

# Monitoring of Lesser White-fronted Goose in Norway in 2005



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## **SUMMARY**

The Lesser White-fronted Goose project of the Norwegian ornithological Society continued the monitoring of the staging Lesser White-fronted Goose at the Valdak Marshes, Porsanger Municipality, Finnmark County also in 2005. During spring totally of 44 LWfG were staging, distributed as 19 adult pairs, one subadult pair, three immatures, one single subadult and one single adult. Five LWfG that were caught and colour ringed in earlier years were re-sighted. In autumn a total of 32 individuals staged during a period of three weeks. These were distributed as 4 pairs and 1 single female with 5 clutches of totally 16 goslings, and 7 adult /subadult birds without goslings. Two juveniles disappeared during the autumn staging. This has never been registered at Valdak before. The cause could be either poaching or predation by Gyr Falcon or Golden Eagle.

The breeding success was relatively low, while the population development has been stable since 2001. The numbers are down 30% since the early 1990s.

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## 1. INTRODUCTION

The Lesser White-fronted Goose (*Anser erythropus*) is the most threatened arctic goose species of the Palearctic region, and the populations throughout the range from Fennoscandia to easternmost Siberia are still declining (Lorentsen et al. 1999). At the Valdak Marshes (Finnmark, Norway), the most important staging area in the Nordic countries, the spring staging population has decreased by approximately one third since 1990 (Aarvak & Øien 2004). The other traditionally important spring staging area of the Fennoscandian population, the Bothnian Bay coast in Finland, has experienced a decrease by more than 85% since 1990 and this site hosted less than 10 individuals in spring 2003 (Markkola et al. 2004). Part of the decrease at the Bothnian Bay coast may be due to the changing migration pattern of the LWfG: it seems that more individuals than earlier simply pass the Bothnian Bay coast and continue straight to Lapland after a staging period in western Estonia. A possible explanation for this could be that springs have become earlier and enabled an earlier arrival of the LWfG in the staging and breeding areas in Lapland.

The current estimate for the Fennoscandian population (excluding the Russian Kola Peninsula) is 20-30 breeding pairs. This estimate is up-dated and based on a statistically significant negative population trend in Fennoscandia since the year 1990. At the time of the previous corresponding estimate, the population trend in the 1990's was not statistically significant. The population has had the same negative trend during the whole period, but after adding the years 2001 – 2003 to the matrix, the population decline is now significant. The most important threat for all LWfG populations is the high mortality due to hunting and poaching. Also, loss of habitats on the staging and wintering grounds and disturbance are serious threats for the species all over the distribution range (Tolvanen et al. 2004).

The Fennoscandian LWfG project run by WWF-Finland and NOF has monitored the two staging areas Skjåholmen and Valdak annually since 1995 and 1990 respectively. The results of the monitoring work from spring and autumn 2005 at the Valdak Marshes are reported here. The report reiterates results presented in earlier yearly reports (see Aarvak et al. 1996, 1997, Aarvak & Øien 1999, 2000, 2001, 2004) from the monitoring and research work, but more comprehensive discussions are omitted. This summary is restricted to short comments on the results from 2005. Results from the monitoring work at Skjåholmen will be published elsewhere.

## 2. STUDY AREA AND METHODS

The Valdak Marshes (N 70°09', E 24°54') is part of the Stabburnes Nature Reserve, which is a Ramsar site and a BirdLife International Important Bird Area (Norwegian IBA 012, Lislevand et al. 2000). It is one of the largest salt and brackish marshes in northern Norway (Elven & Johansen 1982), and represents an extremely important feeding/fattening area for the LWfG in Fennoscandia. For diet preferences, see Aarvak et al. (1996).

Valdak is demarcated inwards from the fjord by Stabburnes, which is a headland made up of glacialfluvial depositions. It constitutes a natural watching point with a height of approximately 25 metres above the wet mires and the salt marshes of Valdak. During the studies, the observers sit close to the edge of the headland. Under such circumstances, the foraging birds can easily be studied at a distance of 250-500 metres without any disturbance to the birds by use of a telescope (20-60 X magnification).

From 1998 on we have used a video camera (Sony Handycam) to film the geese through the telescope, and in 2005 we renewed this equipment to a digital video camera Sony DCR-PC350E PAL. This method increased the possibilities for accurate individual identification (Øien et al. 1996) and age determination of the staging geese significantly. By this method it is possible to distinguish subadult pairs from adult pairs, and to more securely separate single subadults from immatures and subadult pairs from adult ones. Subadults are here defined as birds in their third calendar year, while immatures are in their second calendar year (see Øien et al. 1999 about details on ageing).

The aim of the spring monitoring (8 May - 5 June) was to follow the progress of migration and register the total number of staging LWfG in the area. As in former years, the individuals were identified by the individual uniqueness of the belly patches. A thorough description of the method is given by Øien et al. (1996). We monitored the number of staging individuals and staging time for the pairs (turnover rates), and in addition, we carried out behavioural studies on dominance and on daily activity of individuals

and flocks, food preferences, tolerance to- and level of disturbance, habitat use and migratory movements.

During autumn (20 August - 6 September) emphasis was put on carrying out counts of families and social groups in order to obtain estimates on brood size, productivity and proportion of immatures in the population. In addition, the staging geese with goslings were recorded by video camera to increase the efficiency of identification.

Since 1995 a number of LWfG has been caught, both in Norway, Finland and Russia to map the migration routes by use of satellite telemetry. A few individuals have also been colour ringed. This has added further knowledge to the results obtained by the satellite telemetry (see Aarvak et al. 1999, 2000). In both spring and autumn 2005 time was spent in order to catch more geese for colour ringing. We used two cannon-nets each covering an area of 180 m<sup>2</sup> (15 x 12 m) and one larger cannon-net covering an area of 1350m<sup>2</sup> (50 x 27 m).

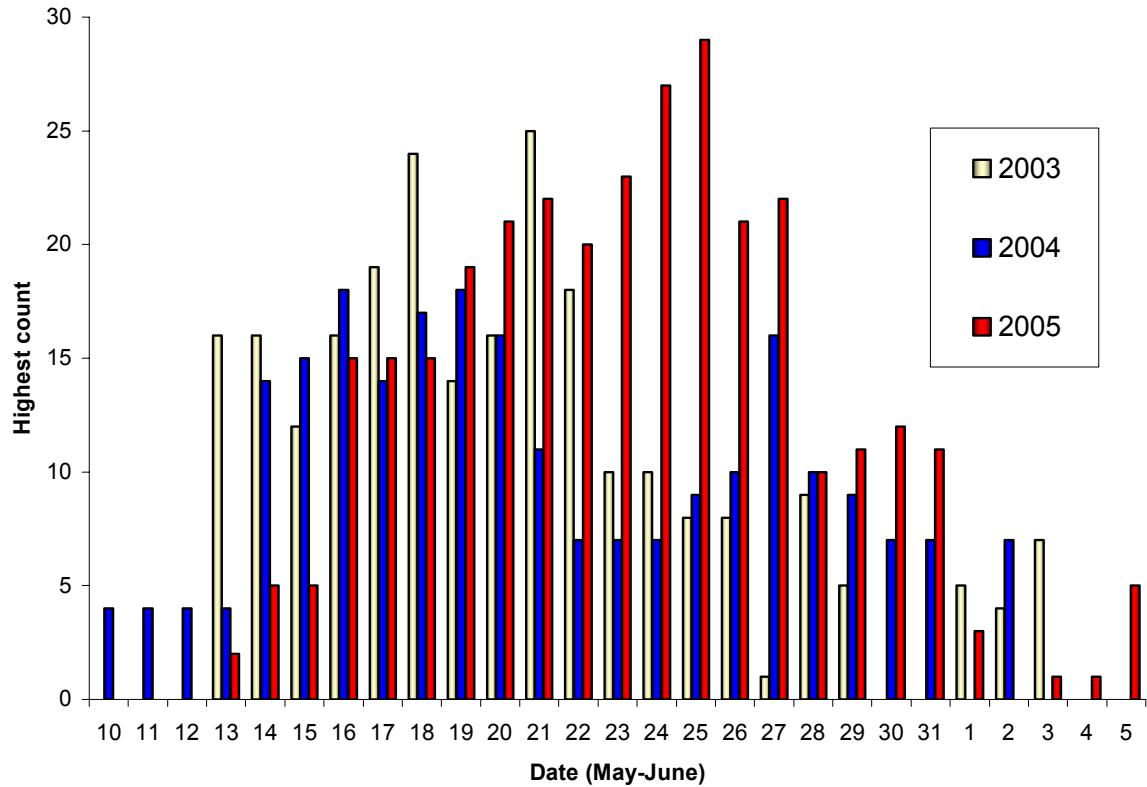


*The picture shows an aerial view of the salt marshes at Valdak taken from the north. The outermost ponds and grass areas are the most important areas for staging bean geese, greylag geese and the lesser white-fronted geese. © Geir Helge Systad, 23 May 2005.*

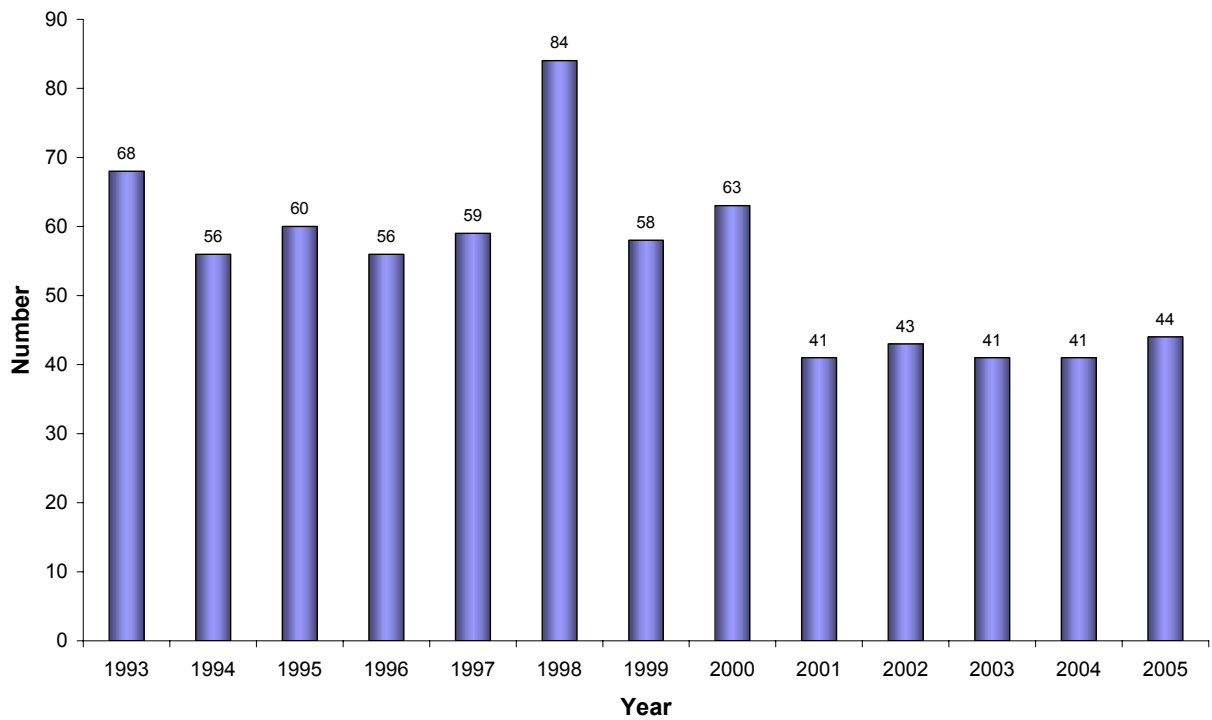
### 3. RESULTS

#### 3.1 Spring staging

The first LWfG (1 pair) arrived on 13 May. Thereafter the numbers increased slowly, reaching a peak of 29 individuals on 25 May. Thereafter the numbers decreased fast (**figure 1**). Two pairs and two single individuals were still present at the end of the monitoring period on 5 June (**figure 1**). Totally 44 individuals were staging at the Valdak Marshes in 2005 (**figure 2**), distributed as 19 adult pairs, one subadult pair, three immatures, one single subadult and one single adult (**table 1**). In Table 1, percentages of immatures and subadults are given. However, these percentages are not directly comparable between the periods 1993-1997 and 1998-2005, since subadults were registered as adults before 1998. No geese were caught during spring staging in 2005. Five LWfG that were caught and ringed in the years 2000, 2002 and 2003 were re-sighted (see **table 4, chapter 3.3**).



**Figure 1.** Maximum daily numbers of Lesser White-fronted Geese observed in the period May-June in 2003-2005.



**Figure 2.** Total number of spring staging Lesser White-fronted Geese at the Valdak Marshes in 2005 estimated from drawings and video of belly patches.

**Table 1.** Numbers of Lesser White-fronted Geese at the Valdak Marshes during spring staging in the years 1993-2005. The table shows the maximum number of staging geese at the best day, distribution of adult pairs, subadult pairs, single subadults, single adults and immatures, as well as total number of staging individuals each spring.

Year	Max on one day	# ad. pairs	# subad. pairs	# imm.	# single subadults	# single adults	% imm./ subad	Total no. of ind.
1993	32	32		4			5.9 %	68
1994	24	26		4			7.1 %	56
1995	48	> 25		> 10			> 16.7 %	> 60
1996	31	23		10			17.9 %	56
1997	32	26		7			11.9 %	59
1998	37	33	5	5	3		21.4 %	84
1999	35	22	3	7* <sup>1</sup>		1	25.9 %* <sup>2</sup>	58
2000	44	25	2	6* <sup>3</sup>	3		23.8 %* <sup>4</sup>	63
2001	22	18	1	0		3	7.3 % * <sup>5</sup>	41
2002	29	13		14	1	2	34.9%	43
2003	25	14	5	9			34.1%	41
2004	18	9	2	13	5	1	53.7%	41
2005	30	19	1	3	1	1	13.6 %	44

\*<sup>1</sup> Not including two immatures in pair with adults which is included in the "no. of ad. pairs" column.

\*<sup>2</sup> Also including two immatures in pair with adults which is included in the "no. of ad. pairs" column.

\*<sup>3</sup> Not including two immatures in pair with subadults which is included in the "no. of subad. pairs" column.

\*<sup>4</sup> Including two immatures in pair with subadults which is included in the "no. of subad. pairs" column. Three subad. are included in the ad pairs column, and not in the subad pair column.

\*<sup>5</sup> Including one subadult in the "ad. pairs" column.

### 3.2 Autumn staging

The year 2005 was the 11th consecutive year when continuous monitoring during the LWfG autumn staging at the Valdak Marshes was accomplished. A total of 32 individuals staged there during a period of three weeks (see **tables 2 and 3**). These were distributed as 4 pairs and 1 single female with 5 clutches consisting of 16 goslings, and 7 adult/subadult birds without goslings.

During the autumn staging in 2005, the LWfG spent most of the time in the islets in the Porsangen Fjord. Throughout the monitoring period from 20 August to 6 September, the flock of LWfG was seen on the Valdak Marshes only 21 August and in the period 31. August – 5. September. The period 22 August – 30 August, they spent on the islets in the innermost part of the Porsangen Fjord. On 28 August, we surveyed the Porsangen Fjord, and localized the LWfG flock on the island Stuurra Saivva. On 21 August, the flock consisted of 9 adults with the 5 clutches of 16 juveniles, altogether 25 individuals. When the flock returned to the Valdak Marshes on 31 August, two juveniles were lost (the single juv in the 1-clutch and 1 juv. from the 5-clutch). This may either be due to goose hunting in the inner part of the Porsangen Fjord, or depredation by Gyrfalcon *Falco rusticolus* or Golden Eagle *Aquila chrysaetos* (both species breed in good numbers in the Porsangen fjord area). This is the first time we register loss of juveniles in the clutches during the autumn staging in the Porsangen Fjord.

### 3.3 Breeding success

A total of 16 adults and 16 (50 %) juveniles were registered during the autumn monitoring period. Five pairs brought goslings, yielding a mean brood size of 3.2 (**tables 2 and 3**). No young were seen on the Skjåholmen Island.

Breeding success is monitored during the post breeding period at the Valdak Marshes, which represent the first staging area before the onset of autumn migration. Mean brood size observed at the Valdak Marshes in the years 1994 - 2005 is 3.0 (SE=0.19, n=12), although it fluctuates significantly between years (Aarvak et al. 1997).

Estimates on brood size can be derived in different ways. The probably best estimate is based on number of juveniles compared to the number of pairs observed (potential breeders) in the pre-



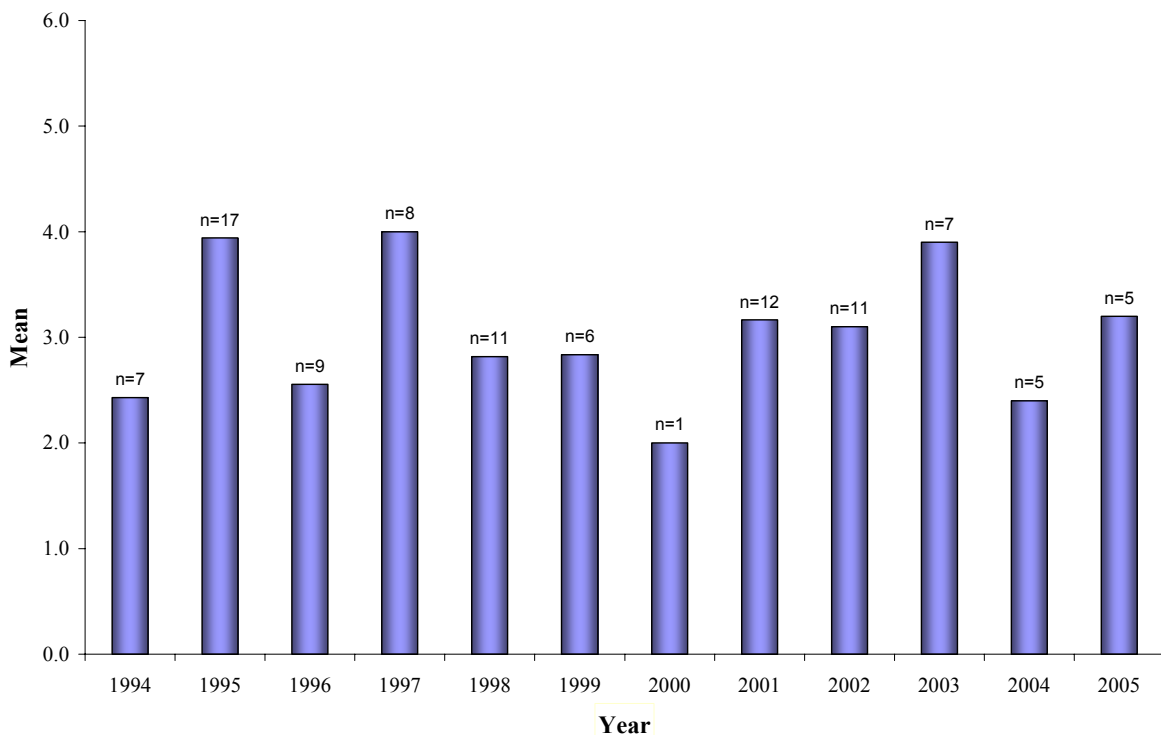
breeding period (Mean brood<sup>3</sup> - cf. Aarvak et al. 1997), which yields an estimate of 0.8 2005 (goslings per potential breeding pair). Based on the number of juveniles produced during summer in relation to all birds present at Valdak the previous spring we get a expected ratio of 26.7 % juveniles in the autumn/winter population. The mean expected juvenile proportion in the autumn for all years (1994-2005) is 32.9 % (SE=3.8, n=12).

**Table 2.** Autumn age ratio and annual brood sizes of Lesser White-fronted Geese in the years 1994-2005, based on counts during autumn migration at the Valdak Marshes (see also **table 3** for distribution of broods and number of pairs with broods).

Year	n adults	n juveniles	n total	% juveniles	n flocks	Mean brood <sup>1</sup>	Mean brood <sup>2</sup>	Mean brood <sup>3</sup>
1994	31	33	64	51.6*	3	2.4	2.2	1.3
1995	61	67	128	52.3	3	3.9	2.2	2.7
1996	16	23	39	59.0	1	2.6	2.9	1.0
1997	25	32	57	56.1	1	4.0	2.6	1.2
1998	29	31	60	51.6	3-1	2.8	2.4	0.9
1999	26	17	43	39.5	6	2.8	1.3	0.8
2000	8	2	10	20.0	1	(2)	(0.7)	(0.04)
2001	24	38	62	61.3	3	3.2	3.2	2.0
2002	28	34	62	54.8	2	3.1	2.4	2.6
2003	20	27	47	57.4	1	3.9	2.7	1.9
2004	15	12	27	44.4	1	2.4	1.7	1.3
2005	16	16	32	50.0	1	3.2	2.0	0.8

1) Counts of pairs with broods in autumn. 2) Number of juveniles divided by number of adults (pairs) in autumn.

3) Number of juveniles in autumn divided by number of pairs in spring \* Assumed that the observations are three independent flocks.



**Figure 3.** Annual registered production of goslings as seen in the flock of autumn staging lesser White-fronts at Valdak Marshes in the period 1994 – 2005.

**Table 3.** Distribution of brood sizes (post-moult) at the staging areas of Valdak Marshes in 1994-2005, Skjåholmen Island in 1995-2005 (see also Table 2).

Area	Brood allocation						Mean brood size	SD	n broods	Year
	1	2	3	4	5	6				
Valdak Marshes	1	2	4				2.43 *	0.79	7	1994
Skjåholmen		2					2.0	0	2	1995
Valdak Marshes		4	3	2	6	2	3.94	1.43	17	1995
Skjåholmen					1		5.0	-	1	1996
Valdak Marshes	1	3	4	1			2.56	0.88	9	1996
Skjåholmen		2	1				2.33	0.58	3	1997
Valdak Marshes		2	1		5		4.00	1.41	8	1997
Skjåholmen		3					2.0	0	3	1998
Valdak Marshes	2	4	2	1	1	1	2.82	1.60	11	1998
Skjåholmen		2					2.0	-	1	1999
Valdak Marshes	1	1	2	2			2.83	1.12	6	1999
Valdak Marshes		1					(2.0)	-	1	2000
Valdak Marshes	3		3	5		1	3.2	1.5	12	2001
Valdak Marshes		5	1	4	1		3.1	1.1	11	2002
Valdak Marshes		1	2	1	3		3.9	1.2	7	2003
Valdak Marshes	2	1		2			2.4		5	2004
Valdak Marshes	1	2	1	1			3.2		5	2005

\* One flock of 32 individuals (16 goslings) has been omitted, because the distribution of broods is unknown.



The salt marshes at Valdak seen from the outlet of the Valdak brook. The most preferred feeding areas can be seen in the background, though the lesser white-fronted geese also often use the grassy areas in the foreground. © Ingar J. Øien, autumn 2005.

### 3.3 Colour ring observations

Five colour ringed LWfG were seen at the Valdak Marshes during the spring staging period in 2005. Two of them were also seen during autumn (see **table 4**).

**Table 4.** Observed colour ringed lesser white-fronted geese at the Valdak Marshes, Porsangen fjord, in 2005. S=spring, A= autumn.

Colour code	Sex	Season
Red-White (left)	F	S + A
White-Green (left)	M	S
Orange-Yellow (right)	M	S
Black-Red (left)	M	S
Yellow-Red (right)	F	S + A

### 3.4 Population development

From 2001 onwards the total number staging individuals has been approx. 30 % lower than the overall mean for the years 1993-2000. Also in 2005 the number of staging individuals was on this level, but promising in the respect that the total number of 44 individuals is the highest total number of spring staging LWfG at the Valdak Marshes since the turn of the century (**figure 2**).

## 4. Acknowledgements

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On 28 August, the inner part of the Porsangen fjord was surveyed for geese. Torkjell Morset from the mountain service, Statskog, drives the boat in the foreground. © Tomas Aarvak, autumn 2005.

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