ARCTIC VOL. 41, NO. 1 (MARCH 1988) P. 53-58

Birds of the Thule District, Northwest Greenland RICHARD VAUGHAN¹

(Received 5 December 1986; accepted in revised form 10 July 1987)

ABSTRACT. The avifauna of the Thule district was studied during three breeding season visits in 1983-85. The results are presented here, supplemented by data from four late summer expeditions made in 1983-86 by M. Lea, A. Erskine and W. Higgs. Counting the two redpolls as one, 47 species have been recorded from the Thule district, 17 of them seabirds, 10 shorebirds and 7 waterfowl. There are at least 21 species with established breeding populations. Status changes are demonstrated for three species, and three Nearctic species are recorded here for the Thule district for the first time. Key words: birds, ornithology, Greenland, Thule district

RÉSUMÉ. On a étudié l'avifaune du district de Thulé au cours de trois visites faites pendant la saison de reproduction entre 1983 et 1985. Les résultats de cette étude sont présentés ici, complétés par des données recueillies lors de quatre expéditions entreprises à la fin de chaque été entre 1983 et 1986, par M. Lea, A. Erskine et W. Higgs. En comptant les deux espèces de sizerins comme une seule, on a relevé 47 espèces dans le district de Thulé, 17 d'entre elles étant des oiseaux de mer, 10 des oiseaux de rivage et 7 des oiseaux aquatiques. Vingt-et-une espèces au moins ont une population reproductrice établie. On a prouvé un changement de statut pour trois espèces, et on a relevé trois espèces néarctiques pour la première fois dans le district de Thulé.

Mots clés: oiseaux, ornithologie, Groenland, district de Thulé

Traduit pour le journal par Nésida Loyer.

INTRODUCTION

During most of the 19th century the Thule district was visited regularly by British whale ships and sporadically by American exploring expeditions, but knowledge of its avifauna was fragmentary until the publication of lists of birds seen or collected there by the Peary expeditions of 1891-96 (Stone, 1895; Chapman, 1899; Gibson, 1922) and by the Crocker Land Expedition of 1914-17 (MacMillan, 1918). These have since been supplemented by the annotated lists of Peter Freuchen (1921), resident from 1910 to 1918, and Danish biologist Henning Thing (1976), who spent the summer of 1975 in the district. Apart from his observations, which were made during a study of sea mammals, the only substantial ornithological field work in the area since the Second World War has been surveys of breeding snow geese by Røen (1960) and Heyland and Boyd (1970) and studies of dovekies by Ferdinand (1968) and Roby et al. (1981).

This paper aims to provide a "baseline" reference for future work, to point to probable changes in status in some species, and to identify gaps in our knowledge of the birds of this seldom-visited area. The Thule district avifauna is of special interest from a zoogeographic perspective, since many of its breeding birds are at the northern, eastern or western borders of their distribution, and they include both Nearctic and Palearctic species. Common and scientific bird names follow the A.O.U. Checklist.

STUDY AREA

Lying between 75°3′ and 79° north latitude and between Melville Bay in the south and the Humboldt Glacier in the north, the study area consists of rocky, ice-capped peninsulas and islands extending westward from the Inland Ice and, between them, fjords that are ice free only between July and September (Fig. 1). These penetrate eastward nearly to the margin of the Inland Ice, from which numerous glaciers descend, often to the sea. The strip of ice-free land between the coast and the Inland Ice is seldom more then 20 km broad, except in Inglefield Land,

which is the only large ice-free area but has yielded few ornithological observations. The date of snow melt on this ice-free land can vary greatly from year to year, and to this are probably due the striking annual differences in bird numbers and distribution.

A recurring polynya called the North Water is located offshore of the study area and is largely responsible for the abundance and diversity of marine birds. These and the marine mammals have supported, and still partly support, a sparse population of Polar Eskimos or Inuhuit. Once nomadic, they are now concentrated in six settlements, of which the largest is Qaanaaq. Because the dog sled is their only means of winter transport, they are still in part dependent on subsistence hunting. They have recently been credited with an annual take of 250 000 dovekies (Born, 1987).

Although climatic change in the Thule district has not yet been fully documented, a warm period between 500 and 1000 A.D. is thought to have been followed by a relatively cool period climaxing in about 1500-1850 A.D. Between 1870 and about 1935 the climate probably became warmer, but it may now be cooling again (Dansgård *et al.*, 1970; Malaurie, 1976).

The Thule district has few areas suitable for birds. Inland cliffs harbour ravens and gyrfalcons; upland plateaus support breeding knots and some other shorebirds. The few low-lying marshy areas, with a development of peat and lakes, often on the shores of fjords, may have loons, ducks, snow geese, jaegers and Lapland longspurs. Stony deltas formed by meltwater streams from glaciers support breeding shorebirds, and islands offshore and in the fjords, in some cases with cliffs, are breeding places of seabirds and common eiders. Dovekies occur on scree slopes wherever the North Water comes near the land.

METHODS

The data presented here were obtained by walking over suitable ground and recording all birds seen during three successive summer visits to the Thule district. The dates of these visits and the localities visited are set out in Table 1.

¹Present address: The Arctic Centre, University of Groningen, Grote Kruisstraat 2-1, 9712 TS, Groningen, The Netherlands ©The Arctic Institute of North America

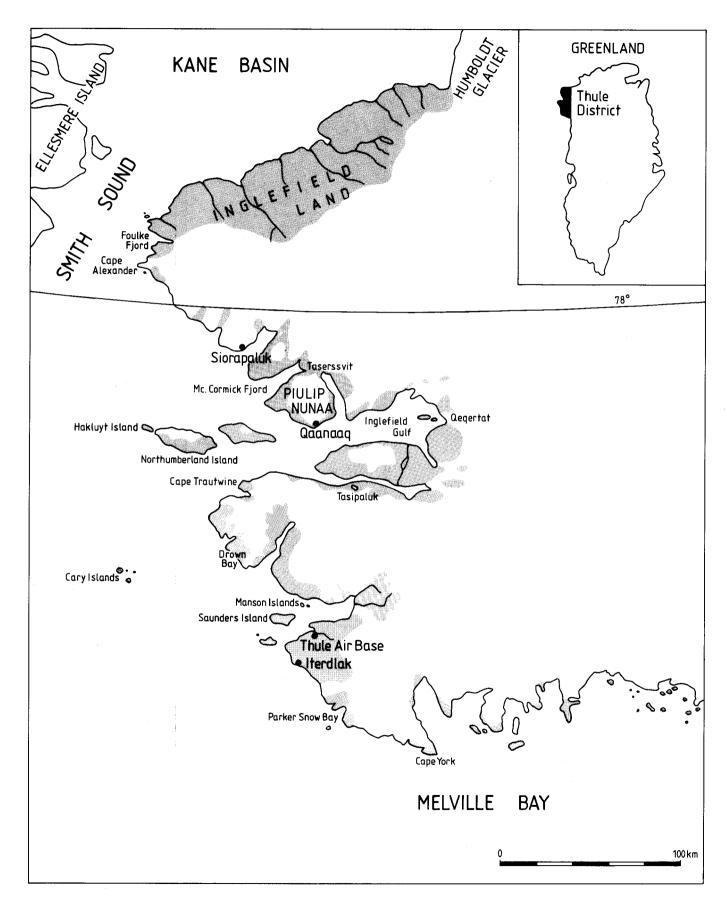


TABLE 1. Observers, dates and areas visited

	1983	
Richard and		Thule Air Base and surroundings
John Vaughan	23 June-7 July	within 20 km
Michael Lea	July-August 1984	Qaanaaq and Siorapaluk
R. and J.V.	28 June-8 July	Coastal strip of Piulip Nunaa from Qaanaaq westward and north to the lake called Taserssuit
R. and J.V.	8-9, 13-15 July	Thule Air Base and surroundings within 15 km
R. and J.V.	10-12 July	Drown Bay area
R. and J.V.	16-17 July	Iterdlak and surroundings
	1985	
Richard and		
Margaret Vaughan	13-16 June	Tasipaluk and surroundings
R. and M.V.	16 June	Qaanaaq
R. and M.V.	17 June	Parker Snow Bay
R. and M.V.	18, 20-26 June	Thule Air Base and surroundings within 15 km
R. and M.V.	19 June	Hakluyt and Saunders Islands
R. and M.V.	26 June	Cliff top near Cape Trautwine
Michael Lea	25 July-8 August	Qaanaaq, Taserssuit, Siorapaluk
Angus Erskine	26 July-20 August	Qaanaaq, Taserssuit, Qeqertat
	1986	
Will Higgs	25 July-20 August	Qaanaaq and Taserssuit

RESULTS

Red-throated loon (*Gavia stellata*): Up to ten breeding pairs were found in each of four localities in 1983-86.

Northern fulmar (Fulmarus glacialis): Landing by helicopter at three points near the western end of Saunders Island on 19 June 1985, we saw fulmars on ledges or in flight along some 8 km of cliff and thought that several thousand pairs were breeding here. About one in three of the birds seen were judged to be of the dark or blue phase.

Sandhill crane (*Grus canadensis*): A sub-adult was seen near Taserssuit on 29 July and 1 August 1985 by M. Lea and A. Erskine. Identification was subsequently confirmed by means of a recording of the bird's call. This is the first published record for Greenland.

Snow goose (Chen caerulescens): In 1983-86 snow geese were found in three localities. In the Drown Bay area on 11 and 12 July 1984 we saw a flock of about 250 moulting, apparently flightless, birds and 15 others in flight. To judge from the abundant droppings and feathers, the geese had been here for some weeks, but we found no evidence of breeding. Along the south coast of Piulip Nunaa west of Qaanaaq we found a pair on 7 July 1984 with a nest containing four eggs and a single bird elsewhere. W. Higgs found 9 adult birds with about 15 goslings here on 3 August 1986. In the third locality, Taserssuit, we found three nests containing clutches of five, three and four eggs on 1-3 July 1984 and saw a total of about 100 birds in groups of 4 to 50 individuals, apparently not breeding. From A. Erskine's data it seems that on 27 July-1 August 1985 there were 250-300 non-breeders present here and up to 20 breeding pairs that had raised at least 30 goslings. On 31 July 1986 W. Higgs saw a flock of 60 + adults and young here, but his time in the area was extremely limited. The four nests found in 1984 were all within 2 km of the fjord shore on the grassy verge of small freshwater pools. All these geese were white and presumably were greater snow geese, C.c atlantica (see Owen, 1980).

Canada goose (Branta canadensis): The first observations of

this species of the Thule district were 4 seen by us on 1 July 1984 in flight at Taserssuit and 3-5 among moulting snow geese near Drown Bay on 11 July 1984. M. Lea and A. Erskine saw 1 at Taserssuit on 29 and 30 July with about 40 snow geese and W. Higgs saw 2 there, also with snow geese, on 31 July 1986.

Common eider (Somateria mollissima): None of the well-known common eider breeding colonies on offshore islands was visited in 1983-86, but in the night of 12-13 June 1985 the helicopter pilot Lars Wellander was forced by bad weather to land on the larger of the two Manson Islands. He told me that he estimated 100-150 pairs of common eiders were nesting there. The common eider was found in 1983-86 inland to the heads of the fjords, and ducks with ducklings were seen on freshwater pools at Taserssuit and Qeqertat in July-August (M. Lea and A. Erskine).

King eider (Somateria spectabilis): Near Taserssuit on 1-2 July 1984 we found four nests with eggs, three of them predated apparently by long-tailed jaegers, and on 11 July 1984 we saw a pair not far from Thule Air Base, but they were not seen on subsequent days.

Oldsquaw (Clangula hyemalia): A common and widespread breeding species in 1983-86, we found a nest in 1983 within 300 m of Thule Air Base's oil tank "farm," and a second pair was often seen on a pool by the main runway.

Common ringed plover (*Charadrius hiaticula*): In 1983-85 we found that this bird was rather local in distribution and that breeding numbers varied from year to year. Thus in 1983 we thought 30-40 pairs were breeding within 10 km of Thule Air Base, both along the shore and up to the margin of the Inland Ice 300 m above sea level; but in 1985 we could find no more than 10-15 breeding pairs in the same area. Although birds were present along the shores of Piulip Nunaa in 1984 and 1985, they were not found on suitable terrain at Taserssuit, nor did we see any near Drown Bay on 10-12 July 1984. A clutch of four eggs found by us on 26 June 1985 just outside the Thule Air Base perimeter were chipped and peeping, so the first egg must have been laid, at the latest, very early in June.

Black-bellied plover (*Pluvialis squatarola*): Our records of black-bellied plovers in the Thule district are the first to be published: one on 24 June 1983 near Thule Air Base, and three on 10 July 1984 near Drown Bay. These three remained in a group, flying together here and there and feeding along the margins of pools.

Lesser golden plover (*Pluvialis dominica*): In July-August 1983 M. and K. Lea saw two birds probably of this species near Qaanaaq. On 3 July 1984 we watched one in full song flight over the valley by Taserssuit, and on 27 and 29 July 1985 M. Lea saw one here and tape-recorded its insistent alarm call. W. Higgs saw one in the same place on 31 July 1986.

Red-necked phalarope (*Phalaropus lobatus*): We saw three on a small pool near Thule Air Base on 27 June 1983. None was here in 1984, but on 18 June 1985 (but not on subsequent dates) a single bird was present at the same pool. Near Drown Bay on 11 July 1984 we found two groups of up to six birds each about a kilometre apart.

Red phalarope (*Phalaropus fulicarius*): We saw a probable female in breeding plumage on 12 July 1985 near Drown Bay, and A. Erskine saw a phalarope on Qeqertat on 11 August 1985 that he thought was a juvenile of this species.

Ruddy turnstone (*Arenaria interpres*): Although M. Lea and A. Erskine saw up to 18 together almost daily between 27 July and 16 August 1985 at several places along the shores of the

fjords, the only ruddy turnstone we saw during our three visits to the Thule district between mid-June and mid-July was on the south shore of McCormick Fjord on 5 July 1984.

Purple Sandpiper (*Calidris maritima*): Single birds were seen by us on 29 June 1983 near Thule Air Base and on 10 July 1984 near Drown Bay, but no evidence of breeding was found.

Red knot (Calidris canutus): We found two birds with small young on high ground north of Thule Air Base on 3 and 5 July 1983, and in 1985 we heard the song flight in this area and saw birds in several places. Red knots were also seen or heard in 1983-85 in five other localities in the Thule district.

Sanderling (Calidris alba): On 7 August 1985 M. Lea saw two adults and three unfledged young on the coastal plain 7 km west of Qaanaaq. His tape recording of the adults' calls leaves no doubt as to their identity.

Baird's sandpiper (*Calidris bairdii*): In 1983-85 we found this species breeding in two localities and probably breeding in three others. Annual differences in number seem to have occurred in the Thule Air Base area, where no breeding birds were found in 1983, three pairs with young were found on 14 and 15 July 1984, and a single nest containing four eggs was found on 25 June 1985.

Parasitic jaeger (Stercorarius parasiticus): Proof of breeding in the Thule district was obtained by us on 12 July 1984 and 23 June 1985 when nests containing two eggs were found respectively near Drown Bay and Thule Air Base. In June-July 1983 and 1984 single birds were seen on eight occasions near Thule Air Base and Taserssuit, but none held territory. A. Erskine saw a pair at Taserssuit on 29 and 31 July and 1 August 1985 that he thought had bred.

Long-tailed jaeger (Stercorarius longicaudus): In 1983-85 repeated visits to likely areas near Thule Air Base produced only a single sighting. Three pairs were holding territory at Taserssuit on 2-4 July 1984, but no nest was found.

Glaucous gull (*Larus hyperboreus*): We saw only one of the ten or more breeding colonies, that at Iterdlak, on 17-18 July 1984. Thule Air Base has provided an additional source of food for this species: in 1983-85 birds were seen at the Dundas Dining Hall and on 30 June 1983 about 150 adults were feeding on the base refuse tip.

Black-legged kittiwake (Rissa tridactyla): In 1985 we visited three of the four breeding colonies mentioned in the literature. Our visit to Parker Snow Bay and Cape Dudley Digges by helicopter on 17 June was very brief, and no kittiwakes were seen on the cliffs here. At the Saunders Island colony on 19 June most nests we could look into were empty though complete, but one contained two eggs and one a single egg. We saw nests here and there along some 7 km of cliff, many of them low down, and we could only guess that there were more than 1000 pairs breeding on these cliffs and probably fewer than 10 000. At Hakluyt Island on the same date breeding kittiwakes seemed to be confined to the west sides of five precipitous stacks at the northeasternmost and highest point. Our estimate, based on nests and birds on these stacks counted from photographs, was 1000-5000 pairs. There may have been more nests on the lower cliffs, but these were shrouded in fog.

Thayer's gull (*Larus thayeri*): One or two adults were seen on several occasions near Thule Air Base in June 1983.

Sabine's gull (*Larus sabini*): One was seen by A. Erskine at Qeqertat 10 August 1985.

Arctic tern (Sterna paradisea): Breeding or probable breeding colonies were found in 1983-86 at several places around the

southwestern and northwestern shores of Piulip Nunaa and at Qeqertat, but Arctic terns were only once seen in the Thule Air Base area — two birds on 27 June 1983.

Thick-billed murre (*Uria lomvia*): During a brief visit by helicopter to the cliffs at the western end of Saunders Island on 19 June 1985, when we landed at three different places, we thought that there were more than 1000 but fewer than 10 000 breeding pairs of murres. At Hakluyt Island on the same date we took photographs showing all the birds visible above the fog shrouding the lower cliffs. They were confined to the west sides of the four highest stacks at the island's northeast point. About 2500 could be counted from the photographs and, since it was a calm day near the start of egg laying, it seems reasonable to infer that they represented 50-80% of the total breeding population (see Gaston and Nettleship, 1981). Thus we arrive at a Hakluyt Island total of 1500-2500 pairs.

Dovekie (*Alle alle*): On 16-17 July 1984 and 19 June 1985 we visited the breeding colonies at Iterdlak and Parker Snow Bay respectively. In August 1983 and 1985 M. Lea spent some time making recordings at the colony east of Siorapaluk.

Black guillemot (*Cepphus grylle*): A. Erskine and M. Lea reported probable breeding birds at the western point of Piulip Nunaa in August 1985, and we saw birds in June 1985 at Parker Snow Bay and Saunders and Hakluyt islands that were probably breeding.

Atlantic puffin (*Fratercula arctica*): Local resident Arrutaq told us in June 1985 that a few pairs nested on the cliffs at the western end of Saunders Island. We failed to see the species there or at Parker Snow Bay and Hakluyt Island in June 1985.

Peregrine falcon (Falco peregrinus): One was seen near Thule Air Base on 20 June 1985 but not on subsequent days.

Gyrfalcon (Falco rusticolus): We found a single breeding pair of this population of white morphs in Piulip Nunaa in June-July 1984 and saw a single bird between Iterdlak and Thule Air Base on 18 July 1984. We were told that the bird had been seen occasionally at Thule Air Base (J. Steen Christensen, pers. comm. 1985). W. Higgs saw one at Taserssuit on 31 July 1986.

Rock ptarmigan (*Lagopus mutus*): These were only encountered on nine occasions in four different areas in 1983-86. On 26 and 29 July 1986 W. Higgs saw females with young in two different localities on Piulip Nunaa.

Common raven (*Corvus corvax*): Up to six were seen near the Thule Air Base refuse tip, 30 June 1983, and a party of two adults with five barely fledged young was near the base on 18 June 1985.

Northern wheatear (*Oenanthe oenanthe*): At least two pairs were thought to be present and breeding near Thule Air Base in June-July 1983, 1984 and 1985, and on 13 July 1984 we watched a pair with at least one fledgling. In August 1985 A. Erskine and M. Lea saw birds at two places in Piulip Nunaa and at Qeqertat, but these could have been on migration from farther north in the Thule district or from Ellesmere Island.

Lapland longspur (Calcarius lapponicus): In 1983-86 ten or more pairs were evidently breeding in each of at least four widely scattered marshy areas. On 6 July 1983 a nest near Thule Air Base contained six young about four or five days old. In 1984 the first fledged young were seen near the base on 15 July.

Snow bunting (*Plectrophenax nivalis*): The most numerous land bird in the Thule district, in 1983-86 it was most common along the coasts and in or near Thule Air Base and virtually absent from the extensive rocky areas and boulder fields without visible vegetation that occur in all parts of the district.

Common and hoary redpoll (Carduelis flammea and C. hornemanni): In 1983-85 all the redpolls we saw were in the Thule Air Base area save for one near Drown Bay on 11 July 1984, and all these birds showed the characteristics of C. flammea, the common redpoll. A pair was watched feeding two fledglings near Thule Air Base on 13 July 1984.

DISCUSSION

Most of the 21 species with well-established breeding populations in the Thule district are circumpolar in distribution, namely, the red-throated loon, northern fulmar, common eider, king eider, oldsquaw, glaucous gull, black-legged kittiwake, Arctic tern, thick-billed murre, gyrfalcon, rock ptarmigan, raven, Lapland longspur, snow bunting and common/hoary redpoll. To these should be added Sabine's gull if its Thule district breeding population proves to be well established (Salomonsen, 1950). One Thule district breeder, the dovekie, is found only in the North Atlantic. The only certainly Nearctic species that breed regularly are the snow goose, Baird's sandpiper and, if its presence as a breeder in the Thule district is confirmed (Salomonsen, 1950), Thayer's gull. The Thule district breeding populations of the ringed plover, red knot and northern wheatear have been shown to be Palearctic in origin (Salomonsen, 1950, 1967), and, if the brant still breeds on offshore islets north of Foulke Fjord and near Cape Alexander, which it was recorded as doing between 1884 and 1917 (Schley and Soley, 1889; MacMillan, 1918), it belongs to this group (Owen, 1980).

Of these 24 breeders or probable breeders, 3 can be claimed as resident, having been observed in the winter months, namely, the black guillemot, ptarmigan and raven, and one other may winter, namely, the redpoll (Freuchen, 1921; Vibe, 1948:40).

Perhaps the most significant finding of our 1983-86 field work was the discovery of Nearctic species not hitherto recorded in the Thule district, namely, the sandhill crane and the Canada goose. The black-bellied plover had already been seen near Thule Air Base in 1969 by Lennart Raner (pers. comm. 1985). The lesser golden plover's presence in the area was, up to 1983, only attested by an adult female shot by David Haig-Thomas on 24 July 1935 near Foulke Fjord (Shackleton, 1937:339). Ian Galbraith (pers. comm. 1985), of the British Museum (Natural History), described this bird as intermediate in size and plumage colour based on the single specimen he had at his disposal from Canada and those from Siberia. Now it seems probable that the lesser golden plover breeds annually in small numbers in the Thule district.

Owing to the paucity of observations, changes in the status of Thule's birds are hard to vouch for. It seems fairly certain that the common loon (*Gavia immer*), thought to have bred near Thule Air Base in 1920-70, though no details were published (Bertelsen, 1932; Salomonsen, 1950, 1967), no longer does so: it was not seen there in 1983-85. The same is perhaps true of the peregrine falcon, which Vibe (1938) found breeding near Thule Air Base but which we only saw once there in 1983-85. The king eider lost one of its two recorded breeding places (E. Ekblaw in Bent, 1925) when Thule Air Base was built in 1951-53, but it could have shifted to other so far unrecorded sites.

The snow goose, which also ceased to breed in the Thule Air Base area after 1951-53, has, however, increased in numbers since then in the district as a whole (Salomonsen, 1981). It has

established colonies on rocky offshore islets, where it certainly was not breeding when the Crocker Land Expedition explored them in 1913-17 (MacMillan, 1918; Haig-Thomas, 1939; Røen, 1960; Heyland and Boyd, 1970; Thing, 1976), and now breeds commonly at Taserssuit, where Haig-Thomas searched in vain for nests in 1935 and 1937 (Haig-Thomas, 1939; Shackleton, 1937). However, there is no good reason to reject the estimate of Heyland and Boyd (1970) of fewer than 1000 fully grown snow geese in Greenland in 1969, which probably still stands in 1987. The only other species that has increased in number in the Thule district during this century is the Lapland longspur. Unknown to earlier visitors (Stone, 1895; Chapman, 1899; MacMillan, 1918; Gibson, 1922), it was recorded for the Thule Air Base area from 1921 onward (Salomonsen, 1950) and elsewhere from 1935 (Shackleton, 1937). Salomonsen (1981) attributes this immigration to a northerly movement of birds from farther south in west Greenland during a period of ameliorating climate rather than to colonization from the eastern Canadian Arctic Archipelago. More doubtful is the history of the wheatear's status in the Thule district. Salomonsen (1950:473) reported that by 1936 it was "breeding rather commonly," and he repeated Vibe's assertion "that it now breeds abundantly in the whole of Thule district," implying that it had been scarcer earlier in the century, when indeed there were only two published records of wheatears' nests in the Thule district: one near the present Thule Air Base, the other near Foulke Fjord, both in the same year, 1916. It seems probable that the species is now once again only a rather scarce breeder in the Thule district. The possible changes in status of the common loon, peregrine falcon, Lapland longspur and wheatear can to some extent all be correlated with the warming climate of the 1920s and 1930s followed by a subsequent cooling.

The field work of 1983-85 points in one case to a possible change in the relative status of different morphs of the same species, namely the northern fulmar. Our admittedly very rough estimate of one "dark" or "blue" bird in three on Saunders Island is not in agreement with the "perhaps one in each hundred" there mentioned by Freuchen and Salomonsen (1958:138), possibly referring to Salomonsen's visit in 1936 (Salomonsen, 1943). In another case, that of the two redpolls, the forms concerned are generally regarded as separate species. Here, too, our observations do not accord with earlier evidence. Nine adults and juveniles shot by Vibe and Salomonsen near Thule Air Base in August 1936 all showed the characteristics of the hoary redpoll (Jon Fjeldså, pers. comm. 1985), confirming several sight records, while the redpolls seen near Thule Air Base by us in 1983-85 all showed the characteristics of the common redpoll, not hitherto recorded for the Thule district except by Lennart Raner (pers. comm. 1985), who in 1969 saw both hoary and common redpolls near Thule Air Base.

Although our observations confirmed the at least occasional presence of red-necked phalarope, red phalarope, ruddy turnstone, purple sandpiper and sanderling in the Thule district in the breeding season, only the sanderling was found breeding. The only other breeding-season record of this species was Gibson's collection of three adults and two chicks in June-July 1892 near the north shore of MacCormick Fjord (Gibson, 1922; identification confirmed by J.P. Myers, pers. comm. 1985). It breeds north of the Thule district both in Ellesmere Island and Greenland, but not south of it in Greenland. If the red-necked phalarope does, as seems likely, breed in the Thule district, then this would represent a northward extension of its West Green-

land breeding range by some 500 km. The same would be true of the red pharalope and purple sandpiper, but the second of these also breeds in Devon Island, 400 km west of Thule. Lastly the ruddy turnstone breeds in Ellesmere Island, in Greenland north of the Thule district and on Disko much farther to the south in West Greenland, and it has almost certainly bred in the Thule district: a clutch of four eggs labelled *Arenaria interpres* in the British Museum (Natural History) and taken at Taserssuit on 20 June 1935 by Haig-Thomas is thought by Curator of Eggs Michael Walters to have been correctly identified (pers. comm. 1985). Haig-Thomas gives no supporting details.

The following species not so far mentioned have also been recorded from the Thule district: red-breasted merganser (Mergus serrator) (Thing, 1976); pomarine jaeger (Stercorarius pomarinus) (Salomonsen, 1950); Ross's gull (Rhodostethia rosea) (Bessels, 1879:478); Iceland gull (Larus glaucoides) (Salomonsen, 1967); ivory gull (Pagophila eburnea) (Salomonsen, 1971; Thing, 1976); razorbill (Alca torda), said to breed in the Cary Islands (Salomonsen, 1981); and the snowy owl (Nyctea scandica) (Bertelsen, 1932). In a class apart is the hitherto unpublished breeding record, the first for Greenland, of the horned lark (Eremphila alpestris) near Thule Air Base on 30 July 1969. The nest contained two eggs and two young and was found by the Swedish ornithologist Lennart Raner (pers. comm. 1985).

ACKNOWLEDGEMENTS

For assistance in the field and for information about Thule birds I thank John and Margaret Vaughan, Angus Erskine, Michael Lea, Lennart Raner, Henning Thing and Will Higgs. For replying to inquiries I thank Wesley Lanyon and Linda L. Reichert, American Museum of Natural History; Jon Fjeldså, Zoological Museum, Copenhagen; Ian Galbraith and Michael Walters, British Museum (Natural History); Hugh Boyd and David Nettleship, Canadian Wildlife Service; and J.P. Myers, Academy of Natural Sciences, Philadelphia. I thank all the people, too numerous to name individually, who assisted us in one way or another at Thule Air Base and the Royal Greenland Trade Department (Karl Svensson and Lars Grundt) for renting us a helicopter. For permission to undertake field work in the Thule district I thank the Commission for Scientific Research in Greenland (Gregers E. Andersen) and for permission to stay at Thule Air Base the U.S. authorities and Mike Dorman, of the U.S. Embassy, The Hague, for approaching them on my behalf. For help in the preparation of this article I thank John and Margaret Vaughan and, for his criticism and advice, Ko de Korte. I am also much indebted to two Arctic reviewers, namely, David Nettleship and Daniel Roby, for their many detailed suggestions.

REFERENCES

BENT, A.C. 1925. Life histories of North American wildfowl. Washington: Smithsonian Institution U.S. National Museum, Bulletin 130. Vol. 2. 376 p. BERTELSEN, A. 1932. Meddelelser om nogle af de i Vest-Grønlands Distrikter mellem 60° og 77° N. Br. almindeligere forekommende fugle, særling om

- deres udbredelsesområde, deres yngleområde og deres træk. Meddelelser om Grønland 91(4). 75 p.
- BESSELS, E. 1879. Die Amerikanische Nordpol-Expedition. Leipzig: Wilhelm Engelmann. 647 p.
- BORN, E.W. 1987. Aspects of present-day maritime subsistence hunting in the Thule area, northwest Greenland. In: Hacquebord, L., and Vaughan, R., ed. Cross cultural contacts and the environment in the Baffin Bay area. Groningen: Arctic Centre. 109-132.
- CHAPMAN, F.M. 1899. Report on birds received through the Peary expeditions to Greenland. Bulletin of the American Museum of Natural History 12:219-244.
- DANSGÅRD, W., JOHNSEN, S.J., and CLAUSEN, H.B. 1970. Grønlands klima før, nu og 50 år frem. Grønland: 161-172.
- FERDINAND, L. 1968. Some observations on the behaviour of the little auk (*Plotus alle*) on the breeding ground, with special reference to voice production. Dansk Ornithologisk Forenings Tidsskrift 62:19-45.
- FREUCHEN, P. 1921. Fuglelivet i Nordvestgrønland. Iagttagelser fra mit vindue. Dansk Ornithologisk Forenings Tidsskrift 15:101-108.
- and SALOMONSEN, F. 1958. The arctic year. New York: Putnam. 438 p.
- GASTÓN, A.J., and NETTLESHIP, D.N. 1981. The thick-billed murres of Prince Leopold Island. Ottawa: Canadian Wildlife Service. 350 p.
- GIBSON, L. 1922. Bird notes from North Greenland. The Auk 39:350-363. HAIG-THOMAS, D. 1939. Tracks in the snow. London: Hodder and Stoughton, 292 p.
- HEYLAND, J.D., and BOYD, H. 1970. Greater snow geese (Anser caerulescens atlanticus Kennard) in Northwest Greenland. Dansk Ornithologisk Forenings Tidsskrift 64:198-199.
- MacMILLAN, D.B. 1918. Four years in the white north. New York: Harper. 426 p.
- MALAURIE, J. 1976. Les changements du climat dans le nordouest du Groenland pendant le postglaciaire récent: nouvelles conclusions palynologiques, géomorphologiques et ethnogénétiques. In: Boyer, R., ed. Les Vikings et leur civilisation. Problèmes actuels. Paris: Mouton. 242 p.
- OWEN, M. 1980. Wild geese of the world. Their life history and ecology. London: Batsford. 236 p.
- ROBY, D.R., BRINK, K.L., and NETTLESHIP, D.N. 1981. Measurements, chick meals and breeding distribution of dovekies (*Alle alle*) in northwest Greenland. Arctic 34:241-248.
- RØEN, U. 1960. Iagttagelser over stor snegås (Anser caerulescens atlanticus Kennard) i Thule Distrikt sommeren 1959. Dansk Ornithologisk Forenings Tidsskrift 54:128-135.
- SALOMONSEN, F. 1943. Report on the Natural History Expedition to Northwest Greenland 1936. Meddelelser om Grønland 124(1). 38 p.
- _____. 1950. Grønlands fugle. The birds of Greenland. Copenhagen: Ejnar Munksgård. 607 p.

- SCHLEY, W.S., and SOLEY, J.R. 1889. The rescue of Greely. New York: Charles Scribner's Sons. 227 p.
- SHACKLETON, E.A.A. 1937. Arctic journeys. The story of the Oxford University Ellesmere Land Expedition 1934-5. London: Hodder and Stoughton. 372 p.
- STONE, W. 1895. List of the birds collected in North Greenland by the Peary Expedition of 1891-2 and the relief Expedition of 1892. Proceedings of the Academy of Sciences of Philadelphia 47:502-505.
- THING, H. 1976. Field notes on birds in Thule district, Greenland 1975. Dansk Ornithologisk Forenings Tidsskrift 70:141-143.
- VIBE, C. 1938. Fangerfolk og fuglefjelde. Copenhagen: Hagerup.