# Observations on geese of the Kong Oscars Fjord region of North-east Greenland, 1971

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*(Med et dansk resumé: Observationer af gæs i Kong Oscars Fjord området, Nordøstgrønland, 1971)*

## INTRODUCTION

The biological objects of the 1971 Radley College East Greenland Expedition were to investigate the status, distribution and breeding success of the Pinkfooted Goose *Anser brachyrhynchus* in the Kong Oscars Fjord region, 72° 30' N;24° W, to establish its relationship with the Barnacle Goose *Branta leucopsis* and to collect information on other bird and mammal species in the area.

The expedition, consisting of two masters and four senior boys, flew to Mestersvig on 26th July and set up a base camp on a peninsula to the north-west of the harbour. The first five days were spent in establishing a cache of stores on Traill' Ø and in a preliminary investigation of the Nyhavn hills and southern shore of Kong Oscars Fjord as far as Skeldal. The party moved to Traill Ø on 31st July and established Camp 2 about 2 km from the sea up the Karupelv valley. The expedition then split into two groups and while the boat party surveyed the more inaccessible nothern region of Traill Ø, reached from Vega Sund via a petrol dump on Ella Ø, the land party cros-

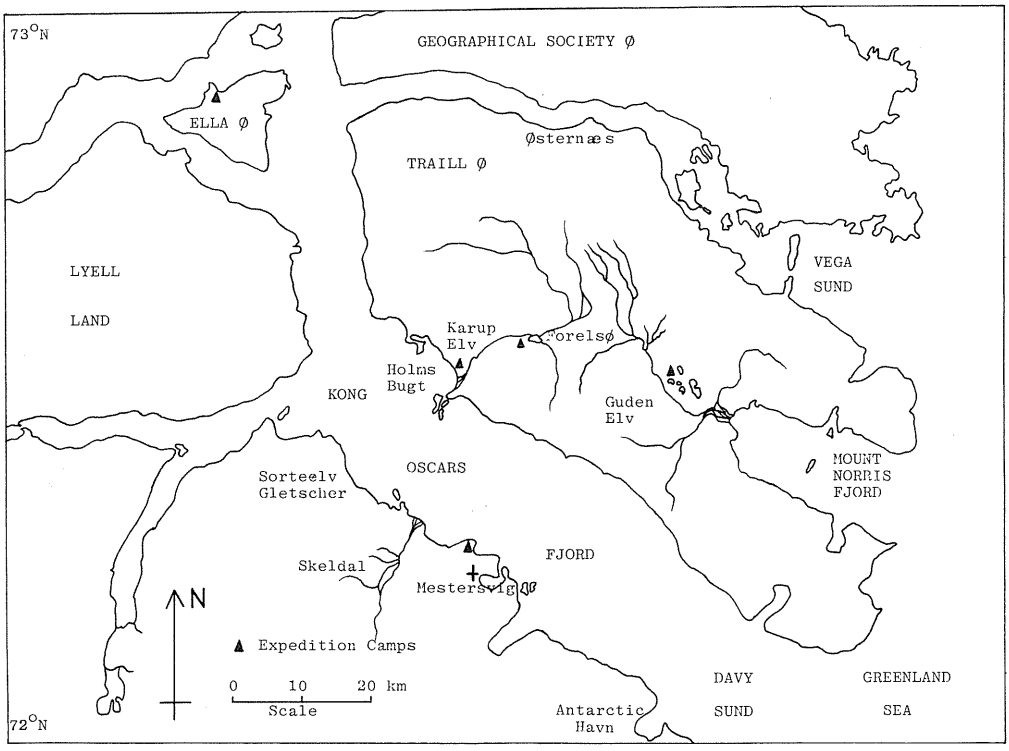


Fig. 1. The study area.
*Kort over undersøgelsesområdet.*

sed the island on foot to reach Mount Norris Fjord, establishing two further camps en route. The expedition returned to the Mestersvig base camp on 9th August, having spent a total of ten days on Traill Ø.

The remaining five days of the expedition were spent investigating the coastal hinterland to the south-east of Mestersvig as far as Antarctic Havn and exploring the Sorteelv glacier, and the party left Greenland and returned to England on 14th August.

## OBSERVATIONS ON GEESE

### Numbers and distribution

Two species only were present, Pinkfoot *Anser brachyrhynchus* and Barnacle *Branta leucopsis*. Both were more numerous than some previous reports had suggested (Goodhart and Wright, 1958; Marris and Ogilvie, 1962), especially on Traill Ø, and the breeding birds were accompanied by relatively large number of goslings. Snow cover the previous winter had been relatively light, the melt began on about 22nd May (mean start 19th May, Meltofte, 1976a) and all snow had gone from lower ground up to 100 m within one month (Mestersvig Station Manager, pers. comm.). This had resulted in a successful breeding season.

Geese occurred in every wide, well-vegetated valley with lakes and tarns that we investigated. The two species were often found together in one flock and non-breeding birds were sometimes found associated with the breeding flocks and sometimes occurred separately in ecologically distinct areas. A more detailed discussion of non-breeding birds follows below.

The following numbers of geese were recorded (table 1):

### Nest sites

Three nests were found on Traill Ø in 1971; all were probably those of Pinkfeet as the Barnacle is a cliff-nester. (Ferns and Green, 1975). The nests were found in three widely separated localities; at Holms Bugt, by the Forelsø lakes at the head of the Karupelv valley, and at Østernæs. Each nest was situated on a low ridge in meadow within 100 m of marsh or water and sites were therefore similar to those selected by Pinkfeet in the main Thórsárver colony, Central Iceland (Scott et al. 1953). Each nest was accompanied by the usual bright green growth of richer vegetation alongside.

### Brood size

Both species had bred with considerable success in 1971 and the following broods were recorded (table 2):

| Pinkfoot: | Number of young per brood | | | | |
|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 |
| Number of broods | 3 | 11 | 4 | 3 | 1=22 |
| Total young | 6 | 33 | 16 | 15 | 6=76 |
| | | | | | Mean brood size=3.4 |
| Barnacle: | Number of young per brood | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| Number of broods | 5 | 8 | 5 | 7 | 4=29 |
| Total young | 5 | 16 | 15 | 28 | 20=84 |
| | | | | | Mean brood size=2,9 |

Table 1. Numbers of geese recorded in the Kong Oscars fjord region, N. E. Greenland, July/August 1971

| Date | Locality | Species | Adults | Goslings |
|---|---|---|---|---|
| 30 July | Mestersvig (Nyhavn hills) | Pinkfoot | 4 | 16 |
| | | Barnacle | 14 | 17 |
| | Skeldal | Barnacle | 26 | 7 |
| 1-8 August | on Trail Ø: | | | |
| | Karupelv valley | Pinkfoot | 66 | 102 |
| | | Barnacle | 93 | 118 |
| | Gudenelv valley to | Pinkfoot | 206 | 55 |
| | Mount Norris fjord | Barnacle | 156 | 63 |
| | Østernæs | Pinkfoot | 27 | 26 |
| | | (2 flocks) | 28 | - |
| 10 August | Mestersvig (Noret) | Barnacle | 79 | 50 |
| 11 August | Antarctic Havn | Barnacle | 83 | - |

There was no apparent relationship between brood size and the total size of the flock of which the families were a part in either species.

Table 5 compares the brood sizes recorded, or estimated from available data, by expeditions to the region since 1956. These results will be discussed later.

**Time of breeding and the flightless period**

No adults were seen in flight when our expedition first arrived. The first Pinkfeet were seen in flight on 2nd August and the first Barnacle on 4th August. The majority of adults of both species were flying by 10th-11th August, with nonbreeders probably 2-3 days ahead of the breeding adults. N.B: Non-breeders are all adults unaccompanied by young; some of these adults may have bred unsuccessfully.

No goslings were seen to fly. The ages of the gosling broods of both species ranged widely. 70% of the Pinkfoot goslings were estimated to be about 6 weeks old by the 8th August. Thus the majority of Pinkfoot goslings should fly for the first time between August 12th-15th. These dates may be usefully compared with the dates for the same events in a typical Thórsárver breeding season (table 3):

| Event | Greenland 1971 (estimates based on gosling age) | Thórsáver, Central Iceland (after Scott *et al.*, 1953) |
|---|---|---|
| Peak hatching date (est.) | 26th June | 22nd June |
| Majority of non-breeders regained flight | 7th-8th August | 28th July |
| Majority of breeding adults regained flight | 10th-11th August | 4th August |
| Majority of goslings achieved flight (est.) | 12th-16th August | 6th-10th August |

It is therefore apparent that in a good season in North-east Greenland the Pinkfoot's breeding cycle can just be accommodated by the Greenland summer, being some 5 days behind the Icelandic norm, and the species certainly then breeds more successfully than in a bad summer in Iceland.

**Composition of the flocks**

Adults. Analysis of our count gave the following results (table 4):

Table 4. Numbers of breeding and nonbreeding adults in the flocks of both species

| Species | No. breeders | % | No. non-breeders | % | Ratio B: Non-B |
|---|---|---|---|---|---|
| Pinkfoot | 73 | 22,0 | 258 | 78,0 | 1:3,5 |
| Barnacle | 156 | 34,6 | 295 | 65,4 | 1:1,9 |

Breeding and mixed flocks of both species were found only in well-vegetated terrain and on the larger lakes of the river valleys. With the one exception of a large nonbreeding flock of 117 Pinkfeet in the lower Gudenelv valley on Traill Ø, flocks of nonbreeding birds were found on small, relatively isolated upland tarns, clearly separated from the breeding adults and their goslings.

**Predation**

Little evidence of predation was observed. No dead goslings or geese were found and only one sternum, from a gosling, was found by a Snowy Owl *Nyctea scandiaca* nest site. Foxes were common.

**Escape reaction**

We noted a difference in escape reactions between the two species, depending on the type of terrain and lake size on which they were surprised. On small lakes and in river valleys, all Pinkfeet flocks, whatever their composition, ran for the hills; this is identical to the behaviour of Iceland Pinkfeet (Scott et al., 1953). By contrast, breeding flocks of Barnacle adults and goslings remained on the water, however small the area, while nonbreeding Barnacles usually ran like the Pinkfeet.

On large lakes, flocks of both species remained in a dense group in the centre of the water.

Diving, followed by periods of submergence for up to 30 seconds, was observed in

one adult, non-breeding Pinkfoot. This bird was found on a small lake above the Gudenelv valley, Traill Ø, from which 9 other non-breeders flew or ran as we approached. The observed diving behaviour is probably not uncommon when flightless geese are taken by surprise (Meltofte, 1975).

## DISCUSSION

No less than thirteen ornithological expeditions have visited Jameson Land and the Kong Oscars Fjord region of North-east Greenland since 1956. Many of these have published accurate figures of brood size and gosling : adult ratios while other expeditions have recorded actual numbers from which the same statistics may be estimated with reasonable accuracy.

Table 5 shows the mean brood sizes of the two goose species in the study area, counted in late July/early August, i.e. over the same ten day period, in each of the years for which records are available. The number of broods on which the mean brood size is based is given in brackets below each mean and means which must be evaluated with caution, being approximate estimates or based on very few broods, are themselves bracketed. Nevertheless, these contribute to the overall picture of fluctuating breeding success of geese in North-east Greenland over nearly twenty years.

As long ago as 1952 Taylor (1953) suggested that a considerable proportion of nonbreeding Icelandic Pinkfeet undergo an annual moult migration to North-east Greenland in late June and early July and this idea is now supported by the evidence of several authorities (Christensen, 1967; Salomonsen, 1968; Rosenberg et al., 1970; Ferns and Green, 1975; Meltofte, 1975, 1976b). the large number of non-breeding Pinkfeet, currently numbering more than 30.000 individuals (1977), involved in this moult migration explains some of the results recorded in this paper and accounts for a significant proportion of the large surplus of non-breeders in the Greenland/Iceland population noted by Boyd and Ogilvie (1969).

Table 5. Mean brood sizes recorded in the Kong Oscars Fjord region, late July/early August.

| Year and Authority | Pinkfoot | Barnacle |
|---|---|---|
| 1956 (Goodhart and Wright) | (4,6) (12 Broods) | (3,8) (6 broods) |
| 1960 (University of Dundee) | Nil Both species apparently | Nil failed to breed |
| 1961 (Marris and Ogilvie) | (2,0) (2 broods) | 2,9 (-) |
| 1962 (Hall) | (3,0) (1 brood) | 2,6 (13 broods) |
| 1963 (Hall and Waddingham) | 3,0 (8 broods) | 2,5 (13 broods) |
| 1966 (Marris and Webbe) | 2,2 (21 broods) | 1,85 (7 broods) |
| 1970 (University of Dundee) | (1,6) (3 broods) | - |
| 1971 (Hardy) | 3,4 (22 broods) | 2,9 (29 broods) |
| 1972 (University of Dundee) | 1,8 (-) | - |
| 1974 (Ferns and Green) | 3,0 (-) | 2,8 (-) |

Table 4 shows the ratios of breeding birds to non-breeders in the adult population of each species in 1971. Thus in a year in which both species probably achieved a near-maximum breeding success, non-breeding Pinkfeet were more numerous by nearly 13% than non-breeding Barnacles. In addition we note the more frequent isolation of non-breeding Pinkfeet from the breeding birds and their goslings, a feature already recorded from Iceland (Hardy, 1967).

This evidence suggests that while the Barnacle is probably a more consistently successful breeder than the Pinkfoot in North-east Greenland, the Pinkfoot breeding population can support itself and does breed more successfully than the Barnacle in some years, if it is accepted that a higher mean brood size is indicative of breeding success. Nevertheless, Iceland, and particularly Thórsárver as a breeding site, remains of great importance to the survival of the Greenland/Iceland population of the Pinkfoot (Kerbes et al., 1971).

SUMMARY

The results of an expedition to Kong Oscars Fjord in 1971 are compared with the figures obtained for Pinkfoot and Barnacle populations of the region since 1956.

Details are given for 1971 of the numbers and distribution of both species, nest sites, brood sizes, the dates of significant events in the breeding cycle, predation and escape reaction.

Comparison with results obtained by previous expeditions leads to the conclusion that both species of goose are well adapted to summer breeding in this region of north-east Greenland.

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DANSK RESUMÉ

**Observationer af gæs i Kong Oscars Fjord området, Nordøstgrønland, 1971**

Resultaterne fra en ekspedition til Kong Oscars Fjord området i 1971 sammenlignes med oplysninger om populationerne af Kortnæbbet Gås og Bramgås i området siden 1956. Oplysninger om antal og udbredelse gives for begge arter samt data om redesteder, kuldstørrelser, ynglecyklus, predation og flugtreaktioner.

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