

# Autumn bird observations in the Northeast Greenland sea ice

INGVAR BYRKJEDAL and JØRN MADSEN



(Med et dansk resumé: Efterårsobservationer af fugle i havisen ud for Nordøstgrønland)

**Abstract** During marine biology cruises to NE Greenland in September-October 2005 and 2007 bird observations were made from the vessel's bridge, often combined with a watch for seals. No methodical counts were carried out, but notes about bird numbers were made. Altogether 18 species were observed. Birds (mainly Little Auks, Brünnich's Guillemots, Black Guillemots, Glaucous Gulls, and Fulmars) were mostly confined to open drift ice and open sea immediately outside the ice. Few birds were seen in the fjords, although these were partly ice free. Concentrations of alcids (particularly Little Auks and Black Guillemots) were observed, indicating ongoing migration. Hundreds of Ivory Gulls were observed between 76 and 77°N, probably an internationally important area for this species at that time of the year. Gyrfalcons were seen in the drift ice many kilometres from the shore, and the occurrences of alcids and other seabirds may make the drift ice an important habitat for NE Greenland Gyrfalcons during the non-breeding season.

## Introduction

The waters off Northeast Greenland are seldom visited by ornithologists outside the summer season, and the information about birds occurring in the region at that part of the year is scanty (Salomonsen 1967, Boertmann 1994). In September-October 2005 and 2007 we visited NE Greenland waters as participants in cruises onboard R/V *Jan Mayen* to study fish biodiversity and physiology of fish and seals. These cruises gave us the opportunity to make bird notes in open water, in drift ice, and in some of the fjords. Although not based

on quantitative recording, the observations gave a fairly good impression of bird distribution in the area, and important numbers of certain species were observed. Reporting these observations may add to the insight into the ecology and migration of bird species in these waters. Information about the birds in this region may be of particular importance in view of future plans for economic exploitation of the area, not least related to possible search for fossil fuel. We here report observations made between 70°N and 78°N, primarily west of

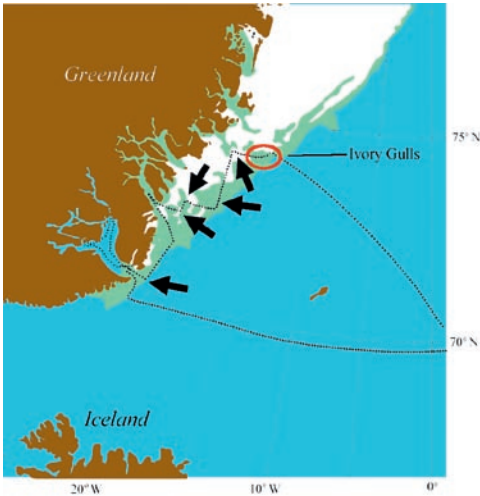


Fig. 1. Sailing route (dotted line) 30 September – 7 October 2005. The distribution of the drift ice (from ice charts issued by the Norwegian Meteorological Institute) on 10 October is indicated; green = open drift ice (1/10-7/10 ice cover), white = closed drift ice (8/10-10/10 ice cover). Arrows indicate locations of Gyrfalcons, and the circle marks an area with regular occurrence of Ivory Gulls.

*Sejlruten (prikket linje) 30. september – 7. oktober 2005. Isens udbredelse for 10. oktober er vist med grøn (åben drivis, 1/10-7/10 isdække) og hvid farve (lukket drivis, 8/10-10/10 isdække). Pilene angiver observationer af Jagtfalk, og cirklen markerer et område, hvor Ismåge blev observeret regelmæssigt.*

the 0° meridian, but also include some observations made from the waters near Spitsbergen.

## Materials and methods

The cruises primarily sought to investigate fish fauna of the fjord systems, but time was also spent in the drift ice in search of seals. The NE Greenland fjords are more or less accessible to ships in the autumn, when the drift ice in the East Greenland Current is at its minimum. Strong northerly winds can, however, move the ice southwards and quickly block the entrance to the fjords, in which case a vessel will have to move out to avoid being locked in by the ice. Thus, our visits to inshore waters, drift ice and open waters east of the ice belt were partly according to planned schedules, partly dictated by changing weather and ice conditions.

Bird observations were done from the bridge during steaming as well as during trawling and stationary marine sampling bouts, whenever time permitted. In open water the vessel steamed with

a speed of about 10 knots, whereas in the ice the speed was reduced, often to about 3 knots. Trawling speed was approximately 1.4 knots. Geographical coordinates were noted when observation bouts started and ended, and whenever especially noteworthy observations were made. One of us (JM) spent a considerable time watching for seals, and this watch could also be extended to birds. Neither of us had the opportunity to concentrate sufficiently on bird observations to perform quantitative recording following a rigorous counting method. We did, however, make notes about numbers of each of the species we observed every day, and related the observations to habitat (fjord, ice, open water).

In 2005 the cruise worked in Greenland waters during the period 30 September – 7 October, and in 2007 during 1-11 October. In 2005, an area between 70°N (Scoresby Sund) and 74°N (off Wollaston Forland) was visited (Fig. 1), while in 2007 the cruise went from 70°N northwards along the ice to 78°N (Fig. 2). In 2005 attempts were made to enter Kejser Franz Joseph Fjord and Kong Oscars Fjord, but these attempts had to be aborted. In both years the Scoresby Sund fjord system was visited, in 2005 extending into Nordvestfjord, Fønfjord and Gåsefjord.

Ice conditions in the fjords varied from dense new and old ice in Kong Oscars Fjord in 2005 to open water in the Scoresby Sund fjord system both years, with scattered stranded icebergs, whereas drift ice occurred offshore in the East Greenland Current. The distribution of the ice was obtained daily from online ice charts issued by the Norwegian Meteorological Institute (<http://met.no>). From these charts, ice cover of 1/10-7/10 was characterized as open ice, and 8/10-10/10 as closed ice, while ice cover <1/10 was characterized as open water.

## Results

### *Fulmar Fulmarus glacialis*

In both years the species was common in open ocean, and between 20 and 60 birds were usually seen trailing the vessel during steaming. The species occurred over the whole latitudinal span covered by the cruises, but Fulmars soon disappeared as we entered the drift ice, and only a handful individuals were seen in the fjords (a few in the mouth of Kong Oscars Fjord and only one single bird observed in the Scoresby Sund fjord system, in spite of Scoresby Sund being free from ice cover except for numerous stranded icebergs).

The fulmars belonged almost exclusively to the

light phase until we reached 76-77°N, when the grey phase became more common. West of Spitsbergen, at 78°N 9°E, the grey phase made up as much as 20-30% of the Fulmars.

#### **Common Eider** *Somateria mollissima*

Single females were seen in the ice belt at the mouth of Kong Oscars Fjord, and a flock of 30-40 Common Eiders were seen in the ice off Scoresby Sund.

#### **Long-tailed Duck** *Clangula hyemalis*

A flock of about 10 was seen in Fønffjord in 2005. One male was seen in open sea between Scoresby Sund and the island of Jan Mayen, and four single males east of the drift ice at 73°46'N 11°31'E.

#### **Gyr Falcon** *Falco rusticolus*

In both years several individuals were seen in the drift ice many kilometres from the shore (Figs 1 and 2). In 2005 three observations were made in open drift ice and two in closed drift ice from the waters east of Hold With Hope to the mouth of Scoresby Sund. In 2007, two Gyrfalcons were seen in open drift ice at the mouth of Scoresby Sund, on 2 October at 70°14'N 19°30'W and on 5 October at 70°10'N 21°58'W. Another was seen on 9 October at 73°29'N 14°16'W, also in open drift ice and close to an area with good numbers of alcids. Apart from the individuals in the mouth of Scoresby Sund, which were 4 and 9 km from the shore, the Gyrfalcons were observed 60-150 km from nearest coast. All individuals were of the white morph.

#### **Purple Sandpiper** *Calidris maritima*

In 2005 a few individuals were seen over open sea in two areas, NE of Jan Mayen and about midway between Jan Mayen and the Norwegian mainland, one of them landing on the ship.

#### **Pomarine Skua** *Stercorarius pomarinus*

Altogether 6 individuals were seen on 7 October 2007 in very open drift ice between 72°25'N 16°46'W and 72°50'N 16°13'W.

#### **Iceland Gull** *Larus glaucoideus*

The only individual seen was an adult on 4 October 2005 at Hall Bredning in Scoresby Sund.

#### **Glaucous Gull** *Larus hyperboreus*

The first individuals were seen following the vessel during steaming from the Norwegian coast westwards, already from about 70°N 9°E. Num-



Fig. 2. Sailing route (dotted line) 1-11 October 2007, and drift ice on 10 October. Circles mark concentrated occurrences of Little Auks, Black Guillemots, and Ivory Gulls, and the occurrence of Pomarine Skuas. Other legends as in Fig. 1.

Sejlruen (prikket linje) 1.-11. oktober 2007 og isens udbredelse 10. oktober. Cirklerne markerer koncentrationer af Søkonge, Tejst og Ismåge samt forekomst af Mellemkjove. Øvrige symboler som i Fig. 1.

bers increased from the waters near Jan Mayen. The species was common in the drift ice as well as in the fjords (Kong Oscars Fjord, Scoresby Sund, Fønffjord), but also in open waters along the eastern border of the drift ice.

#### **Kittiwake** *Rissa tridactyla*

This species was surprisingly rare on our crossing of the Norwegian Sea, where only a few individuals were seen. Kittiwakes occurred regularly, but few in numbers, in open water along the ice edge and in open drift ice.

#### **Ivory Gull** *Pagophila eburnea*

In both years the southernmost observations were at about 72°N. The species was observed in open and very open drift ice (i.e., along the eastern border of the drift ice), not in the fjords or in entirely open waters far from the ice belt. During 30 September – 2 October in 2005, Ivory Gulls occurred regularly but only as scattered individuals around 74°N (Fig. 1). In 2007 a few individuals were seen daily northwards from 72°25'N (7 October) until 10 October, when the species started to oc-

cur in large numbers at 76°N 5°W (Fig. 2). Sailing northeastwards from here we continually met small flocks of Ivory Gulls, with flock sizes of up to 37 individuals. This continued as we steamed in the open drift ice to at least 76°46'N 3°20'W, when evening darkness put an end to observations. During a total of only 90 min of watching we noted 308 birds that day. Next day, at 77°27'N 2°25'W, we observed two individuals, but after that, when we steamed northeast-east into open sea, we saw none.

#### **Razorbill** *Alca torda*

One of us (JM) saw several individuals near Jan Mayen in 2007.

#### **Brünnich's Guillemot** *Uria lomvia*

In 2005 the species was only noted in open sea northeast of Jan Mayen, whereas in 2007 it occurred more commonly. None were seen in the fjords, but regular occurrences were noted in very open drift ice and open sea along the eastern border of the drift ice from 70°N to 77°30'N. Unlike Little Auks and Black Guillemots, no marked concentrations were noted; Brünnich's Guillemots usually occurred scattered, as single birds or flocks of 2-3 birds. Most frequent occurrences were found between latitudes 74°N and 76°N where, during 3 hours of steaming, a total of 40 individuals were counted. Small numbers were still present in the Isfjorden region of Spitsbergen on 13 October.

#### **Little Auk** *Alle alle*

The species was seen in open waters immediately east of the drift ice and in open drift ice. None were seen in the fjords. In 2005 the species was seen particularly frequently in the drift ice from east of Wollaston Forland to Kong Oscars Fjord (from about 74°30'N to 72°N). In 2007, scattered individuals were observed along and within the drift ice from about 70°N to 73°50'N. On 8-11 October, from 74°N 11°W to 77°30'N 0°01'W, large numbers of Little Auks occurred in open sea along the edge of the drift ice (Fig. 2), with 1080 individuals noted during three hours when steaming on 8 October. Two pelagic trawl hauls down to a depth of 150 m in these waters gave good catches of the amphipods (*Parathemisto* sp.) and euphausiaceans (*Meganycitaphanes* sp.).

#### **Black Guillemot** *Cephus grylle*

In 2005, scattered individuals were regularly encountered in open drift ice off Wollaston Forland.

South hereof the species seemed less common; one individual was spotted at the mouth of Kong Oscars Fjord and a single bird was observed in Scoresby Sund. In 2007 none were seen south of 72°25'N, but northwards from there the species occurred regularly in open drift ice and in open water near the ice edge. On the 9 October we encountered unusually large numbers in open drift ice at about 73°40'N 13°30'W (Fig. 2), with flocks of up to about 150 individuals flying past. As we moved farther northeastwards along the ice the species was seen at least north to 77°30'N 0°01'W. In the Spitsbergen region we observed this species still present in Adventfjorden on 13 October.

#### **Puffin** *Fratercula arctica*

One individual was observed at approximately 73°N 12°W on 8 October 2007.

#### **Wheatear** *Oenanthe oenanthe*

On 3 October 2007 a juvenile bird landed on the ship at Hall Bredning in Scoresby Sund, and probably the same individual was seen onboard the next day near Danmark Ø. The landscape was snow-covered down to the shorelines, and the air temperature varied from -8°C to -10°C.

#### **Raven** *Corvus corax*

In 2005, 4-5 Ravens were seen in the Scoresby-sund settlement and two were feeding on the remains of a dead seal in the drift ice off the mouth of Scoresby Sund. Again in 2007, a Raven was seen in the ice at the mouth of Scoresby Sund, about 30 nautical miles from the nearest shore.

#### **Snow Bunting** *Plectrophenax nivalis*

On 28 September 2005, Snow Buntings were frequently seen flying eastwards near the vessel when we steamed westward from 69°20'N 6°50'E to 70°00'N 4°00'E, and some individuals landed on the ship. On 2 October 2007 a Snow Bunting was observed flying eastwards over the sea between Jan Mayen and Scoresby Sund.

## **Discussion**

The main occurrences of sea birds were found in the zone from open drift ice outwards to the adjacent open sea. While alcids and larids occurred scattered in the drift ice and in open waters immediately east of the drift ice along the stretches covered by the cruises, the observations also revealed the presence of marked seabird concentrations between latitudes 73°N and 76°N in early October, involving Little Auks, Black Guillemots,





The pack ice off NE Greenland is an important autumn staging area of Ivory Gulls. Photo: Peter Lyngs, Svalbard, august 2006.

Ivory Gulls, and to some extent also Brünnich's Guillemots. Ringing recoveries have shown that large numbers of Little Auks and Brünnich's Guillemots from Svalbard spend the winter at SW Greenland, where they arrive during November (Bakken et al. 2003, Lyngs 2003). The large flocks of Black Guillemots seen in 2007 likewise suggest a migrational passage of birds from Svalbard, although few of this species have been ringed in Svalbard (or NE Greenland), and none have been recovered (Bakken et al. l.c., Lyngs l.c.); only low numbers of this species breed in Greenland north of Scoresby Sund (Boertmann 1994).

Concentrations of Ivory Gulls in the region have been reported previously in September (Hjort 1976). The numbers we observed were remarkable and indicated the presence of many hundreds of birds within a fairly limited area. The birds observed by Hjort (1976) were migrating toward southwest, and Hjort proposed the existence of a migrational pattern of this species similar to that of the Little Auk and Brünnich's Guillemot. Ongoing satellite trackings (<http://ivorygull.npolar.no/ivorygull/map.html>) of Ivory Gulls from breeding ground at Svalbard and Franz Josef Land have since confirmed this supposition of Hjort. The NE Greenland drift ice may

be of particular importance during migration for this declining species.

The low numbers of Kittiwakes observed suggest that this species has a more scattered pelagic distribution than the other species mentioned during its migration from Svalbard towards the Davis Strait, or alternatively, that the majority of the birds had already passed these northern areas by the time we were there.

The occurrence of Gyrfalcons in the East Greenland drift ice seems not to have been reported before. Gyrfalcons from NE Greenland are supposed to winter in southern parts of Greenland and in Iceland (Salomonsen 1967, Boertmann 1994), and their presence in the drift ice where there are numerous alcid and larids to prey upon, is not surprising – Gyrfalcons are known to utilise a wide range of prey, including waterbirds, especially in the non-breeding season (Potapov & Sale 2005). In fact, the drift ice, offering abundant and predictable food resources, could be of vital importance for East Greenland's Gyrfalcons during migration, and possibly even in winter. Gyrfalcons have been observed in drift ice elsewhere, notably in the Bering Sea area, where some seem to stay throughout the winter and hunt seabirds in polynyas (Potapov & Sale 2005).

Very few birds of any species occurred in the fjords by the time we visited them, with Glaucous Gulls as the only exception – this species was distributed over a wider range of habitats than any other and was found in fjords as well as in open water and drift ice of all densities. The much more numerous Northern Fulmar did not penetrate far into the drift ice and was practically not seen in the fjords, even where these were free from drift ice.

#### Acknowledgements

The study is based on observations made during the TUNU-MAFIG Expeditions to NE Greenland (IPY-University of Tromsø). We would like to thank David Boertmann and Hans Meltøfte for valuable comments on the manuscript.

#### Resumé

##### Efterårsobservationer af fugle i havisen ud for Nordøstgrønland

Under marinbiologiske togter med skibet F/F *Jan Mayen* til Nordøstgrønland i september-oktober 2005 og første del af oktober 2007 blev der gjort fugleobservationer, når tiden tillod det. Observationerne blev gjort fra broen og fulgte ikke nogen kvantitativ metode, men antallet af de enkelte arter blev noteret. En af forfatterne, JM, tilbragte megen tid med at observere sæler i forbindelse med et af togtets projekter, og da han samtidig noterede alle observationer af fugle, mener vi at have fået et nogenlunde realistisk billede af fuglenes forekomst langs sejlrueten.

Koncentrationen af fugle var højest lige uden for eler inde i den åbne drivis. I fjordene var fuglelivet fattigt. Kun Gråmåge fandtes regelmæssigt i både åbent hav, åben og tæt drivis samt i fjordene, som bortset fra enkelte isbjerger var enten helt isfri eller dækket af tætpakket is. Mallebukken var en talrig følgesvend, men fulgte kun skibet til isranden.

Alkefugle (Søkonge, Polarlomvie og Tejst) forekom både i åben drivis og i åbent hav lige uden for drivisen. I 2007 observeredes store koncentrationer af især Søkonge og Tejst på 74-77°N. Der må have været tusindvis af Søkonger i farvandene, og der blev set flokke på op til 150 Tejster. Der er antageligt tale om trækfugle fra Svalbard.

Begge år blev Ismåge set nord for 72°N. I 2007, da *Jan Mayen* sejlede nordover fra 74°N, var arten særlig talrig. Der blev optalt 308 individer i løbet af halvanden time, mens skibet sejlede med 11-12 knob. Man har tid-

ligere registreret koncentrationer af trækkende Ismåger i dette område (Hjort 1976), og satellitssporing af radiomærkede individer fra Svalbard og Franz Josef Land viser træk til overvintringsområder ved Sydgrønland og Nordamerika (<http://ivorygull.npolar.no/ivorygull/map.html>). Det østgrønlandske drivisbælte er formodentlig et vigtigt område for denne art i dele af året.

Riden forekom regelmæssigt langs drivisen og ude på åbent hav. Antallet var dog meget lavt.

Der blev gjort forholdsvis mange observationer af Jagtfalk i drivisen mange kilometer fra land. Alle eksemplarer var af hvid fase. De rige forekomster langs drivisen af trækkende havfugle, især alkefugle, gør muligvis området til et vigtigt opholdsted for Jagtfalke undervejs fra Nordøstgrønland til de formodede overvintringsområder i Sydgrønland og Island. Det er også muligt, at arten overvintrer i drivisen, sådan som det er observeret i Beringshavet.

Af mere sporadisk forekommende arter kan nævnes Mellemkjove, som blev set i drivisen på 72-73°N, Ravn, hvoraf enkelte holdt til i drivisen i munden af Scoresby Sund, og en Stenpikker, der landede på skibet nær Hall Bredning i 2007. Hvidvinget Måge blev kun set en enkelt gang, i Føn fjord i 2005. Af andefugle sås kun nogle få Havlitter og Ederfugle.

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Accepted 7 October 2008

I. Byrkjedal ([ingvar.byrkjedal@zmb.uib.no](mailto:ingvar.byrkjedal@zmb.uib.no))  
 Bergen Museum, University of Bergen, Muséplads 3,  
 N-5007 Bergen, Norway

J. Madsen  
 Eidos, Langemarksvej 32, DK-2860 Søborg, Denmark