

Distribution and numbers of moulting non-breeding Greylag Geese in Norway

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Introduction

Some information on the distribution and numbers of moulting non-breeding Greylag Geese *Anser anser* in central Norway is given by Fog *et al.* (1984), who summarised available information on the period 1978–82 from a variety of sources. The main moulting grounds of Greylags in Norway are located in the outer archipelagos along the coast. Due to surveys of seabirds and wildfowl in connection with the oil exploration on the Norwegian continental shelf, new information on the distribution and numbers of moulting Greylags in Norway is now available.

Previously, moulting Greylags were mostly counted in June, prior to the peak moulting period, during surveys of breeding seabirds. Special surveys were therefore launched in 1985 and 1986 during the peak moulting period in July to obtain better figures (Follestad *et al.* 1986).

The aim of this paper is to review the status of the moulting populations of non-breeding Greylags in Norway.

Material and Methods

Greylags were mostly counted from selected observation posts on land, or from the air. Moulting geese generally swim out to sea when disturbed on land, and they may be difficult to observe, even with a spotting scope. Counts of Greylags on the sea are therefore best performed in calm weather. A helicopter survey was made in parts of the area on 23–25 July 1985 (Follestad *et al.* 1986). Some data were obtained from the literature. Data are still lacking for some sections of the coast.

Moulting, breeding adults with their broods are excluded from the figures. Thus, counts mainly include flocks of non-breeding geese.

The map in Figure 1 has been drawn using the mapping program of the Norwegian Seabird Project (Kvenild and Strand 1984; Follestad 1986).

Results

Numbers of moulting, non-breeding Greylags in different parts of the surveyed area are given in Table 1. The archipelagos of Frøya in the county of Sør-Trøndelag (64°N 9°E) and Vega in the county of Nordland (65°40'N 11°50'E) together hold about half of the known moulting Greylags in Norway (Figure 1). No moulting grounds are known south of the county of Sogn og Fjordane (61°–62°N). Several references which refer to Ranafjorden (66°N 13°E) as a major moulting ground, following Lund (1971), are incorrect.

The moulting population of non-breeding Greylag Geese in Norway is estimated to be about 22,000 individuals (Table 2). This is most certainly a minimum, due to incomplete surveys in part of the moulting area.

Development of the moulting population

At Frøya, the numbers in 1985 and 1986 were about 2,700 and 5,200 respectively (Follestad *et al.* 1986). Frengen and Røv (1975) counted about 400 moulting Greylag Geese in the northern parts of Froan Nature Reserve (north of Frøya) in 1974, while 1,125 and 3,330 were counted in approximately the same area in 1985 and 1986 respectively.

In the archipelago of Vega, Lund (1971) observed about 1,000 geese in 1961–63 and about 2,000 in 1971. However, these figures only involve part of the moulting area at Vega and should not be directly compared with later counts. Follestad (unpubl.) reported counts of about 3,500 in 1977 and 1978. Fog *et al.* (1984) suggest 4,500 in 1982, and Follestad *et al.* (1986) 6,000 in 1985, based on counts of 5,500 geese. In 1986 J. Antonsen (pers. comm.) counted 4,150 geese, excluding the Laanan area, and 3,800 geese in 1987. From 1977 on, all counts were done by this same local observer. Up to 1985 there was an increase in the moulting population of Greylags at Vega.

More than 1,000 moulting Greylags were south of the island of Smøla (63°25'N 8°E)

Table 1. Recent numbers of moulting Greylag Geese in Norway. For some districts estimated numbers based on counts (marked with *) are given.

COUNTY District	Numbers of geese	Year	Method	Source
SOGN OG FJORDANE				
Askvoll	310	84	2	2
Hyllestad	33	84	2	2
MØRE OG ROMSDAL				
Smøla	860	85	1	1
SØR TRØNDELAG				
Hitra	175	85	1	1
Frøya	5200*	86	1	1
Ørland	20	85	1	1
Bjugn	620	85	1	1
Åfjord	365	85	3	1
Roan	275	85	3	1
Osen	25	85	3	1
NORD-TRØNDELAG				
Namsos	20	85	3	1
Fosnes	35	85	3	1
Flatanger	40	85	3	1
Vikna	1-2000*	75	2	3
Leka	500*	80	1	4
Naerøy	30	85	3	1
NORDLAND				
Bindal	340	80	1	4
Sømna	1250	80	1	4
Brønnøy	200	80	1	4
Vega	6000*	85	1	5
Herøy	495	85	3	1
Dønna	140	85	3	1
Lurøy	335	85	3	1
Traena	60	85	3	1
Rødøy	250	82	2	6
Meløy	100	81	2	7
Gildeskål	20	82	2	6
Bodø	550-700	84	2	8
Steigen	200	82	2	6
TROMS				
Kvaefjord	8	84	1	9
Bjarkøy	19	84-85	1	9
Torsken	10	85	1	9
Berg	17	84-85	1	9
Lenvik	28	85	1	9
Balsfjord	31	84-85	1	9
Tromsø	220	83-86	1	9
Karlsøy	140	85-86	1	9

Note: Methods: 1 = counts mainly in the moulting period, 25 June – 20 July, and specially with regard to moulting Greylags.

2 = counts mainly before or after the moulting period, or counts in connection with mapping of breeding seabirds.

3 = counts mainly from helicopter 23-25 July.

Sources: 1 = this study; 2 = Godø unpubl.; 3 = Folkestad unpubl.; 4 = Fog *et al.* 1984; 5 = J. Antonsen pers. comm.; 6 = Bremdal and Røv 1984; 7 = K-B Strann pers. comm.; 8 = A. Aandahl pers. comm.; 9 = Strann and Vader 1987.

in July 1974 (Follestad unpubl.) and P. Fiske (pers. comm.) counted about 860 in 1985 and 800 in 1986. At Bliksvær, Bodø (67°17'N 14°E), 415 geese were counted in 1982 (Bremdal and Røv 1983), while A. Aandahl (pers. comm.) counted 500–600 in 1984.

Discussion

Reliability of the data presented

Greylags are often difficult to observe in the moulting period. The counts must therefore be regarded as minimum esti-

mates in several areas. Estimates based on counts before or after the peak moulting period, are also approximate.

As yet unknown moulting areas may exist in Nordland north of Steigen (67°57'N 15°E), and in the county of Troms and Finnmark (68°–71°N), as well as in the most southern parts of the country.

In some areas moulting non-breeding geese have been counted over a series of years. When comparing these results, care must be taken concerning different survey methods, and the increased knowledge of Greylag behaviour and habitat use during recent years.

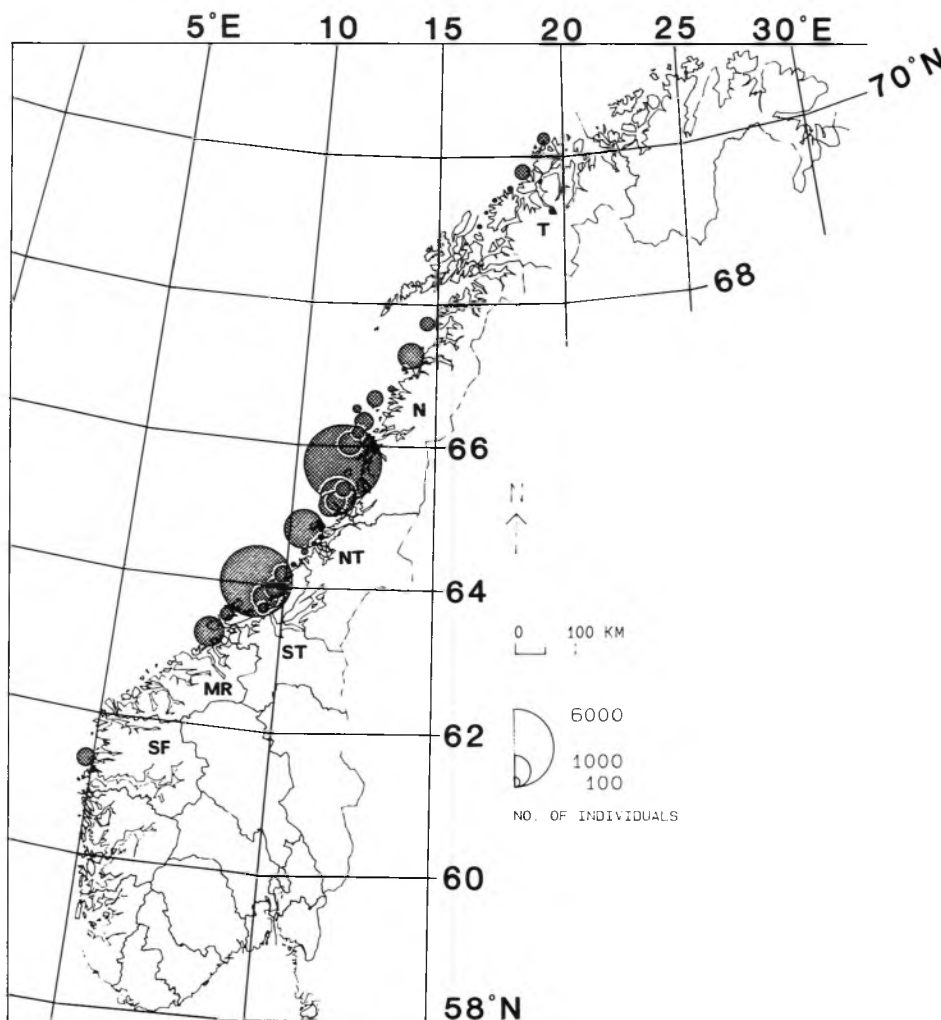


Figure 1. Distribution of moulting Greylags in Norway. Scale refer to circle diameter and represent no. of individuals. SF=Sogn & Fjordane county, MR=Møre & Romsdal county, ST=Sør-Trøndelag county, NT=Nord-Trøndelag county, N=Nordland county, T=Troms county.

Moulting population

The estimate of 22,000 moulting Greylags in Norway, is almost twice the estimate given by Fog *et al.* (1984). This is partly due to better coverage of the moulting grounds, but a substantial population increase must also have taken place in the central parts of the moulting area. This may reflect an increase in the corresponding breeding populations, or a change in the moulting area for some part of the population. At present, however, data for discussing this phenomenon are largely lacking.

Origin of the moulting geese in Norway

The non-breeding members of northern goose populations generally undergo wing moult at moulting grounds north of their breeding grounds (Rutschke 1985). Earlier reports of Greylags ringed in Norway and elsewhere indicate that Greylags from other countries migrate to moulting grounds in Norway (Lund 1971; Hudec 1984). However, the extent of such movements is unclear. The current neck banding scheme in Scandinavia under the auspices of the Nordic Council for Wildlife Research may hopefully shed more light on moult migration patterns.

At present, an answer to the question may be sought by comparing numbers of moulting geese with estimates of the breeding population (Table 2). The non-breeding part of a population consists of one or two year old birds which have not attempted to nest, and of unsuccessful adults. It is not clear to what extent two year old birds and

failed breeders undertake moult migration or moult close to their breeding grounds (Hudec 1984).

From recoveries of ringed Greylags in Denmark, Paludan (1973) constructed a population model where birds which did not nest in the spring make up about 55% of the total population. Of the nesting pairs, 65% nest successfully (Naacke 1982). On the basis of these figures Hudec (1984) calculated that there would be 320 non-breeding birds in a population having 100 breeding pairs.

It is unclear whether non-breeding individuals from breeding populations south of Sogn og Fjordane moult in the vicinity of the breeding grounds, or if they migrate to other moulting grounds. However, these populations are small and their contribution to the totals may be insignificant.

In Sogn og Fjordane and the county of More og Romsdal (62°–63°N) the estimated numbers of moulting Greylags fit reasonably well with the model by Hudec (1984). The estimate of 550 pairs in the county of Sør-Trøndelag (63°–64°N) is most certainly a minimum. According to the model, this should provide a moulting population of at least 1,800 geese. This is much lower than the estimated 7,000, and therefore indicates a mass moult migration of geese to this area.

At Vega, in Nordland, the breeding population was estimated at 300–350 pairs in 1982 (Antonsen pers. comm.) and the model would predict about 1,000 moulters. The estimated moulting population of 6,000 Greylags in Vega in 1985 is far higher, again indicating a mass moult migration to this area.

Table 2. Number of moulting Greylags in Norway, compared with estimates of the breeding population.

County/district	Moulting		Breeding	
	Estimate (individuals)	Estimate (pairs)	Source	
Sogn og Fjordane	400	150	Godø 1980	
Møre og Romsdal	900	350–400	Folkestad 1979	
Sør-Trøndelag	7000	550	S-H Lorentsen	
Nord-Trøndelag	2000	?		
Nordland				
Helgeland S of Vega	2000	?		
Vega	6000	300–350	J. Antonsen	
Helgeland N of Vega	2500	?		
Troms	<1000	>500	K-B Strann	
Finnmark	>100	50–100	K-B Strann	
Total	22000	?		

The breeding population in the county of Troms (69°–70°N) has recently been estimated at a minimum of 500 pairs, and that in Finnmark at probably less than 100 (K-B Strann pers. comm.). The moulting areas in these counties are only censused rather occasionally, and results must be regarded as minimum estimates. Unknown moulting localities may exist. Some of the non-breeding geese may migrate to other areas to moult (Strann and Vader 1987).

Greylags ringed as moulting at Vega 1961–71, have later been recovered north to the border of Nordland and Troms counties, suggesting that breeders from the far north moult at Vega (Lund 1971). This may indicate that in the case of the Greylag Goose, the general northward pattern of moult migrations may be reversed near the northern border of its breeding distribution.

Hudec (1984) estimated the number of moulting non-breeding Greylag Geese in Norway at about 9,600 individuals, based on an estimate of 3,000 breeding pairs. Using his model, 22,000 moulting Greylags in Norway should represent a breeding population of 6,500–7,000 pairs. Though adequate data are lacking on the numbers of breeding Greylags in Norway, this estimate seems to be somewhat high. Madsen (1987) has summarised existing information on the breeding numbers of the north-west European population of Greylags (excluding Great Britain) giving a total of 12,050–12,800 pairs, including an estimate of 2,000 pairs in Norway (from Ogilvie 1978). As the last estimate is probably much too low, the coastal areas of central and northern Norway can be considered one of the major breeding areas for Greylag Goose in Europe, and there is a definite need of updated information on their number.

Future management

Increases in Greylag populations in Norway have led to increasing conflicts in relation to crop damage. To avoid this, the hunting season was opened from 10 August on Smøla in 1982–84 instead of 21 August. The effects of this earlier hunting season on the breeding and moulting population in this area are not known in detail, but it is worth noting that there has been some decrease in the moulting population at Smøla. More studies are needed on the moulting popula-

tions of Greylags, their relation to the breeding populations and on the extent of damage caused by different groups of birds during the season.

The significance of Vega to moulting Greylags may be related to the availability of undisturbed localities and suitable feeding places. There has been a progressive decline during the last decade in the sheep stocks kept on the Helgeland islands, and this has led to decreased grazing, allowing the vegetation to grow rank (Gullestad *et al.* 1984). As well as reducing the importance of some islands in this archipelago to the Barnacle Goose in their month-long stay during their spring migration, changes in the vegetation may be the reason for the decline in the number of moulting Greylags there from 1985 to 1987. The lower numbers may also reflect disturbance by an increasing number of boat-tourists, or scarcity of food. The summer of 1987 was very dry and may have reduced plant growth on smaller islands. A decline in the breeding population of Greylags on these islands has indeed been noted since 1980 (J. Antonsen pers. comm.), and care should be taken to study the development of both the breeding and the moulting population at Vega in the future.

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Summary

This paper reviews the status of moulting non-breeding populations of Greylag Geese in Norway. The moulting population is now estimated to be a minimum of 22,000 geese, and the data indicate a substantial population increase in central parts of the moulting area. The two main moulting grounds are the archipelagos of Frøya and Vega. This new estimate is discussed in relation to the breeding populations of Greylags in Norway. Although geese generally move to the north to moult, this pattern seems to be reversed in northern parts of Norway.

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