

# Bird observations in Siriuspasset, North Greenland, 2016 and 2017

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(Med et dansk resumé: Fugleobservationer i Siriuspasset, Nordgrønland, 2016 og '17)

**Abstract** During the summer seasons of 2016 and 2017, bird observations were recorded near Siriuspasset in Nansen Land, North Greenland. Breeding birds were surveyed in a 9 km<sup>2</sup> area. Wader populations were dense compared to other sites in North and Northeast Greenland, and Red Phalarope *Phalaropus fulicarius* and Lapland Longspur *Calcarius lapponicus* were found to breed far north of their previously known distributions in Greenland.

## Introduction

During the summers of 2016 and 2017, a Danish-Korean expedition performed biological and paleontological studies near Siriuspasset in Nansen Land, North Greenland. Compared to the North Greenland region as a whole, Siriuspasset and its surroundings have very lush vegetation, comparable to areas 900 km to the south in Northeast Greenland (cf. Fig. 20 in Aastrup *et al.* 2005). Siriuspasset is a well-known habitat for both muskoxen *Ovibos moschatus* and wolves *Canis lupus*, and high numbers of moulting Pink-footed Geese *Anser brachyrhynchus* were recorded there in 2009 during an aerial survey (Boertmann & Forchhammer 1992, Marquard-Petersen 2011, Boertmann *et al.* 2015). Bennike & Kelly (1986) visited Nansen Land and land areas just east of Siriuspasset in 1984 and reported opportunistic observations of birds, but the current study is the first to report on more focused bird studies from this biological oasis in the extreme north of Greenland.

## Description of the study area and methods

The study site was located on the east shore of J. P. Koch Fjord at the southwestern end of Siriuspasset, at altitudes of 0-300 m a.s.l., and here a well-vegetated area of 9 km<sup>2</sup> was censused for breeding birds (Figs 1 & 2). This was delimited by the coast, a river and features in the terrain.

From 25 July to 13 August, 2016 and 30 June to 21 July, 2017 breeding birds were monitored daily in the census area. In both years, the survey periods were actually too late to census breeding waders, as failed breeders may have left by then (cf. Meltofte 2001). Moreover, in 2016 the census was so late that most nests had hatched, which was why 2016 breeding number estimates were based on observations of pairs with chicks (i.e. alarm-calling birds). In 2017, the reported breeding numbers were based on the number of nests found. This bias means that the presented numbers and densities of breeding pairs represent minimum estimates.

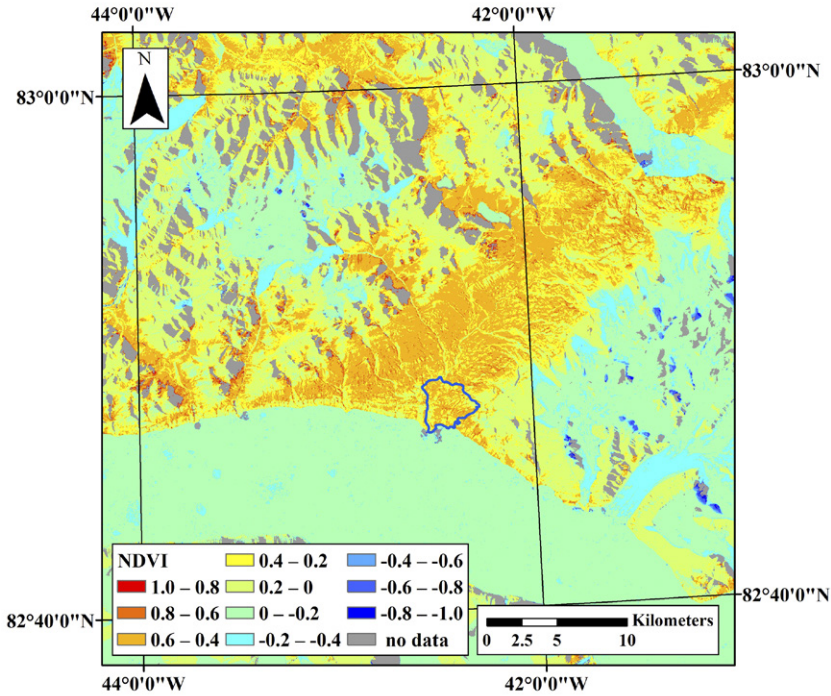


Fig. 1. Satellite image from 17 July 2016 showing the vegetation cover in the Siriuspasset area. Landsat-8 Operational Land Imager/ Thermal Infrared Sensor (OLI/TIRS) and based on the Normalized Difference Vegetation Index (NDVI). NDVI values range mostly from 0.4 to 0.8 indicating a relatively high vegetation cover (Carlson & Ripley 1997). The census area is shown with a blue border along the coastal line, streams and small ridges that are recognizable in the terrain.

*Vegetationen i Siriuspasset kortlagt på satellitbillede optaget den 17. juli 2016 og angivet ved hjælp af NDVI-indekset, som er et mål for frodighed. Jo varmere rød-gul farve jo frodigere. Optællingsområdet er vist med en blå ramme.*



Fig. 2. The study area in Siriuspasset seen towards west with the ice-covered J. P. Koch Fjord in the background, 27 July 2016. Photo: Won Young Lee.

*Arbejdsområdet i Siriuspasset set mod vest med den isdækkede J. P. Koch Fjord i baggrunden, 27. juli 2016.*

Snow cover was examined using satellite images provided by the National Aeronautics and Space Administration, USA (Fig. 3). According to the daily satellite images of summer 2016, the Siriuspasset area was largely free of snow from 18 June. In 2017, the snow was gone by 23 June, but the exact timing could not be established due to cloud cover in the preceding period.

For each nest, the numbers of eggs and hatching dates were also recorded, and in 2017 nest positions were recorded with a GPS. In both 2016 and 2017, northern collared lemmings *Dicrostonyx groenlandicus* were observed in the study area. One Arctic fox *Vulpes lagopus* was observed in both 2016 and 2017, and six wolves were observed in 2017 in the census area.

### Annotated records

The Ruddy Turnstone *Arenaria interpres* was one of the most abundant species observed at the study site. In total, 20 nests were recorded in 2017. The shortest distance between nests in 2017 was 80 m, and the first hatching was observed on 9 July 2017. The recorded breeding density (pairs per km<sup>2</sup>) was about two times higher than that recorded at Jørgen Brønlund Fjord in Peary Land in 1973 (Meltofte 1976; Table 1), and was comparable to the density recorded on the western side of Germania Land in central Northeast Greenland (Boertmann *et al.* 1991; Table 1). Elsewhere in North Greenland, the ruddy turnstone has been recorded as a common breeding bird at the head of Danmark Fjord and in low numbers in central North Greenland, but has been absent from Washington Land (Håkansson *et al.* 1981, Bennike & Kelly 1986, Berg & Kapel 1998, Bennike & Feilberg 2004).

Eighteen pairs of Sanderlings *Calidris alba* with chicks were observed in 2016; however, this number possibly shows positive bias because of the risk for double-registration (the birds were not individually separable). Conversely, as observations were made late in the breeding season, failed breeders would have left. In 2017, a total of 13 nests were confirmed. The first hatching date was on 13 July 2017, and at least one nest was predated by an Arctic fox. The breeding density recorded in 2017 was seven times higher than that at Jørgen Brønlund Fjord in 1973 (Meltofte 1976; Table 1). Elsewhere in North Greenland, the Sanderling is generally the most common wader, although it apparently does not breed in Washington Land (Håkansson *et al.* 1981, Bennike & Kelly 1986, Berg & Kapel 1998, Bennike & Feilberg 2004).

Three pairs of Red Knots *Calidris canutus* were observed in 2016, and seven nests with eggs were found in 2017. The first hatching was observed on 10 July 2017. Small flocks of 15–20 adult birds were observed with Ruddy Turnstones and Common Ringed Plovers



Fig. 3. Satellite image from 17 June 2016 showing Siriuspasset (in centre of image) almost free of snow, while the mountains and fjords are still covered in snow and ice. Extract from Worldview website <https://worldview.earthdata.nasa.gov>.

Satellitbillede fra den 17. juni 2016 med Siriuspasset i midten af billedet, hvor passet er næsten snefrit, mens fjeldene stadig er dækkede af sne og fjordene af is.

*Charadrius hiaticula*, probably representing post-breeding birds. The birds foraged together near ponds on 18 July 2017. Elsewhere in North Greenland, the Red Knot is less numerous than other wader species, and breeds at higher altitudes (Meltofte 1976, Håkansson *et al.* 1981, Bennike & Kelly 1986, Berg & Kapel 1998, Bennike & Feilberg 2004).

Three pairs of Common Ringed Plovers with chicks were observed in 2016, whereas in 2017 only one pair was found near the shore of the fjord. On 16 July 2017, three 1 or 2 day old chicks were seen. This was fewer than found at other studies in North and Northeast Greenland (Table 1). Elsewhere in North Greenland, the Common Ringed Plover is commonly reported from central and southern areas (Meltofte 1976, Håkansson *et al.* 1981, Bennike & Kelly 1986, Berg & Kapel 1998, Bennike & Feilberg 2004). A Red Phalarope *Phalaropus fulicarius* with four chicks was found at a lake c. 5 km north of the census area on 19 July 2017. To date, this is the northernmost breeding record of the species in Greenland. Previously, it was recorded as a summer visitor in North Greenland, and as breeding as far north as Germania Land in Northeast Greenland (Meltofte 1979, Boertmann 1994).

### Other species

In 2017, 12 pairs of Snow Buntings *Plectrophenax nivalis* were confirmed as breeding in rocky areas. Their density was 1.3 pairs per km<sup>2</sup>, which is slightly lower than that reported from most other North and Northeast Greenland studies (Table 1). The first hatching date was

Tab. 1. Comparison between this study and three previous studies on densities of breeding birds (pairs/nests per km<sup>2</sup>) in North Greenland and central Northeast Greenland. This study in 2017. Southern Peary Land 1973 (Jørgen Brønlund Fjord; Meltofte 1976). 14 localities in central Northeast Greenland 1989 (Boertmann *et al.* 1991). Danmarkshavn 1975 (Meltofte 1977, 1979). Zackenberg in south central Northeast Greenland 1996-2008 (Meltofte 2006, Jensen & Rasch 2011).

*Sammenligning mellem denne undersøgelses optællingsresultater (udtrykt som par/reder pr. km<sup>2</sup>) med tilsvarende resultater fra andre steder i Nord- og Nordøstgrønland.*

Species Art	This study <i>Dette studie</i>	Southern Peary Land 1973 <i>Sydlige Peary Land 1973</i>	Danmarkshavn 1975	Central NE Greenland 1989 <i>Centrale Nordøst- grønland 1989</i>	Zackenberg 1996-2010
Common Ringed Plover <i>Charadrius hiaticula</i>	0.1	0.6	4.7-4.9	0-8.2	1.2-4.8
Ruddy Turnstone <i>Arenaria interpres</i>	2.2	0.9	3.8	0.3-4.8	0.04-5.3
Red Knot <i>Calidris canutus</i>	0.8	0	0	0-1.8	0.3-2.7
Sanderling <i>Calidris alba</i>	1.4	0.4	2.9-3.3	0.5-3.2	1.1-5.0
Long-tailed Skua <i>Stercorarius longicaudus</i>	0.8	0	0.4	0.1-1.4	1.0-1.6
Lapland Longspur <i>Calcarius lapponicus</i>	0.6	0	0	0	0
Snow Bunting <i>Plectrophenax nivalis</i>	1.3	0.3	5.6-5.8	5.1-18.8	1.5-5.1

observed on 2 July 2017 and the first fledging date was 16 July 2017. Five singing Lapland Longspur *Calcarius lapponicus* males were recorded from 3 July onwards in 2017, whereas none were recorded in 2016. Later in the season, males and females were frequently observed carrying insects to feed chicks, but the actual nests were not found. The previous northernmost breeding records of this species in Greenland are from the Thule area in western North Greenland at 77° N (Boertmann 1994) and at Zackenberg in East Greenland at 74° 30' N (Jensen & Rasch 2011).

On 19 July 2017, a female King Eider *Somateria spectabilis* with four ducklings was observed on the same lake as the Red Phalaropes. Breeding of King Eiders has previously been reported from North Greenland (Meltofte 1976, in Jørgen Brønlund Fjord, Bennike & Kelly 1986, in Hall Land). Eleven pairs of Long-tailed Skuas *Stercorarius longicaudus* were territorial in 2016 and seven pairs in 2017, but their breeding status was not confirmed. A fledged juvenile was first seen on 2 August 2016, remaining in the territory until 11 August. The density in 2017 of 0.8 pairs per km<sup>2</sup> was slightly lower than that recorded from certain areas in south-central Northeast Greenland (Elander & Blomqvist 1986, Meltofte & Høye 2007).

Moulting Pink-footed Geese in small flocks of 20-30 birds were observed near streams and the seashore in mid-July 2017. In early August 2016, flocks of hundreds

of birds foraged near small ponds on land. These birds had finished their moult and were able to fly. Only one Snowy Owl *Bubo scandiaccus* was seen during the two survey years: a female on 2 August 2016. Likewise, only one Gyrfalcon *Falco rusticolus* was seen near the J. P. Koch Fjord shore on 6 August 2016.

## Discussion

Tab. 1 summarizes the densities of breeding birds found in this study and compares them with previous studies in North Greenland and central Northeast Greenland. The most numerous breeding waders in the census area were Ruddy Turnstone, Sanderling, Red Knot and Common Ringed Plover. Other breeding species were Snow Bunting, Lapland Longspur and Long-tailed Skua. In addition, King Eider and Red Phalarope were observed as breeding near the census area. Predators on nests and chicks in the area included the Arctic fox, wolf and Long-tailed Skua.

The breeding populations of most recorded waders were denser than those observed in a previous study in Peary Land in North Greenland (Meltofte 1976). Particularly, Ruddy Turnstone and Sanderling populations showed higher density, while Common Ringed Plovers were less numerous. These relatively high densities of breeding waders are probably related to the comparatively rich vegetation rather than to snow cover when



Female Lapland Longspur with food for the chicks in the census area in July 2017, the so far northernmost breeding record of this species in Greenland. Photo: Won Young Lee. *Laplandsværting, hun med føde til ungerne i optællingsområdet i juli 2017, det hidtil nordligste ynglefund af arten i Grønland.*

the birds arrive, as snow melts relatively late in this area (cf. Meltofte 1985, Meltofte *et al.* 2008). Compared to the census from Jørgen Brønlund Fjord in 1973 (Meltofte 1976), in 2017 Sanderling and Ruddy Turnstone completed egg-laying up to 10 days later (based on incubation periods of 23 to 27 days; Cramp & Simmons 1982), while ringed plover completed laying at approximately the same time (i.e. about 21 June). This was most likely related to the relatively late snowmelt in Siriuspasset (cf. Meltofte 1985).

The most remarkable observations were the breed-

ing records of Red Phalarope and Lapland Longspur, both far north of their previously known breeding ranges in Greenland. These studies show that Siriuspasset and its surroundings are not just a High Arctic oasis for vegetation and muskoxen, but also for breeding birds.

### Resumé

**Fugleobservationer i Siriuspasset, Nordgrønland, 2016 og '17**  
I somrene 2016 og '17 arbejdede et dansk-koreansk forskerhold i Siriuspasset i Nansen Land i det nordligste Grønland. Det primære arbejde var palæontologi, men der blev også studeret



A female King Eider with four ducklings on 19 July 2017. Photo: Won Young Lee.

*Kongeederfugl med fire ællinger i Siriuspasset den 19. juli 2017.*

fugle. I et optællingsområde på 9 km<sup>2</sup> blev der dagligt registreret ynglefugle (Fig. 1 & 2). Selvom tidspunktet for optællingerne generelt var for sent til at få alle de fugle, der oprindeligt etablerede territorier, med (idet par der havde opgivet at yngle har forladt området), er særligt resultaterne fra 2017 bemærkelsesværdige, fordi tæthederne af Lille Kjøve *Stercorarius longicaudus* og flere arter af vadefugle (Sandløber *Calidris alba* og Stenvender *Arenaria interpres*) var relativt høje sammenlignet med andre steder i højarktisk Grønland (Tab. 1). Tidspunktet for æglægning for Stenvender og Sandløber var ca. 10 dage senere end tidligere rapporteret fra det nærliggende Jørgen Brønlund Fjord-område, hvilket kan hænge sammen med, at sneen ligger længere i Siriuspasset (Fig. 3). I 2017 ynglede desuden Lapværling *Calcarius lapponicus* i området, og en Thorshane *Phalaropus fulicarius* med unger blev fundet nær optællingsområdet. Begge fund er langt nordligere end tidligere ynglefund i Grønland. Siriuspasset adskiller sig fra det øvrige yderste Nordgrønland ved at være relativt frodigt, det er et velkendt område for moskusokser *Ovibos moschatus* og ulve *Canis lupus*, mens forekomsten af ynglefugle indtil dette arbejde har været næsten ukendt.

## Acknowledgements

I am very grateful to David Boertmann for valuable comments and corrections to improve the manuscript. I specially thank Dr. Chang-Uk Hyun for the satellite image analysis and NDVI calculation. I thank Dr. Jakob Vinther for sharing his previous experiences during an expedition in 2009. I thank one anonymous reviewer and the editor for providing useful corrections and improvements. This study was funded from Korea Polar Research Institute (A pilot study on behavioral ecology of marine birds around J. P. Koch Fjord in North Greenland, PE16330; Early animal evolution and the primitive Earth system of north Greenland, PE17160). All research was conducted under permission from the Government of Greenland (License number: G16-074 in 2016 and C-17-4 in 2017).

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