SVALBARD PINK-FOOTED GOOSE

Population Status Report 2012-2013

Technical Report from DCE – Danish Centre for Environment and Energy No. 29 2013

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Data sheet

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Abstract: This report compiles annual monitoring data on the population status of the Svalbard pink-footed goose for the season 2013-14, which is used to monitor the population development and provide input data to the modeling of an optimal harvest strategy for the population for the coming hunting season (2013-14). This is part of an adaptive harvest management framework set up to support the implementation of the AEWA International Species Management Plan for the population. The estimated population size (May 2013) was 81,600 individuals, which is the highest ever recorded. The proportion of juveniles in the population (October 2012) was under long-term average, namely 9.9%. The number of pink-footed geese harvested in Norway and Denmark in the 2012 hunting season was c. 11,000.

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1 Aim

The aim of this report is to compile annual monitoring data on the population status of the Svalbard pink-footed goose for the season 2013-14. Data is used to monitor the population development and provide input data to the modeling of an optimal harvest strategy for the population for the coming hunting season (2013-14). This is part of an adaptive harvest management framework set up to support the implementation of the AEWA International Species Management Plan for the population (see Madsen, J. and Williams, J.H. 2012; AEWA Technical Report No. 48). We thank the national volunteer networks who contributed with counts to this report (names are listed in Appendix 1A-1E).

2 Population estimate 2012-13

Internationally coordinated population counts were performed on 4 November 2012 and 5 May 2013. Counts were coordinated as tightly as possible to the date and, in May to the middle of the day, because of previous experience with flocks moving between sites with the risk of double counting. In November, when the population is distributed all over the non-breeding range, from Trøndelag in mid Norway in the north, through Denmark, The Netherlands and south to Belgium (as well as scattered flocks in southern Sweden), flocks were either counted when they were leaving the roost sites in the morning, arriving to roost sites in the evening, or in the fields. In May, when the population is concentrated in Trøndelag and Vesterålen, Norway and Jutland in Denmark, counts in Trøndelag were targeted to the middle of the day when the majority of geese stay on the roost sites. Counts were performed by a local team of observers; however information from sites outside the range of counting, such as the migration corridor through southern part of Norway, was derived from online data sources. Counts from Sweden were solely derived from the online reporting system Svalan (http://svalan.artdata.slu.se/birds/default.asp).

The count on 4 November 2012 is summarized in Table 1 and the details are shown in Appendix 1A. For Denmark, 3,000-5,000 pink-footed geese may have been missed in North Jutland. Pink-footed geese have recently started to use the area Store Vildmose, and in the autumn of 2012, up to 8,000-10,000 occurred here but their roost site was unknown. Some of them might have flown to Vejlerne to roost but on the days following the count Henrik Haaning Nielsen followed the geese flying to the evening roost. It turned out that they stayed on some flooded areas in Store Vildmose, however it was impossible to unravel how big a proportion of the birds which flew to Vejlerne to roost on 4 November or stayed for the night in Store Vildmose. Hence the estimate based on the November count was 62,500-67,500 individuals (rounded up to nearest hundred).

Table 1. Results of international count of pink-footed geese, 4 November 2012.

Country	Region	Numbers
Norway	Trøndelag	905
Denmark	Jutland	40045
Netherlands	Friesland	16769
Belgium	Flanders	3680
Sweden	Southern Sweden	1021
TOTAL		62420

The count performed on 5 May 2013 is summarized in Table 2 and Appendix 1B-1D. The majority of pink-footed geese were found in the county of Nord-Trøndelag, Norway. According to the team, coordinated by Per Ivar Nicolaisen, the geese were stable on the roosts during the count and relatively few geese were found in the fields. In southern Norway, large flocks of migrating geese were observed; however, they were observed during the middle of the day, hence simultaneously with the count in North-Trøndelag. The risk of double counting was therefore minimal. The population estimate based on this count (rounded up to nearest hundred) was 81,600 individuals.

Table 2. Results of international count of pink-footed geese, 5 May 2013.

Country	Region	Numbers
Norway	Norway south of Nord-Trøndelag	3047
Norway	Nord-Trøndelag	73905
Norway	Vesterålen	200
Denmark	Jutland	4422
TOTAL		81574

The counts suggest that between 10,000 and 15,000 geese were missed in the November count. The reason for this remain a mystery; however, it is noteworthy that the pink-footed geese have become very mobile and exploratory in their behaviour and during autumn (and spring) they spread to new sites outside the known range. It is a constant challenge to find and cover these new sites. It is highly likely that the new unknown sites are to be found in Denmark but possibly also southern Norway and southern Sweden.

In summary, the population of pink-footed geese has continued its growth and reached a new peak size (Fig. 1). However, the rate of increase went down which was due to a below average productivity (see below).

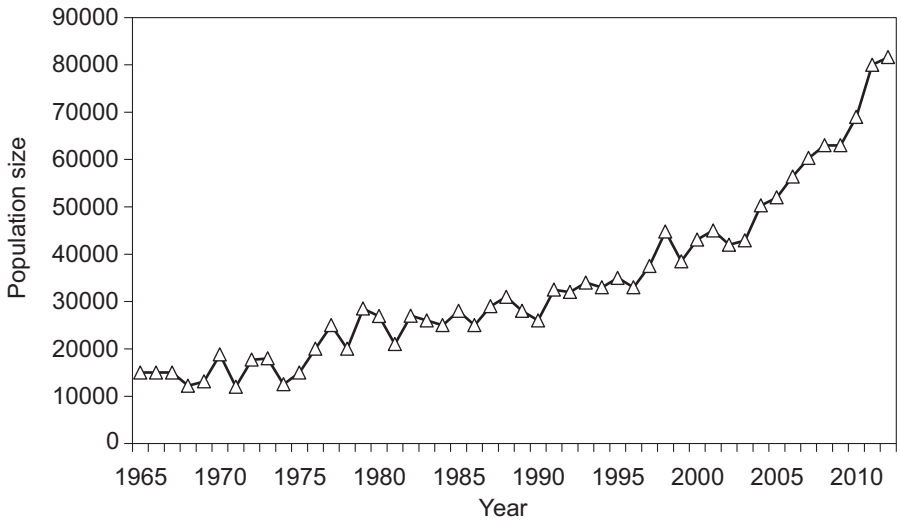

Figure 1. Development of the size of the Svalbard pink-footed goose population, 1965/66-2012/13.

3 Productivity autumn 2012

The 2012 spring in Svalbard was relative cold with 4.5 thaw days in May (number of days with mean daily temperature above 0°C) which is an average of daily mean temperatures at Svalbard Airport and Ny Ålesund (www.eklima.no). The subsequent productivity in the population of pink-footed geese recorded in the autumn of 2012 was relatively low. Age ratio counts were performed in The Netherlands, Denmark and Norway during mid-October (Table 3). The proportion of juveniles varied between 9.5% (in Denmark) and 13.6% (in Norway). The proportion of juveniles differed significantly between the three countries (Chi-square = 19.45; df = 2, $p < 0.001$). To derive an overall estimate, the proportion of juveniles has been weighted against the approximate numbers of geese staying in Norway, Denmark (including Sweden assumed to have the same proportion as in Denmark) and The Netherlands, respectively, during the middle of October 2012 (Table 3). By that time, at least 4250 pink-footed geese were present in Trøndelag, Norway (Paul Shimmings pers. comm.), while pink-footed geese had not yet arrived in Belgium. It is assumed that the total population was at least 81,600 individuals (using the May count and not considering mortality between November 2012 and May 2013) and that the 'missing' geese were in Denmark. The overall proportion of juveniles in the population was thus 9.9%.

Table 3. Proportion of juveniles in the population of pink-footed geese in Norway, Denmark and The Netherlands during autumn 2012 (samples taken between 13-30 October) and estimate of an overall population-wide proportion of juveniles, based on the approximate October distribution between countries. Counts were performed by Paul Shimmings (Norway), Ole Amstrup, Jørgen Peter Kjeldsen and Henrik Haaning Nielsen (Denmark) and Fred Cottaar (The Netherlands).

Country	Numbers Counted	Number of juvs.	% juvs.	Numbers in mid-Oct.	Estimated number of juvs.
Norway	1393	190	13.64	4250	580
Denmark	4174	395	9.46	60650	5654
The Netherlands	10816	1130	10.45	16700	1745
TOTAL	16382	1715		81600	8064
				%juvs. weighted	9.88

Brood sizes were recorded in Norway, Denmark and The Netherlands during October 2012. Results are summarized in Table 4. There is a significant difference between countries (one-way ANOVA, $F_{2,552} = 13.85$, $p < 0.0001$). A Post hoc test (Tukey's Multiple Comparison Test) shows that Netherlands vs. Denmark and Netherlands vs. Norway are significantly different, while there is no difference between Denmark and Norway. The results suggest that a population brood size estimate cannot be based on data pooled across the staging sites. Before 2012, brood sizes have mainly been assessed in The Netherlands, and until we have data from more years, a population estimate will remain based on the Dutch data.

Table 4. Mean brood sizes (± std) recorded in Norway, Denmark and The Netherland during autumn 2012. Counts were performed by Paul Shimmings (Norway), Ole Amstrup (Denmark) and Fred Cottaar (The Netherlands).

Country	Mean	Sample	std
Norway	1.96	94	1.00
Denmark	2.02	50	0.96
The Netherlands	1.57	409	0.73

4 Harvest in Norway and Denmark 2012

Data on hunting bags from Norway for the autumn 2012 has been supplied by Statistics Norway (www.ssb.no) (Trond A. Steinset pers. comm.). Hunting bags from Denmark have been derived from the National Hunting Bag Statistics at Aarhus University (http://bios.au.dk/videnudveksling/til-jagt-og-vildtinteresserede/vildtudbytte) (Tommy Asferg pers. comm.). For Denmark, an estimate is provided via online reporting (newly established) and one via wing collection sampling (http://bios.au.dk/videnudveksling/til-jagt-og-vildtinteresserede/vinger/) (Thomas Kjær Christensen pers. comm.). The data are preliminary since the final evaluation of the national hunting bag has not yet taken place. The results suggest that in Norway fewer pink-footed geese were shot than in the previous three hunting seasons (Fig. 2). One of the reasons for the decrease was a delayed cereal harvest which meant that a large proportion of cereal fields were not harvested by the time of arrival of pink-footed geese to Nord-Trøndelag during late September and therefore, many flocks passed quickly onwards to Denmark. The numbers of pink-footed geese harvested in Denmark remained at the same level as in the previous two years. In total, the number of harvested geese decreased by around 1000 geese compared to the two previous years.

Table 5. Preliminary hunting bags of pink-footed geese in Norway and Denmark, hunting season 2012-13. The Danish total is an average of estimates based on wing surveys (9126) and the newly established online reporting (8580).

Country	Hunting bag 2012
Norway	2169
Denmark	8853
TOTAL	11022

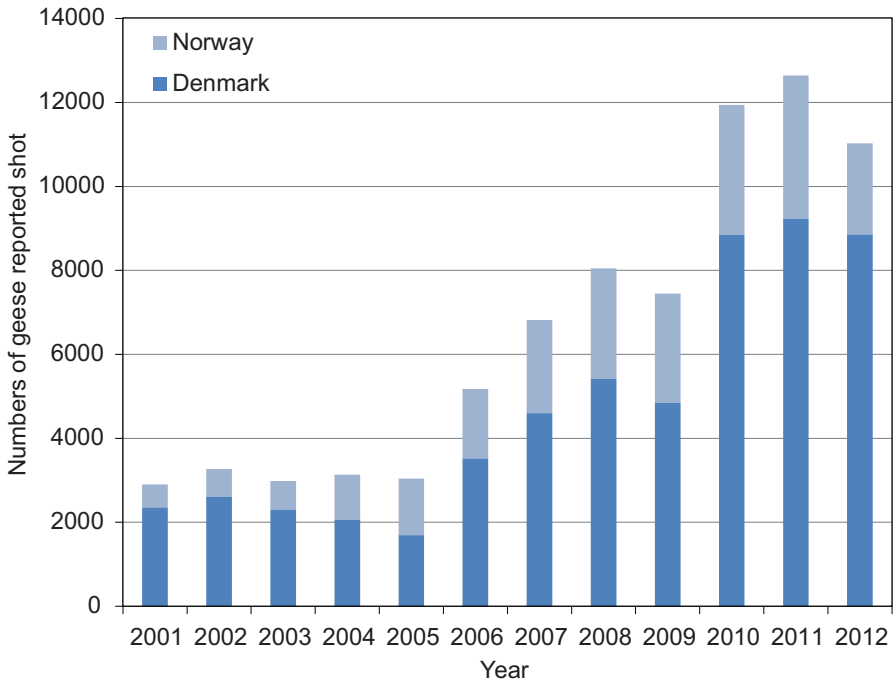

Figure 2. Harvest of pink-footed geese in Denmark and Norway, 2001-2012. Data from 2012 are preliminary. Sources: see text.

5 Spring weather conditions in Svalbard 2013

The overall productivity of high-Arctic pink-footed geese can be predicted using thaw days or snow coverage by the end of May (G. H. Jensen et al. submitted manuscript). The mean daily temperatures are derived from Ny-Ålesund and Svalbard Airport meteorological stations (www.eklima.no). In May 2013 Ny-Ålesund had 7 thaw days and Svalbard Airport had 9 thaw days. For further analysis an average of 8 thaw days will be used. This is just above the long-term average for 1969-2011, which is 7.3 (std = 4.4). This information will be used for the predictive modeling to define the optimum harvest for the hunting season 2013 (to be reported in August 2013).

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