

Spring staging of Taiga Bean Goose *Anser f. fabalis* in southern Sweden 2007 – estimate of the size of populations using the western and central flyways

Vårrastning av taigasädgås Anser f. fabalis i södra Sverige 2007 – uppskattning av storleken på populationer som nyttjar det västra och centrala flyttstråket

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Abstract

The Taiga Bean Goose *Anser fabalis fabalis* is one of few goose species under current decline. The species uses three flyways: the Scandinavian population migrates west of the Baltic Sea and the Bothnian Bay, the Finnish and western Russian populations take a central flyway, and the central Russian population migrates east of the Baltic Sea. On 17–21 March 2007, the number of birds using the western and the central flyways were counted at all staging sites in southern Sweden. During the count, practically the whole western and central flyway populations were concentrated in southern Sweden. We estimated the number of birds at 56,000. Recent estimates suggest that 5000–6000 of these birds breed in Scandina-

via and use the western flyway. This means that approximately 50,000 birds used the central flyway. Assuming that a maximum of 30,000 birds wintered in Germany and used the eastern flyway, the global population of the Taiga Bean Goose amounted to a maximum of 85,000 birds. This is about 15,000 birds less than an estimate from 1999.

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Introduction

The Taiga Bean Goose is known to breed in the taiga zone from Scandinavia in west to the Ural Mountains in the east. The current estimate (Nilsson et al. 1999) of 90,000–110,000 individuals is based on counts made at the wintering grounds in Sweden, Denmark, England, The Netherlands and Germany. Recent unpublished updates rather points at a population size of 70,000–80,000 individuals (Mooij, pers. comm.). During spring migration three major flyways are known (Figure 1). A western flyway runs from northern Jutland, Denmark and southern Sweden along the west coast of the Bothnian Bay to the breeding grounds in northern Scandinavia (Skyllberg et al. 2008). A central flyway connects the wintering grounds in southeast Denmark and southern Sweden via southwest Finland with breeding grounds in Finland and western Russia (e.g. Nilsson 1984, Nilsson & Pirkola 1991). An eastern flyway runs from eastern Germany via the Baltic countries to breeding areas in western and central Russia (Nilsson et al. 1999). The number of geese using each of these three flyways is not well-

known. As a consequence, the African-European Migratory Waterbirds Agreement (AEWA) only recognizes one single population of the Taiga Bean Goose, comprising its entire breeding range from Scandinavia to east of the Urals. If the species in fact consists of two or more separate populations, their small sizes and likely decline the last decades would classify them as Column A populations, possibly requiring International Action Plans for special protection.

Recently, detailed counts at spring staging sites along the west coast of the Bothnian Bay suggest that 5000–6000 birds take this flyway, making up the Scandinavian population including non-breeders (Skyllberg et al. 2008). These birds are believed to winter in northern Jutland, Denmark, at two major sites in United Kingdom, and in mild winters in southernmost Sweden (southwest Scania). It is unknown to which extent birds using the central and eastern flyways mix or use different wintering sites in southeast Denmark, southern Sweden, Germany and the Netherlands, and therefore counts in wintering quarters cannot currently be linked to the two flyways. In order to estimate the number

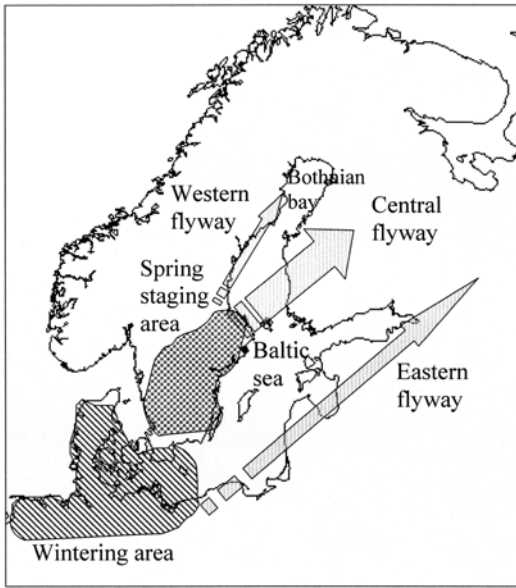


Figure 1. Major wintering area, spring staging area in southern Sweden, and three major flyways of the Taiga Bean Goose.

Huvudområde för övervintring, område för vårrastning i södra Sverige samt tre huvudstråk för vårflyttningen.

of birds associated with each flyway, counts have to be conducted along these flyways during spring or autumn migration. In this study an estimate of the numbers of birds using the western and central flyways during spring is presented. Because of the very early spring of 2007, Taiga Bean Geese using the two flyways west of the Baltic Sea proper were concentrated within a very limited area in southern Sweden during a 2–3 week period in March. Based on counts made for the western flyway in 2002–2006 (Skjällberg et al. 2008) and for both flyways in spring 2007 (this study), it is suggested that the western flyway currently is used by 5000–6000 and the central flyway by approximately 50,000 Taiga Bean Geese.

Materials and methods

Accuracy of counts and estimates

Taiga Bean Geese were counted at feeding grounds, and in some cases at the night roost, by local ornithologists at 43 of 45 selected spring staging sites in 12 counties of southern Sweden (Table 1). Counts were conducted by persons with good local knowledge of the respective staging site and with

experience of counting geese. At some major sites weekly, simultaneous counts were organized by groups of ornithologists, whereas at most sites individual ornithologists with good local knowledge conducted independent counts covering one or more feeding localities. Commonly the best feeding sites were counted almost every day throughout the 2–3 weeks of spring staging. At such sites one experienced counter was asked to come up with an estimate for the whole site, based on many reports from single feeding localities. For our total estimate we used mainly counts conducted during the weekend 17–18 March, but for sites without complete coverage this weekend counts conducted up to a week later were used. These later counts were only used when incomplete counts on 17–18 March revealed no substantial turnover of geese prior to the complete count. Because many persons and sites were involved, the estimates with necessity differ in methodology and accuracy among sites.

Most important for the final estimate is the accuracy of counts performed at sites regularly hosting more than 2000 birds. At the major sites Östen (site 4) and Tåkern (site 23), organized counts were conducted on a weekly basis, either at the feeding grounds or during flights to and from the major roosts. At the major site Tännaren (site 42) one organized day-count was undertaken by individual ornithologists covering all feeding grounds, and at Vendelsjön (site 41) the major roost was counted almost daily together with nearby fields. Kvismaren is one major site currently lacking organized counts. The number reported for 18 March included 3460 geese counted on fields used by geese having their night roost in lake Kvismaren. Feeding grounds further east, used by geese night-roosting at Segersjö in lake Hjälmarén, were not counted this day. This group of birds normally makes up approximately 25% of the total number, and therefore another 1140 geese were added for the total count at site Kvismaren. At other major sites such as Skåraområdet (site 28) and sites in south-western Uppland (sites 34–36) the geese are regularly using the same feeding grounds. During staging these sites were visited almost every day by experienced ornithologists. At the site Alunda/Stamsjön (site 39) the only complete count was on 23 March, when 4100 geese were counted at the roost (Stamsjön).

Sites hosting less than 1500 geese are quite restricted in size, often having one suitable night roost and some nearby fields available for feeding. Most of these sites are regularly visited by one or a couple of local ornithologists that typically know

Table 1. Major spring staging sites for Taiga Bean Goose in southern Sweden north of the county of Scania (sites in Scania are considered mainly wintering grounds).

Huvudområden för rastande taigasädgäss i södra Sverige norr om Skåne (skånska lokaler anses vara övervint-ringplatser).

	County <i>Landskap</i>	Staging site <i>Rastlokal</i>	Estimate <i>Uppskatning</i>	Date of count <i>Räkningsdatum</i> March <i>mars</i>
1	Halland	Getterön	0	17
2		Kungsbackafjorden	0	17
3	Västergötland	Veselången	0	17
4		Östen	6000	24
5	Närke	Vibysjön	270	10
6		Kvismaren/Segersjö	4500	17
7		Tysslingen	1400	17
8	Värmland	Ölmeviken	250	21
9	Västmanland	Fellingsbro	200	17
10		Köping	380	17
11		Hallstahammar	400	17
12		Tidö/Asköviken	700	18
13		Hedensberg/Tortuna	700	22
14		Solinge/Frövisjön	700	17
15		Lisjö/Gnien	230	14
16		Västerfärnebo	1600	17
17		Lisselbo/Saladamm	350	14
18	Småland	Skatelövsfjorden	0	17
19		Lidhemssjön/Djurle myr	0	17
20		Nisten/Nöbbele	0	17
21		Mörlundaslätten	760	21
22	Öland	Askelunda	400	
23	Östergötland	Täkern	2590	17
24		Ringstad mosse	750	18
25		Svensksundsviken	200	19
26	Södermanland	Floda/Jägern	250	18
27		St Malsomr/Stensjön	400	18
28		Skåraområdet	2100	24
29		Stenkvista/Rossvik	700	17
30		Vingåkersslätten	100	18
31		Sätterstamaden	?	
32	Uppland	Ransta	?	
33		Altuna/Revelstasjön	400	18
34		Fjärdhundra/Örsundaån	2000	18
35		Torstuna/Alstasjön	3000	18
36		Hjälstaviken	2100	18
37		Veckholm	900	20
38		Frötuna/Hederviken	800	17
39		Alunda/Stamsjön	4100	23
40		Lena/Husbydamarna	600	21
41		Vendelsjön/Vendelådalen	3400	17
42		Tämnaren	8200	22
43		Ledskär	400	24
		Additional minor sites	*2500	17–21
44	Dalarna	Hovran/Flinesjön/Krylbo	800	17
45	Gästrikland	Torsåker	250	17
	Sweden		55 300	
	Denmark + Finland		750	
	Western and central flyways		56 050	

*Lagga 650, Hosjön 500, Alasjön 350, Hagalund 350, Huddunge 200, Övre Föret 150, Rasbo 150, Fysingen 150

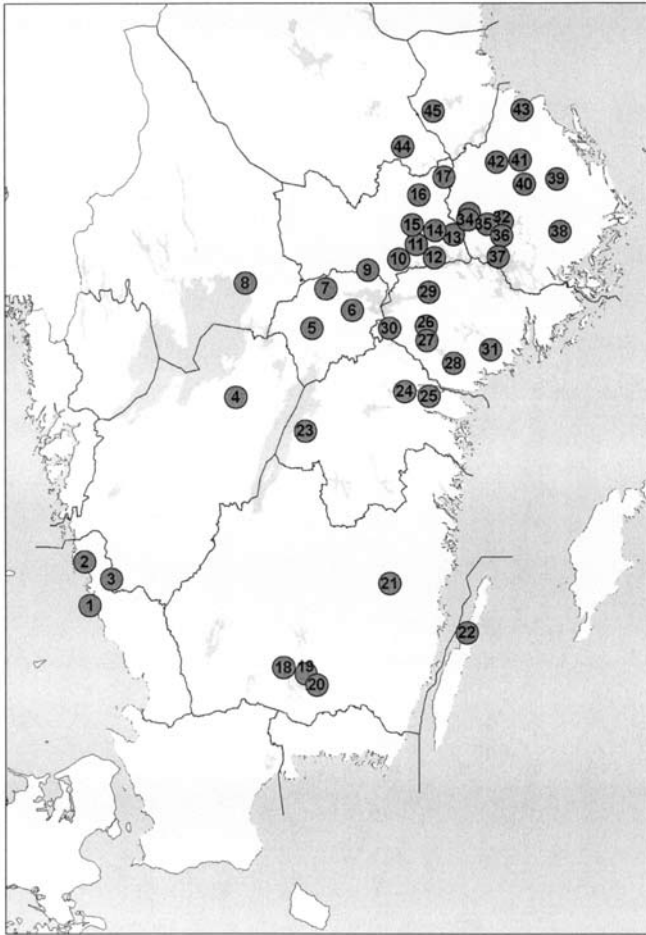


Figure 2. Spring staging sites of Taiga Bean Geese in southern Sweden. Site names are listed in Table 1.

Rastlokaler under vårflyttningen för taiga-sädgås i södra Sverige. Lokalernas namn återfinns i Tabell 1.

the site and the number of staging geese very well. Thus, counts at smaller sites should be reliable both regarding coverage of the whole site and accuracy of reported numbers. Some minor sites, however, known or believed to host more than 400–500 Taiga Bean Geese, have insufficient documentation, both historically and in spring 2007. Such sites are no. 26, 31, 32 and 33. Also these sites are included for completion. Data reported for site 5 are as early as from 10 March and for sites 14 and 17 from 14 March. These are all sites known to regularly host more birds than reported in 2007. In lack of counts conducted during the period 17–21 March, we rely on the conservative (at site 5 obviously incomplete) estimates prior to these dates. In the county of Uppland, a number of minor sites which have not been known to regularly host more than a couple of hundred birds are included with a total of 2500 birds in Table 1.

Results

In Table 1 we have listed 45 sites in southern Sweden reported to regularly host at least 400–500 Taiga Bean Geese during spring migration. The geographical location of these sites is illustrated in Figure 2. The geese mainly use large agricultural plains west and east of lake Vättern (counties of Västernorrland and Östergötland), the plain west of lake Hjälmaren (Närke) and the plains surrounding lake Mälaren in the counties of Västmanland, Södermanland and Uppland. In the outskirts of the major agricultural areas also sites hosting a smaller number of geese have been included in Table 1 (e.g. site 8 – the most north-western site, site 45 – the northernmost site). It should be noted that later in spring also sites further north in Sweden are used but these sites did not host any Taiga Bean Geese during the study period and are therefore not included in Table 1.

Discussion

Double counts

Because Taiga Bean Geese have been observed to stay on average one week at their northern spring staging sites (e.g. Skyllberg et al. 2008), and are believed to migrate at least 300–500 km to the next stop-over, double counts can be minimized by selection of a period with little movement of migrating geese. Major movements were observed in the period 9–13 March, when there was a migration of birds from the southern parts of the spring staging area (e.g. counties of Småland and Halland) to the northern parts. Migration movements during the period 15–24 March were small, but from 26 March and further on the Taiga Bean Geese using the central flyway began leaving their sites in Sweden for staging sites in western Finland and Russia. On 26 March more than 2500 birds reached their staging sites at Kristinestad in western Finland (Ismo Nousiainen, pers. comm.). The last major movement along the central flyway was on 13–15 April when large numbers of migrating Taiga Bean Geese were observed leaving Uppland over the Bothnian Sea. These dates also the western flyway, along the west coast of the Bothnian Bay, was used by at least 1500 Taiga Bean Geese. Observations of neck-banded geese indicate some exchange of geese between neighbouring staging sites in Uppland (Bern 2005), but likely these local movements are quite random and therefore should be cancelled out in our estimates.

East of lake Vättern, a major movement was observed on 9–10 March when Taiga Bean Geese were leaving their early spring staging sites in southern Småland (sites 18–20). These geese most likely ended up at sites in Östergötland, Sörmland and Uppland. West of lake Vättern, the most important staging site is lake Östen. This site is believed to receive geese from Jutland, Denmark and/or Halland (sites 1 and 2), and Veselången (site 3) but also from southwest Scania (in February and early March). Already Rosenius (1937) recognized the flyway from Jutland, via Halland, to sites west and northwest of lake Vättern, and attributed it to Scandinavian birds. Based on regular counts, estimates at Östen for the periods 4–14 March, 16–24 March and 23 March–4 April were 5600, 6000 and 5200, respectively. No geese were observed at sites south of Östen (and west of lake Vättern) after 17 March.

In order to minimize effects of possible movements from the southernmost sites to northern sites, available counts conducted in the beginning

of the period was used for the estimate at sites in the northern range of the area (mainly counties of Uppland and Västmanland), and counts conducted in the end of the period, was used for southernmost sites. Also at the southernmost site along the eastern corridor of lake Vättern (Mörlunda slätten, site 21), counts late in the period (21 March) was used. Similar to the western corridor, no geese were observed south of this site on 17 March. Site 28 (Skåraområdet) held about 2000 geese during several weeks, both before but mostly after the period of 17–21 March and therefore we used the maximum count from 24 March. This site is situated far to the east (Figure 2). Because only very few geese were observed at sites south of site 28 after 12 March (and numbers of geese were stable at nearby sites 24 and 25) the geese reported on 24 March at site 28 can be expected to have been staging in the area at least a week.

Sources of error due to possible double counts are mainly associated with estimates at sites 39 and 42. These sites are situated in the northern parts of the covered area and counts used in the end of the period are used for the estimate. The reason for this is that a complete count covering the whole area of feeding fields at Tännaren, which is a large staging site with many roosts and feeding sites around this big lake, was only conducted on 22 March. Similarly, the only complete count of site 39 was from 23 March. As no major movements were observed during the period 17–23 March, possible double counts should have involved only a small number of geese. It is likely that this number was smaller than the number of geese at minor staging sites that were unknown and at the few sites (e.g. 31 and 32) known to host at least 200–300 geese that were not counted in 2007.

Population estimates

During the five day period 17–21 March there were no flocks of Taiga Bean Geese remaining at their wintering grounds in United Kingdom (normally a total of about 1000 individuals stay over winter at two sites). At Rosvang in northern Jutland a flock of 350 Taiga Bean Geese were reported on 17 March. No observations of flocks of Taiga Bean Geese were made from the wintering sites in the county of Scania, Sweden. Only about 400 birds were reported from the major staging sites in the area of Kristinestad, Finland on 22 March. The early spring even emptied the major spring staging sites in southern Småland (sites 18–20) as early as in the first week of March, which is very unusual

(Ronny Johansson, pers. comm.). This situation, with largely all Taiga Bean Geese concentrated to their spring staging sites north of central Småland and Västergötland, was very beneficial in order to get a reliable estimate of the western and central flyway populations. This situation may not be common, and counts the coming years will show whether population estimates will depend on the proceeding of spring and spring migration patterns.

In total, we estimate that about 55,000 Taiga Bean Geese were staging in southern Sweden on 17–21 March, and together with approximately 1000 birds in Denmark and Finland our total estimate is approximately 56,000 Taiga Bean Geese. Of these birds, about 6000 belong to the Scandinavian breeding population, using the western flyway along the Bothnian Bay (Skjyllberg et al. 2008). The remaining approximately 50,000 Taiga Bean Geese is our estimate of the central flyway population. According to Heincke (pers. comm.) about 30,000 Taiga Bean Geese are wintering in the Netherlands and Germany, and they belong to the eastern flyway. This means that the global population of the Taiga Bean Goose may amount to approximately 85,000 individuals. This estimate is lower than the current published estimate of 90,000–110,000 birds (Nilsson et al. 1999), but in line with recent unpublished estimates based on counts at wintering grounds (Mooij, pers. comm.). This result further supports recent speculations about a significant decline of the world population of the Taiga Bean Goose and emphasizes the importance of a possible update of the classification of the species according to AEW categories. We also suggest that discussions about National and International Action Plans should be initiated in order to secure a positive conservation status of the populations of three flyways.

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Sammanfattning

Taigasädgäsen *Anser fabalis fabalis* häckar inom taigazonen från Skandinavien i väster till Uralbergen i öster. Enligt Nilsson m.fl. (1999) består världspopulationen av 90.000–110.000 individer. Räkningar av övervintrande taigasädgäss under de senaste decennierna pekar dock på en minskning och antalet individer kan vara så lågt som 70.000–80.000. Tre viktiga flyttstråk nyttjas av taigasädgäsen under vårflyttningen (Figur 1). Ett stråk löper från södra Sverige på västra sidan av Bottniska viken till rastplatser i Väster- och Norrbotten. Detta västliga flyttstråk nyttjas av den Skandinaviska populationen av taigasädgäs. Skjyllberg m.fl. (2008) har nyligen beräknat att det västliga flyttstråket nyttjas av ca 6000 individer under vintern. Det centrala flyttstråket går från Mälardalen/Uppland ut över södra Bottenhavet mot sydvästra Finland (t.ex. Nilsson & Pirkola 1991) och nyttjas av taigasädgäss häckande i norra Finland och västra Ryssland. Det östra flyttstråket löper på den östra sidan av Östersjön från norra Tyskland via Baltikum till häckningsområden i första hand Ryssland (Nilsson m.fl. 1999). Antalet sädgäss som nyttjar vart och ett av dessa tre flyttstråk är fortfarande inte klarlagt och kunskapen om kopplingen mellan

flyttstråk, häckningsområden och övervintringsområden är fortfarande mycket bristfällig. En konsekvens av detta är att AEWA (African-European Migratory Waterbirds Agreement) endast anger en population av taigasädgås som omfattar rasens hela utbredningsområde. Om taigasädgåsen i själva verket består av två eller flera avgränsade populationer med skilda häckningsområden och flyttvägar är sannolikt storleken av dessa populationer så små, och dessutom minskande, att en klassificering som s.k. Column A population i AEWA kan vara aktuell. Det skulle i sin tur betyda att Sverige och andra nationer inom AEWA med ansvar för taigasädgåsen åläggs att upprätta nationella och internationella aktionsplaner för att säkerställa bevarandestatus och verka för en positiv populationsutveckling.

I föreliggande studie har vi beräknat summan av antalet taigasädgås som under 2007 nyttjade det västra och centrala flyttstråket, dvs. de två stråk som löper väster om Österjsjön. Under en två- till treveckorsperiod i mars var alla taigasädgås som flyttar längs dessa två stråk koncentrerade till rastplatser norr om en öst-västlig linje mellan Småland och södra Västergötland och söder om en linje mellan södra Gästrikland och Södra Värmland (Figur 2).

Material och metoder

Taigasädgås räknades av lokala ornitologer på 43 av 45 kända vårrastplatser inom 12 landskap i Götaland och Svealand (Tabell 1). På vissa större lokaler (t ex Östen och Tåkern) genomfördes veckovis, organiserade räkningar, men på de flesta rastplatser nyttjades räkningar utförda av oberoende lokala ornitologer. På varje lokal utsågs en kontaktperson med mycket god kunskap om gässens vanor i området, som i slutändan vägde ihop den samlade informationen till ett uppskattat antal taigasädgås för perioden 17–21 mars. Perioden karakteriserades av få större gåsrörelser mellan olika lokaler, vilket minimerade risken för dubbelräkningar. I de allra flesta fall nyttjades räkningar utförda under helgen den 17–18 mars. I de fall räkningar saknades för den perioden nyttjades i första hand data efter 17–21 mars för lokaler i den södra delen av räkningområdet och data före 17–21 mars i den norra delen av området. Detta förfarande minimerade ytterligare risken för dubbelräkningar eftersom gässen rör sig från den södra till den norra delen av området under mars månad. Undantag för regeln gjordes i några fall för att kunna nyttja heltäckande räkningar för t.ex. Skåraområdet (lokal 28),

Alunda/Stamsjön (lokal 39) och Tännaren (lokal 42) samt för att ge minimiantal för lokalerna 5, 15 och 17 (Tabell 1).

Dubbelräkning

Eftersom väldigt få flyttningsrörelser noterades under perioden 15–24 mars kan eventuella dubbelräkningar anses vara små och sannolikt försumbara i förhållande till övriga felkällor under räkningsperioden. Större flyttningsrörelser noterades 9–13 mars då sädgäss sträckte från lokaler i den södra delen av rastområdet mot nordost till lokaler i framförallt Västmanland och Uppland (Figur 2). Sedan var sädgässen stationära under ca två veckor innan nästa sträckperiod inföll 25–26 mars då sträcket längs det centrala flyttstråket över södra Bottenviken aktiverades. Den 26 mars nådde minst 2500 taigasädgäss rastplatser vid Kristinestad i sydvästra Finland (Ismo Nuousiainen, pers. comm.).

Populationsuppskattning

Totalt 55.300 taigasädgäss räknades på de 45 rastlokaler under perioden 17–21 mars (Tabell 1). Om man beaktar att ytterligare 750 taigasädgäss uppehöll sig på Jylland och i västra Finland, så blir totalantalet för det västra och centrala flyttstråket ca 56.000 taigasädgäss. Cirka 6000 av dessa gäss fortsätter längs det västra flyttstråket till sina Skandinaviska häckningsområden, varför våra beräkningar pekar på att 50.000 taigasädgäss nyttjade det centrala flyttstråket över södra Bottenhavet (Figur 1). Enligt Heincke övervintrade cirka 30.000 taigasädgäss i Holland och nordöstra Tyskland under 2007. Dessa gäss antas flytta genom Baltikum längs det östra flyttstråket. Resultatet av räkningarna i Sverige våren 2007, tillsammans med uppskattningen från Holland och Tyskland, pekar på att världspopulationen av taigasädgås i nuläget uppgår till ca 85.000 individer. Detta antal är lägre än vad som rapporterades av Nilsson m.fl. (1999) och i nivå med inofficiella noteringar från det senaste decenniet (Mooij, pers. comm.). Vintern 2006–2007 var mycket mild och betingelserna under våren mycket gynnsamma för denna typ av räkning, eftersom i stort sett hela beståndet av taigasädgås uppehöll sig inom ett begränsat område i norra Götaland och södra Svealand. Frågan om taigasädgåsen flexibilitet att välja olika flyttvägar, väster eller öster om Östersjön, beroende på vinterns stränghet samt vårens utveckling kan endast besvaras av framtida räkningar i kombination med individmärkning.