird breeding colony:
in an area within 200 m from the colony, activities (except navigating) need approval in the period 1 June - 15 Sept. Staying in the colony is not permitted.

In areas designated for eiders and other seaducks:
all activities, except from single helicopter flights* and navigation with motorised vessels with a maximum speed of 10 knots, need approval in the period 1 Aug. - 30 Sep.

In areas designated for staging, breeding and moulting geese:
all activities, except from single helicopter flights* and navigation with motorised vessels with a maximum speed of 10 knots, need approval in the periods 1 - 20 May, 15-31 May and 15 June - 10 Aug.

In areas designated for calving muskoxen:
all activities, except helicopters flying 500 m above ground need approval in the period 15 Apr. - 31 May.

In areas designated for walrus in Northeast Greenland:
all activities, except helicopters flying 500 m above the ground/sea level, need approval 1 May - 15 Oct.

More regulations: See http://www.bmp.dmu.dk

* = defined as flights for transportation of equipment or personnel with intervals of at least 4 days.

Table 2. Summary of the conflict potential (with human activities) and demand of management of the Greenland Ramsar sites and potential Ramsar sites.

Site no.	Current threats	Conflict potential*	Demand of management
1	hunting, scallop fishery, helicopter flying	high	high
2	hunting, scallop fishery, helicopter flying	middle	high
3	no serious threats	middle	middle
4	egg collecting, hunting, helicopter flying	high	high
5	helicopter flying and human activities	middle	middle
6	helicopter flying and human activities	middle	middle
7	hunting	middle	middle
8	hunting, egg collecting, helicopter flying	middle	high
9	helicopter flying	middle	low
10	helicopter flying	low	low
11	helicopter flying	low	low
Potential new areas			
Germania Land	helicopter flying	low	low
Itsako	hunting, helicopter flying	middle	high
Umiiarfik	hunting, helicopter flying	middle	high
Qilangaarsuit	hunting, helicopter flying, recreational activities	high	high
Foulke Fjord	no current threats	low	low
Haklyut Ø	no current threats	low	middle
Saunders Ø	no current threats	low	middle
Kap York-Kap Atholl	no current threats	low	middle
Kap Schackleton	hunting, egg collecting, helicopter flying	middle	high
Søndre Isortoq	hunting, egg collecting, helicopter flying	high	high
Evighedsfjorden	hunting, egg collecting, helicopter flying	high	high
Sermilinnguaq	hunting, egg collecting, helicopter flying	high	high
Nipisat Sund	hunting	high	high
Kap Brewster	hunting, egg collecting	high	high
Østed Dal etc.	helicopter flying	low	low
Storsletten	helicopter flying	low	low

* conflicts between humans activity and the occurrence of waterbirds and other fauna

Monitoring

The Ramsar Convention states:

> ***"Each Contracting Party shall arrange to be informed at the earliest possible time if the ecological character of any wetland in its territory and included in the List has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference. Information on such changes shall be passed without delay to the organisation or government responsible for the continuing bureau duties specified in Article 8." (Article 3.2).***

To fulfil this obligation, a programme for monitoring the possible changes in the ecological character of the Ramsar sites is needed.

We recommend that a number of key species are selected in each site and their population trends are monitored with fixed intervals of time. The ideal interval of monitoring the state of the sites would be every 3-5 years. If this is difficult to meet, we propose a division of the sites into categories, based on their need of monitoring in relation to conservation:

Urgent: In sites where changes in ecological character are very likely or have taken place, monitoring surveys are recommended to take place every 3-5 years.

Necessary: In sites where changes in ecological character may take place, monitoring surveys are recommended at 8-10 years intervals.

Relevant: In sites where changes in ecological character potentially take place, monitoring surveys with 10-20 years intervals are recommended.

Monitoring program

Urgent (3-5 years)	Necessary (8-10 years)	Relevant (10-20 years)
Site no. 2	Site no. 1	Site no. 9
Site no. 4	Site no. 5	Site no. 10
Site no. 8	Site no. 6	Site no. 11
	Site no. 7	

Public information and training

There is today very little recognition of the Ramsar sites in Greenland. An information campaign will therefore be appropriate if/when the Ramsar Convention is implemented in the Greenland legislation. However, information material about Ramsar sites is now under preparation under the auspices of the Nordic Council of Ministers and this includes Greenland (P. Nielsen pers. comm.).

A revised and updated version of the information folder from Greenland Home Rule Government (Anonymous 1990) could be the first step. Furthermore could the sites be marked in the field f. ex. with signposts at popular landing sites, and finally could a the press, primarily the Greenland television be included for the production of information spots.

Article 4.5 stress that the contracting parties shall promote the training of personnel competent in the fields of wetland research, management and wardening. Particularly the wardening at the sites could be incorporated in the tasks of the municipal game wardens.

Conclusions

The purpose of Ramsar-sites is protection of their contents both wetland habitats and the fauna and flora these habitats support. The criteria for the designation of Ramsar sites are both quantitative and qualitative.

In Greenland wetland habitat threats are very limited, because the agriculture areas are extremely small, land development only takes place at inhabited sites and land reclamation is not current. However, the fishery may change wetland habitats on the seafloor f. ex. on the scallop fishing grounds. Potential habitat threats include oil spills from shipping off the Greenland coasts, and future development of petroleum/mineral exploitation sites or hydro power plants. Except for a planned gold mine in South Greenland no such plans are current.

The major current threats to the Greenland fauna are hunting and disturbance. Hunting takes place everywhere in the marine habitats where people live and throughout the year. Hunting in terrestrial and fresh water habitats are more restricted and usually very seasonal.

Disturbance (other than the disturbance from the hunting activities) is mainly from sailing and helicopter flying. The latter is at least locally extensive in Greenland. The disturbance effects from sailing is enhanced due to the hunting, because hunting usually takes place from boats, and birds and marine mammals therefore associate the noise from boats with a threat.

In this context the Ramsar sites have the potential to be an efficient tool in the conservation of the wetland fauna primarily the birds.

It is therefore obvious that the primary function of the Greenland Ramsar sites should be areas where hunting and disturbance are limited. The convention states that the Ramsar sites and other wetlands should be wisely used, and this does not exclude hunting. However, the hunting and related disturbances are generally not performed as "wise use" in Greenland. In some Ramsar areas (no. 1and 4) human activities have more or less driven away very important waterbird occurrences. The Ramsar sites are therefore areas, where regulation of hunting and other disturbing activities should be implemented, and the report present proposals to such regulation.

When the eleven Greenland Ramsar sites where designated in 1987, the biological information was limited. However, except for one of the sites (no. 3) all the sites, based on an increased level of information, still meet the criteria of Ramsar sites and still are important habitats for waterbirds. The increased level of information also revealed several other areas which meet the criteria, and the designation of some of these as Ramsar sites including regulation of the human activities within them, could be an important contribution to the conservation of particularly the hunted waterbird populations in West Greenland.

In order to prepare management plans for the Ramsar sites, it is recommended that the sites are visited and the information on fauna, flora, habitats, human use etc. is updated.

Moreover is it recommended that the Ramsar sites are implemented in the Greenland legislation, and that in this context it is specifically stated that auks (alcids) are included among the waterbirds when the specific criteria are applied.

And finally it is recommended that the sites are monitored regularly in the future and that public information campaigns are initiated.

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Appendix I

Convention on Wetlands of International Importance especially as Waterfowl Habitat
Ramsar, Iran, 2.2.1971
as amended by the Protocol of 3.12.1982
and the Amendments of 28.5.1987
Certified copy

Paris, 13 July 1994
Director, Office of International Standards and Legal Affairs
United Nations Educational, Scientific and Cultural Organization (UNESCO)

The Contracting Parties,

RECOGNIZING the interdependence of Man and his environment;

CONSIDERING the fundamental ecological functions of wetlands as regulators of water regimes and as habitats supporting a characteristic flora and fauna, especially waterfowl;

BEING CONVINCED that wetlands constitute a resource of great economic, cultural, scientific, and recreational value, the loss of which would be irreparable;

DESIRING to stem the progressive encroachment on and loss of wetlands now and in the future;

RECOGNIZING that waterfowl in their seasonal migrations may transcend frontiers and so should be regarded as an international resource;

BEING CONFIDENT that the conservation of wetlands and their flora and fauna can be ensured by combining far-sighted national policies with co-ordinated international action;

Have agreed as follows:

Article 1

For the purpose of this Convention wetlands are areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres.

For the purpose of this Convention waterfowl are birds ecologically dependent on wetlands.

Article 2

Each Contracting Party shall designate suitable wetlands within its territory for inclusion in a List of Wetlands of International Importance, hereinafter referred to as "the List" which is maintained by the bureau established under Article 8. The boundaries of each wetland shall be precisely described and also delimited on a map and they may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine

water deeper than six metres at low tide lying within the wetlands, especially where these have importance as waterfowl habitat.

Wetlands should be selected for the List on account of their international significance in terms of ecology, botany, zoology, limnology or hydrology. In the first instance wetlands of international importance to waterfowl at any season should be included.

The inclusion of a wetland in the List does not prejudice the exclusive sovereign rights of the Contracting Party in whose territory the wetland is situated.

Each Contracting Party shall designate at least one wetland to be included in the List when signing this Convention or when depositing its instrument of ratification or accession, as provided in Article 9.

Any Contracting Party shall have the right to add to the List further wetlands situated within its territory, to extend the boundaries of those wetlands already included by it in the List, or, because of its urgent national interests, to delete or restrict the boundaries of wetlands already included by it in the List and shall, at the earliest possible time, inform the organization or government responsible for the continuing bureau duties specified in Article 8 of any such changes.

Each Contracting Party shall consider its international responsibilities for the conservation, management and wise use of migratory stocks of waterfowl, both when designating entries for the List and when exercising its right to change entries in the List relating to wetlands within its territory.

Article 3

The Contracting Parties shall formulate and implement their planning so as to promote the conservation of the wetlands included in the List, and as far as possible the wise use of wetlands in their territory.

Each Contracting Party shall arrange to be informed at the earliest possible time if the ecological character of any wetland in its territory and included in the List has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference. Information on such changes shall be passed without delay to the organization or government responsible for the continuing bureau duties specified in Article 8.

Article 4

Each Contracting Party shall promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands, whether they are included in the List or not, and provide adequately for their wardening.

Where a Contracting Party in its urgent national interest, deletes or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat.

The Contracting Parties shall encourage research and the exchange of data and publications regarding wetlands and their flora and fauna.

The Contracting Parties shall endeavour through management to increase waterfowl populations on appropriate wetlands.

The Contracting Parties shall promote the training of personnel competent in the fields of wetland research, management and wardening.

Article 5

The Contracting Parties shall consult with each other about implementing obligations arising from the Convention especially in the case of a wetland extending over the territories of more than one Contracting Party or where a water system is shared by Contracting Parties. They shall at the same time endeavour to coordinate and support present and future policies and regulations concerning the conservation of wetlands and their flora and fauna.

Article 6

There shall be established a Conference of the Contracting Parties to review and promote the implementation of this Convention. The Bureau referred to in Article 8, paragraph 1, shall convene ordinary meetings of the Conference of the Contracting Parties at intervals of not more than three years, unless the Conference decides otherwise, and extraordinary meetings at the written requests of at least one third of the Contracting Parties. Each ordinary meeting of the Conference of the Contracting Parties shall determine the time and venue of the next ordinary meeting.

The Conference of the Contracting Parties shall be competent:

- to discuss the implementation of this Convention;
- to discuss additions to and changes in the List;
- to consider information regarding changes in the ecological character of wetlands included in the List provided in accordance with paragraph 2 of Article 3;
- to make general or specific recommendations to the Contracting Parties regarding the conservation, management and wise use of wetlands and their flora and fauna;
- to request relevant international bodies to prepare reports and statistics on matters which are essentially international in character affecting wetlands;
- to adopt other recommendations, or resolutions, to promote the functioning of this Convention.

The Contracting Parties shall ensure that those responsible at all levels for wetlands management shall be informed of, and take into consideration, recommendations of such Conferences concerning the conservation, management and wise use of wetlands and their flora and fauna.

The Conference of the Contracting Parties shall adopt rules of procedure for each of its meetings.

The Conference of the Contracting Parties shall establish and keep under review the financial regulations of this Convention. At each of its ordinary meetings, it shall adopt the budget for the next financial period by a two-third majority of Contracting Parties present and voting.

Each Contracting Party shall contribute to the budget according to a scale of contributions adopted by unanimity of the Contracting Parties present and voting at a meeting of the ordinary Conference of the Contracting Parties.

Article 7

The representatives of the Contracting Parties at such Conferences should include persons who are experts on wetlands or waterfowl by reason of knowledge and experience gained in scientific, administrative or other appropriate capacities.

Each of the Contracting Parties represented at a Conference shall have one vote, recommendations, resolutions and decisions being adopted by a simple majority of the Contracting Parties present and voting, unless otherwise provided for in this Convention.

Article 8

The International Union for Conservation of Nature and Natural Resources shall perform the continuing bureau duties under this Convention until such time as another organization or government is appointed by a majority of two-thirds of all Contracting Parties.

The continuing bureau duties shall be, inter alia:

- to assist in the convening and organizing of Conferences specified in Article 6;
- to maintain the List of Wetlands of International Importance and to be informed by the Contracting Parties of any additions, extensions, deletions or restrictions concerning wetlands included in the List provided in accordance with paragraph 5 of Article 2;
- to be informed by the Contracting Parties of any changes in the ecological character of wetlands included in the List provided in accordance with paragraph 2 of Article 3;
- to forward notification of any alterations to the List, or changes in character of wetlands included therein, to all Contracting Parties and to arrange for these matters to be discussed at the next Conference;
- to make known to the Contracting Party concerned, the recommendations of the Conferences in respect of such alterations to the List or of changes in the character of wetlands included therein.

Article 9

This Convention shall remain open for signature indefinitely.

Any member of the United Nations or of one of the Specialized Agencies or of the International Atomic Energy Agency or Party to the Statute of the International Court of Justice may become a Party to this Convention by:

- signature without reservation as to ratification;
- signature subject to ratification followed by ratification;
- accession.

Ratification or accession shall be effected by the deposit of an instrument of ratification or accession with the Director-General of the United Nations Educational, Scientific and Cultural Organization (hereinafter referred to as "the Depositary").

Article 10

This Convention shall enter into force four months after seven States have become Parties to this Convention in accordance with paragraph 2 of Article 9.

Thereafter this Convention shall enter into force for each Contracting Party four months after the day of its signature without reservation as to ratification, or its deposit of an instrument of ratification or accession.

Article 10 bis

This Convention may be amended at a meeting of the Contracting Parties convened for that purpose in accordance with this article.

Proposals for amendment may be made by any Contracting Party.

The text of any proposed amendment and the reasons for it shall be communicated to the organization or government performing the continuing bureau duties under the Convention (hereinafter referred to as "the Bureau") and shall promptly be communicated by the Bureau to all Contracting Parties. Any comments on the text by the Contracting Parties shall be communicated to the Bureau within three months of the date on which the amendments were communicated to the Contracting Parties by the Bureau. The Bureau shall, immediately after the last day for submission of comments, communicate to the Contracting Parties all comments submitted by that day.

A meeting of Contracting Parties to consider an amendment communicated in accordance with paragraph 3 shall be convened by the Bureau upon the written request of one third of the Contracting Parties. The Bureau shall consult the Parties concerning the time and venue of the meeting.

Amendments shall be adopted by a two-thirds majority of the Contracting Parties present and voting.

An amendment adopted shall enter into force for the Contracting Parties which have accepted it on the first day of the fourth month following the date on which two thirds of the Contracting Parties have deposited an instrument of acceptance with the Depositary. For each Contracting Party which deposits an instrument of acceptance after the date on which two thirds of the Contracting Parties have deposited an instrument of acceptance, the amendment shall enter into force on the first day of the fourth month following the date of the deposit of its instrument of acceptance.

Article 11

This Convention shall continue in force for an indefinite period.

Any Contracting Party may denounce this Convention after a period of five years from the date on which it entered into force for that party by giving written notice thereof to the Depositary. Denunciation shall take effect four months after the day on which notice thereof is received by the Depositary.

Article 12

The Depositary shall inform all States that have signed and acceded to this Convention as soon as possible of:

- signatures to the Convention;
- deposits of instruments of ratification of this Convention;
- deposits of instruments of accession to this Convention;
- the date of entry into force of this Convention;
- notifications of denunciation of this Convention.

When this Convention has entered into force, the Depositary shall have it registered with the Secretariat of the United Nations in accordance with Article 102 of the Charter.

IN WITNESS WHEREOF, the undersigned, being duly authorized to that effect, have signed this Convention.

DONE at Ramsar this 2nd day of February 1971, in a single original in the English, French, German and Russian languages, all texts being equally authentic* which shall be deposited with the Depositary which shall send true copies thereof to all Contracting Parties.

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* Pursuant to the Final Act of the Conference to conclude the Protocol, the Depositary provided the second Conference of the Contracting Parties with official versions of the Convention in the Arabic, Chinese and Spanish languages, prepared in consultation with interested Governments and with the assistance of the Bureau.

Appendix II

Source: http://www.ramsar.org/

Ramsar Classification System for Wetland Type

The codes are based upon the Ramsar Classification System for Wetland Type as approved by Recommendation 4.7 and amended by Resolution VI.5 of the Conference of the Contracting Parties. The categories listed herein are intended to provide only a very broad framework to aid rapid identification of the main wetland habitats represented at each site.

Marine/Coastal Wetlands:

A -- ***Permanent shallow marine waters*** in most cases less than six metres deep at low tide; includes sea bays and straits.
B -- ***Marine subtidal aquatic beds***; includes kelp beds, sea-grass beds, tropical marine meadows.
C -- ***Coral reefs***.
D -- ***Rocky marine shores***; includes rocky offshore islands, sea cliffs.
E -- ***Sand, shingle or pebble shores***; includes sand bars, spits and sandy islets; includes dune systems and humid dune slacks.
F -- ***Estuarine waters***; permanent water of estuaries and estuarine systems of deltas.
G -- ***Intertidal mud, sand or salt flats***.
H -- ***Intertidal marshes***; includes salt marshes, salt meadows, saltings, raised salt marshes; includes tidal brackish and freshwater marshes.
I -- ***Intertidal forested wetlands***; includes mangrove swamps, nipah swamps and tidal freshwater swamp forests.
J -- ***Coastal brackish/saline lagoons***; brackish to saline lagoons with at least one relatively narrow connection to the sea.
K -- ***Coastal freshwater lagoons***; includes freshwater delta lagoons.
Zk(a) – ***Karst and other subterranean hydrological systems***, marine/coastal

Inland Wetlands:

L -- ***Permanent inland deltas***.
M -- ***Permanent rivers/streams/creeks***; includes waterfalls.
N -- ***Seasonal/intermittent/irregular rivers/streams/creeks***.
O -- ***Permanent freshwater lakes*** (over 8 ha); includes large oxbow lakes.
P -- ***Seasonal/intermittent freshwater lakes*** (over 8 ha); includes floodplain lakes.
Q -- ***Permanent saline/brackish/alkaline lakes***.
R -- ***Seasonal/intermittent saline/brackish/alkaline lakes and flats***.
Sp -- ***Permanent saline/brackish/alkaline marshes/pools***.
Ss -- ***Seasonal/intermittent saline/brackish/alkaline marshes/pools***.
Tp -- ***Permanent freshwater marshes/pools***; ponds (below 8 ha), marshes and swamps on inorganic soils; with emergent vegetation water-logged for at least most of the growing season.
Ts -- ***Seasonal/intermittent freshwater marshes/pools*** on inorganic soils; includes sloughs, potholes, seasonally flooded meadows, sedge marshes.
U -- ***Non-forested peatlands***; includes shrub or open bogs, swamps, fens.
Va -- ***Alpine wetlands***; includes alpine meadows, temporary waters from snowmelt.
Vt -- ***Tundra wetlands***; includes tundra pools, temporary waters from snowmelt.

W -- ***Shrub-dominated wetlands***; shrub swamps, shrub-dominated freshwater marshes, shrub carr, alder thicket on inorganic soils.
Xf -- ***Freshwater, tree-dominated wetlands***; includes freshwater swamp forests, seasonally flooded forests, wooded swamps on inorganic soils.
Xp -- ***Forested peatlands***; peatswamp forests.
Y -- ***Freshwater springs; oases***.
Zg -- ***Geothermal wetlands***
Zk(b) – ***Karst and other subterranean hydrological systems***, inland
Note : "***floodplain***" is a broad term used to refer to one or more wetland types, which may include examples from the R, Ss, Ts, W, Xf, Xp, or other wetland types. Some examples of floodplain wetlands are seasonally inundated grassland (including natural wet meadows), shrublands, woodlands and forests. Floodplain wetlands are not listed as a specific wetland type herein.

Human-made wetlands:

1 -- ***Aquaculture*** (e.g., fish/shrimp) ***ponds***
2 -- ***Ponds***; includes farm ponds, stock ponds, small tanks; (generally below 8 ha).
3 -- ***Irrigated land***; includes irrigation channels and rice fields.
4 -- ***Seasonally flooded agricultural land*** (including intensively managed or grazed wet meadow or pasture).
5 -- ***Salt exploitation sites***; salt pans, salines, etc.
6 -- ***Water storage areas***; reservoirs/barrages/dams/impoundments (generally over 8 ha).
7 -- ***Excavations***; gravel/brick/clay pits; borrow pits, mining pools.
8 -- ***Wastewater treatment areas***; sewage farms, settling ponds, oxidation basins, etc.
9 -- ***Canals and drainage channels, ditches***.
Zk(c) – ***Karst and other subterranean hydrological systems***, human-made.

Appendix III

The following mentioned species are those which can be hunted in Greenland. Hunting on all other species are prohibited (Anonymous 1989) in Greenland.

Species	Closed season
Great northern diver	1 June - 15 August
Red-throated diver	1 June - 15 August
Fulmar[5]	1 June - 15 August
Great cormorant	1 April - 30 September
White-fronted goose	1 May - 15 August
Pink-footed goose[1]	1 May - 15 August
Barnacle goose[1]	1 May - 15 August
Mallard	1 June - 15 August
Long-tailed duck	1 June - 15 August
Common eider[2, 6]	1 May - 15 August
King eider	1 June - 15 August
Red-breasted merganser	1 June - 15 August
Ptarmigan	1 June - 15 August
Arctic skua[5]	1 June - 15 August
Pomarine skua	1 June - 15 August
Long-tailed skua	1 June - 15 August
Great black-backed gull[5]	1 June - 15 August
Glaucous gull[3, 5, 7]	1 June - 15 August
Iceland gull[5]	1 June - 15 August
Kittiwake[5]	1 June - 15 August
Little auk[3, 5, 8]	1 June - 15 August
Black guillemot[5]	1 June - 15 August
Brünnich's guillemot[3, 4]	15 March – 15 October
Common guillemot	15 March – 15 October
Raven[3, 7]	15 April - 30 June

[1] In Ittoqqortoomiit municipal closing season 1 June - 31 August.
[2] North of Kangaatsiaq municipality closing season 1 June - 15 August.
[3] In Ittoqqortoomiit and Avanersuaq municipalities hunted allowed all year around.
[4] North of Kangaatsiaq municipality closing season 1 June - 31 August.
[5] Collection of eggs allowed until 1 July. Collection of eggs from other species than the above mentioned (marked [5], [6] or [7]), except Arctic tern (until 1 July), are prohibited.
[6] In Ittoqqortoomiit and Avanersuaq municipalities collection of eggs and down allowed until 25 July.
[7] In Ittoqqortoomiit and Avanersuaq municipalities collection of eggs allowed all year around.
[8] In Ittoqqortoomiit and Avanersuaq municipalities collection of chicks allowed.

National Environmental Research Institute

The National Environmental Research Institute, NERI, is a research institute of the Ministry of Environment and Energy. In Danish, NERI is called *Danmarks Miljøundersøgelser (DMU)*.
NERI's tasks are primarily to conduct research, collect data, and give advice on problems related to the environment and nature.

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Department of Coastal Zone Ecology

Publications:
NERI publishes professional reports, technical instructions, and the annual report. A R&D projects' catalogue is available in an electronic version on the World Wide Web.
Included in the annual report is a list of the publications from the current year.

NERI Technical reports

2000

Nr. 318: Order Theoretical Tools in Environmental Sciences. Proceedings of the Second Workshop October 21st, 1999 in Roskilde, Denmark. By Sørensen, P.B. et al. 170 pp., 150,00 DKK.
Nr. 319: Forbrug af økologiske fødevarer. Del 2: Modellering af efterspørgsel. Af Wier, M. & Smed, S. 184 s., 150,00 kr.
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