

## Long-term population trends in the Lesser Black-backed Gull *Larus f. fuscus* at Stora Karlsö and Lilla Karlsö, and initial results on breeding success

*Populationstrender och häckningsframgång hos silltrut Larus f. fuscus på Stora och Lilla Karlsö*

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### Abstract

Censuses of the breeding population of the nominate race of Lesser Black-backed Gull *Larus fuscus fuscus* were performed on the islands Lilla Karlsö and Stora Karlsö in the Baltic Sea in 2003 and 2004. At Lilla Karlsö, 126 and 136 nests were found, whereas the figures for Stora Karlsö were 532 and 477. These figures were evaluated together with previous censuses and the conclusion is that the population of both islands has recovered from the decrease that took place during the eighties and early nineties. The breeding success was found to be very low in 2003 and 2004 – about 0.11 respectively 0.02 fledglings/nest at Stora Karlsö and 0.16

respectively 0.07 at Lilla Karlsö. The reasons for the reproductive failure are not clear.

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### Introduction

The populations of the nominate race of Lesser Black-backed Gull *Larus f. fuscus* have declined drastically throughout its entire breeding range – the Baltic Sea, the inland of Finland, northern Norway, Estonia and Russian Karelia – during the second half of the 20th century. At Græsholmen, near Bornholm in the Baltic Sea, the breeding pairs of Lesser Black-backed Gull numbered 1200 in 1940 whereas in 1990 the number was down at 4–5 pairs (Lyngs 1992), showing no sign of recovery (P. Lyngs, personal communication). Declining numbers are also reported from Finland (e.g. Bergman 1982, Hario 1990) and northern Norway (Strann & Vader 1992, Lorentsen 2003). The Swedish population of nominate Lesser Black-backed Gull has been estimated at 17,000 pairs in the late seventies and about 4000–5000 in the late nineties (Svensson et al. 1999). As a consequence of the decline, the nominate race *fuscus* has been put on Red List of Swedish Species under the category “Endangered” (Gärdenfors 2000). The reasons for the declines are not fully understood, but several (probably interacting) factors have been suggested (Bergman 1982, Kilpi 1983, Hario 1990,

1994, Lyngs 1992, Strann & Vader 1992, Hario & Rudbäck 1996, 1999, Svensson et al. 1999, Hario et al. 2004): (1) competition with Herring Gull *Larus argentatus*, (2) scarcity of food in the breeding area, (3) negative factors in the winter quarters, (4) predation, and (5) diseases.

Stora Karlsö and Lilla Karlsö together hold the largest breeding concentration of the Lesser Black-backed Gull in the proper Baltic Sea. The five censuses that have been performed at the largest colony, Stora Karlsö, between 1976 and 1998 show a decreasing trend in the number of breeding pairs (Hedgren & Kolehmainen 2000). The number of breeding pairs at Lilla Karlsö have been monitored continuously since the early seventies.

The aim of our study was to follow up and evaluate the previous censuses of the Karlsö populations and to make a pilot study of different population parameters, to be able to forecast the future of the nominate race of Lesser Black-backed Gull in the Baltic Sea area.

### Material and methods

The study was carried out between May and August in 2003 and 2004 on the islands Stora Karlsö

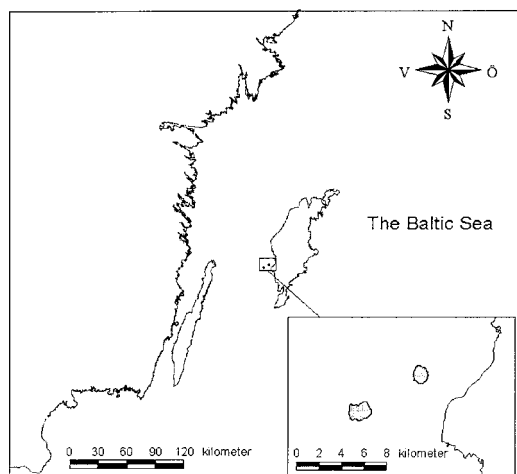


Figure 1. Map showing the location of Stora Karlsö (left) and Lilla Karlsö (right) in the Baltic Sea.  
*Karta som visar Stora och Lilla Karlsös position i Östersjön.*

(57°17'N, 17°58'E) and Lilla Karlsö (57°19'N, 18°04'E), located on the west coast of Gotland in the Baltic Sea (Figure 1).

Censuses were performed at Stora Karlsö and Lilla Karlsö where the numbers of nests were counted. One part of each island (the "study area", Figure 2) was studied more thoroughly. At Stora

Karlsö, the nests in the study area were censused between mid-May and mid-June. Most of the remaining parts of the colony at the island were censused 3 and 4 June in 2003 as well as 2004. During these two days two persons were thoroughly searching for nests at localities where birds had been breeding earlier and where individuals had been observed from distance earlier in the breeding season. The different breeding areas were just visited once for nest counting (except for the study area) and in the order from west to east along the southern part of Stora Karlsö. While approaching a breeding area the number of Lesser Black-backed Gull individuals in the air was counted, thereafter the nests were located and marked (to avoid double counting) and the content noted. At Lilla Karlsö all nests were counted and in the study area the nests were marked as well.

The study area at Stora Karlsö was visited with 1–3 days intervals during the incubation and chick rearing periods, and the content of the nests was controlled. Chicks were ringed and weighed the first time they were found and thereafter weighed each time they were found. Observational studies were performed from hides, using telescopes, between 9 and 26 June at Stora Karlsö and between 14 and 30 June at Lilla Karlsö in 2003. During the second part of July and throughout August, fledglings were counted repeated times by walking around the islands in a way that the whole shoreline (and the sea surface outside the shoreline) were surveyed in as short time as possible.

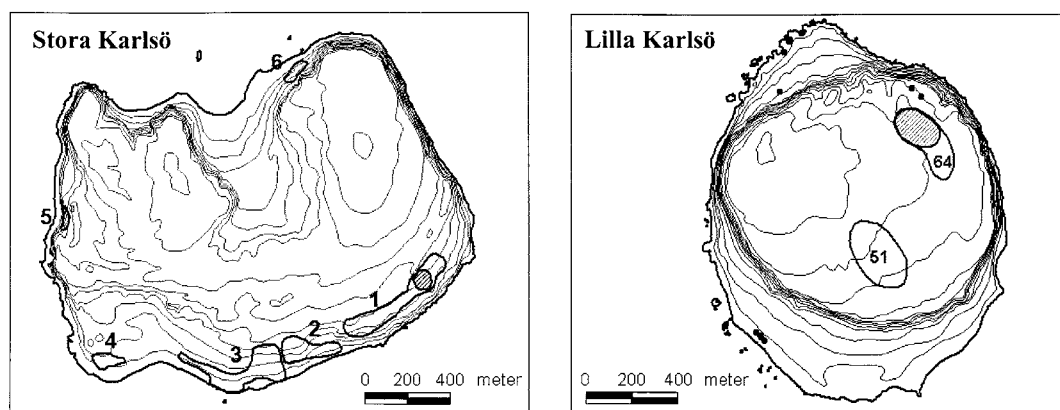


Figure 2. The breeding areas at Stora Karlsö and Lilla Karlsö. Number 1–6 at Stora Karlsö represent the areas in Table 1. The figures in the two breeding areas at Lilla Karlsö show the number of nests in 2003 while the dots mark individual nests outside the main breeding areas the same year. The striped parts of the islands represent the "study areas".  
*Häckningsområdena på Stora och Lilla Karlsö. Område 1–6 på Stora Karlsö motsvarar de som anges i Tabell 1. Siffrorna i de två häckningsområdena på Lilla Karlsö anger antalet bon år 2003 och prickarna representerar bon utanför häckningsområdena samma år. De streckade fälten markerar "studieområdena" på öarna.*

Table 1. Number of breeding pairs of Lesser Black-backed Gulls in different areas at Stora Karlsö (cf. Figure 2). Data from 1976, 1985 and 1998 originate from Hedgren & Kolehmainen (2000).

*Antal häckande par silltrut i olika områden under olika år på Stora Karlsö (jämför Figur 2). Data för åren 1976, 1985 och 1998 är från Hedgren & Kolehmainen (2000).*

Area <i>Område</i>	Number of breeding pairs <i>Antal häckande par</i>				
	1976	1985	1998	2003	2004
1 (Fanterna-Lilla Äske)	303	93	199	277	246
2 (Lilla Äske, vik och udde)	77	52	16	43	65
3 (Stora Äske-Suderhamn)	121	110	62	146	108
4 (S och SO Lauphargi)	153	95	44	49	36
5 (Ramroir)	-	-	2	10	12
6 (NO Stora Förvar)	-	-	-	7	10
Total	654	350	323	532	477

## Results and discussion

### *Censuses and trends in colony size*

A total of 658 and 613 nests were found at the two islands in 2003 respectively 2004. The Lesser Black-backed Gulls at Lilla Karlsö are breeding in open sheep pasture land which made the nest counting easy. Therefore, the 126 respectively 136 nests (Figure 3) found at Lilla Karlsö are most likely close to the true number. In contrast, most of the Lesser Black-backed Gulls at Stora Karlsö breed in dense vegetation, preferably under shrubs of Mahaleb cherry *Prunus mahaleb* or Juniper *Juniperus communis*. The 532 and 477 nests located at Stora Karlsö (Figure 3) are underestimates. Several nests were probably not found because some breeding areas (area 4 and western part of area 1, Figure 2) had very dense vegetation of Mahaleb cherry that were difficult to survey completely during the limited time of searching. Area 5, with 15–20 nests (of which 10 were observed from distance), was situated close to breeding auks. To avoid disturbance this breeding area was not visited at all. In addition some late pairs had not started to breed at the time of the nest counting. Hence, we estimate the true number of breeding Lesser Black-backed Gull pairs at Stora Karlsö in 2003 to be 600. The population of both Karlsö islands in 2003 was therefore about 730 pairs.

In 2004, the nests in the breeding areas with dense vegetation at Stora Karlsö were even more difficult to locate. The reason was that the herb Garlic Mustard *Alliaria petiolata* this year grew exceptionally frequent and dense under the Mahaleb cherry shrubs. This might partly explain the lower number of nests found in area 1 and 4 (Figure 2, Table 1). However, area 3, which is relative-

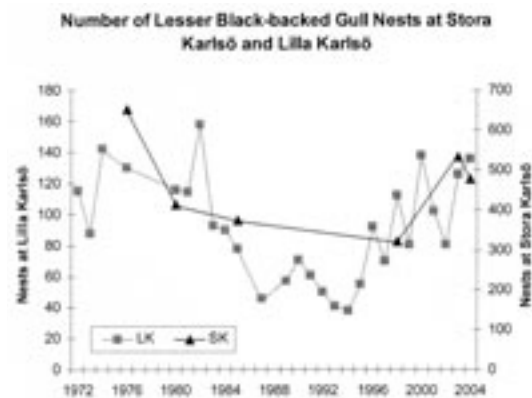


Figure 3. The number of Lesser Black-backed Gull nests at Lilla Karlsö and Stora Karlsö between 1972 and 2004. Data have been collected at Lilla Karlsö in all years, except for 1976, 1977–79, 1986 and 1988. At Stora Karlsö censuses have been made in 1976, 1980, 1985, 1998, 2003 and 2004. *Antal silltrutsbon på Lilla Karlsö och Stora Karlsö mellan 1972 och 2004. Från Lilla Karlsö finns uppgifter för samtliga år utom 1975, 1977–79, 1986 och 1988. Uppgifter från Stora Karlsö finns för åren 1976, 1980, 1985, 1998, 2003 samt 2004.*

ly easy to survey, had 146 nests in 2003 compared to 108 nests in 2004 indicating an actual decrease between the years. The other areas (2, 5 and 6) held slightly more nests in 2004.

The number of breeding pairs of Lesser Black-backed Gulls at Stora Karlsö has been estimated through nest counting in 1976, 1980, 1985 and 1998 (Fredriksson 1977, Fredriksson 1992, Hedgren & Kolehmainen 2000). At these occasions 654, 414, 375 and 323 nests were found (Figure 3). These

figures show a clearly decreasing trend over the years, whereas the result of the censuses in 2003 and 2004 show a breeding population of Lesser Black-backed Gulls that is comparable with figures of the late 1970s (Figure 3, Table 1). Compared to 1998 the number of nests was higher at all different breeding areas at Stora Karlsö in 2003 (Table 1). Seven nests were also found at a new site on the northern part of the island (area 6, Figure 2). An interesting finding was that 114 out of the 146 nests found in area 3 (Figure 2) were located at slopes of cobblestones near the seashore, which has not been noted in the earlier censuses. The amount of time allocated for the censuses have been varying between the occasions, which might have resulted in different quality of the estimates. Nevertheless, the much higher number of nests found in 2003 and 2004 can probably not only be explained by differences in census methodology. A real increase in the number of nests has most likely occurred.

The breeding population at Lilla Karlsö decreased from about 140 pairs in the mid seventies to about 40–60 pairs in late eighties and early nineties and thereafter increased to numbers similar to the mid seventies (Hjernquist 1972–2003). Thus, the trend of a substantial decline and a recent increase is similar at both islands. Notice that

the breeding number at Lilla Karlsö does sometimes vary a lot between adjacent years (Figure 3). We do not know if the population at Stora Karlsö has varied in the same manner. Even though the number of nests of Lesser Black-backed Gulls found at Lilla Karlsö varies between years, the number of adult birds staying at the island during the breeding season does not fluctuate in the same manner from year to year (Hjernquist M, personal observation). It might be that in some years several pairs fail to breed at an early stage (or even do not try to breed) and consequently few nests are found. Taking the results of the censuses from both islands in consideration, the overall conclusion is that the population of Lesser Black-backed Gull in the Karlsö area has increased and is now close to the figures of the 1970s. Whether this increase is a result from internal recruitment or an influx of individuals from other areas is unclear.

#### Breeding parameters

The average clutch size in the study area at Stora Karlsö was 2.81 eggs in 2003 and 2.91 eggs in 2004, whereas the figures for the study area at Lilla Karlsö were 2.75 and 2.82, respectively (Table 2). These clutch sizes are comparable with data from other studies (e.g. Hario 1990, Hario & Rudbäck

Table 2. Breeding parameters of Lesser Black-backed Gulls at Lilla Karlsö (LK) and Stora Karlsö (SK) in 2003 and 2004.

*Häckningsdata för silltrut på Lilla Karlsö (LK) och Stora Karlsö (SK) åren 2003 och 2004.*

Year	Location	No. of Nests	Average clutch size ± s.d.	Unhatched eggs <sup>1</sup> nests/eggs/%	Predated eggs nests/eggs/%	Hatched eggs %	Fledglings per nest <sup>2</sup>
År	Lokal	Antal bon	Medelkullstorlek	Okläckta ägg <sup>1</sup> bon/ägg/%	Prederade ägg bon/ägg/%	Kläckta ägg %	Flygga ungar per bo <sup>2</sup>
2003	LK	53	2.75 ± 0.52	2/2/1.3	1/1/0.6	98.1	0.16
2003	SK	108	2.81 ± 0.42	6/7/2.5	≥8/21/6.5	≤91.0 <sup>4</sup>	0.11
2004	LK	45	2.82 ± 0.44	4/5/4.4	6/6/4.4 <sup>3</sup>	91.1	0.07
2004	SK	23	2.91 ± 0.29	2/2/2.9	3/9/13.0 <sup>3</sup>	84.1	0.02

<sup>1</sup> Including eggs/chicks that “died at pipping”. *Inkluderar ägg/ungar som dog i samband med kläckningen.*

<sup>2</sup> Calculated from the number of fledglings found on respective island divided by the total number of nests found on the island. *Beräknat från antalet flygga ungar funna på respektive ö delat med antalet funna bon på ön.*

<sup>3</sup> Including eggs that “disappeared” during the time of incubation. *Inkluderar ägg som oförklarligt försvann under ruvningen.*

<sup>4</sup> The fate of many eggs in the 108 nests are unknown during the time of hatching, the hatching rate of 91 % assumes all these eggs being hatched. See the text for discussion. *Ödet för många av äggen i de 108 bona vid tidpunkten för kläckning är okänt. Uppskattningen om 91 % kläckningsframgång bygger på att alla äggen faktiskt kläckte.*

1996, Bukacinski et al. 1998). The percentages of unhatched and predated eggs were low and varied between 1.3% and 4.4% respectively 0.6% and 13%, giving hatching frequencies between 84% and 98% (Table 2). At the study area at Stora Karlsö in 2003 many of the 108 nests were not visited frequently during the time of hatching (partly due to rainy days that prevented visits but also because the more chicks that hatched the more of the limited time had to be allocated to searching and handling of chicks resulting in fewer number of nests that could be controlled during a visit). Therefore the exact fate of the eggs in many clutches at the time of hatching are unknown. However, the majority of the eggs with unknown fate were most likely hatched. Assuming all these eggs to be hatched gives a hatching rate of 91%, the true value is probably slightly lower provided that some of the eggs may have been predated shortly before hatching (Table 2).

Repeated counting of fledged juveniles along the whole shoreline of Stora Karlsö in 2003 gave a figure of about 60, suggesting a breeding result of 0.11 fledglings/nest if calculated with 532 as the number of nests (or 0.10 fledglings/nest for 600 nests). In 2004 only 11 fledged juveniles were found at Stora Karlsö, suggesting a fledging rate of 0.02. At the time of counting at Stora Karlsö in 2004 about half of the fledged juveniles at Lilla Karlsö had left the island. If the same amount had left Stora Karlsö the fledging result should be 0.05 juveniles/nest instead. The fledging rates for Lilla Karlsö were 0.16 and 0.07 in 2003 respectively 2004 (Table 2). The breeding results for both islands in 2003 and 2004 are very low and can not compensate for the adult mortality in the long run. Hario (1994) calculated a minimum fledging rate of 0.45 juveniles/pair to maintain the population (assuming 10% annual loss of adults and 44% survival from first winter to maturity).

#### *Predation*

During 52 observation hours in the study area at Stora Karlsö in 2003, where about 30 nests could be surveyed regarding predation, 10 young chicks (younger than 7 days) were predated by Herring Gull and 4 older chicks (15–18 days) predated by Great Black-backed Gull *Larus marinus*. At another location (Area 5, see Figure 2) at Stora Karlsö in the same year where 10 nests were surveyed, no predation was observed during 12.5 observation hours. At Lilla Karlsö (in 2003) only one chick was predated, by a Lesser Black-backed Gull,

during in total 41 observation hours (36 nests observed) in the study area.

#### *Chick growth*

Figure 4 shows the body weights of Lesser Black-backed Gull chicks at different ages at Stora Karlsö. Comparison with chick weights from the archipelago of the Gulf of Finland in 1981–1989 (Hario 1990, his figure 7) shows that the chicks at Stora Karlsö gained weight at least as good as the Finnish chicks did during what Hario call “better-quality years”. The average weight gain during the first 7 days of the chicks’ life in Gulf of Finland varied between 50 g and 105 g in the years 1981 to 1989. The chicks weighed at Stora Karlsö gained more than 100 g during the first 7 days (Figure 4). This indicates that the food situation for Lesser Black-backed Gull in the Karlsö area was good in 2003 and 2004 and that the chicks did not suffer from starvation.

#### *Diseases*

Hario et al. (2004) concluded that the observed population decline of Lesser Black-backed Gull in the Gulf of Finland (eastern Baltic Sea) was due to high chick mortality as a result of disease. In addition, the high chick mortality in the Gulf of Finland was associated with elevated DDE/PCB ratio in Lesser Black-backed Gull (Hario et al. 2004). Occurrence of diseases among the chicks at the Karlsö islands is possible, in 2003 just one chick was found dead without any signs of predation (or being eaten upon after death) whereas in 2004 several chicks were found and collected for examination. However, the autopsies were not able to clarify the reason for the high chick mortality since the majority of the collected chicks were severely degraded.

#### **Conclusions**

The breeding population of Lesser Black-backed Gull at Stora Karlsö and Lilla Karlsö has recovered from the decrease that took place during the eighties and early nineties. This recent recovery might be due to an influx of adult individuals from other breeding areas or due to successful internal recruitment. However, a very low breeding success was found at the islands in 2003 and 2004. The reasons for the breeding failures are not clear. Predation could be a contributing factor in some of the localities (e.g. the study area at Stora Karlsö),

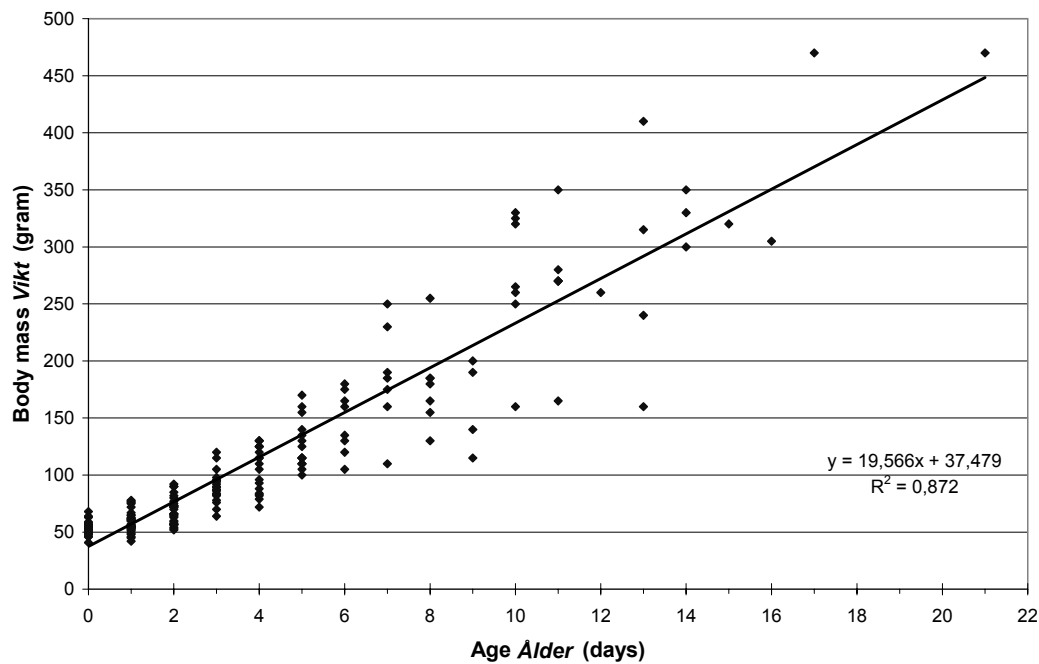
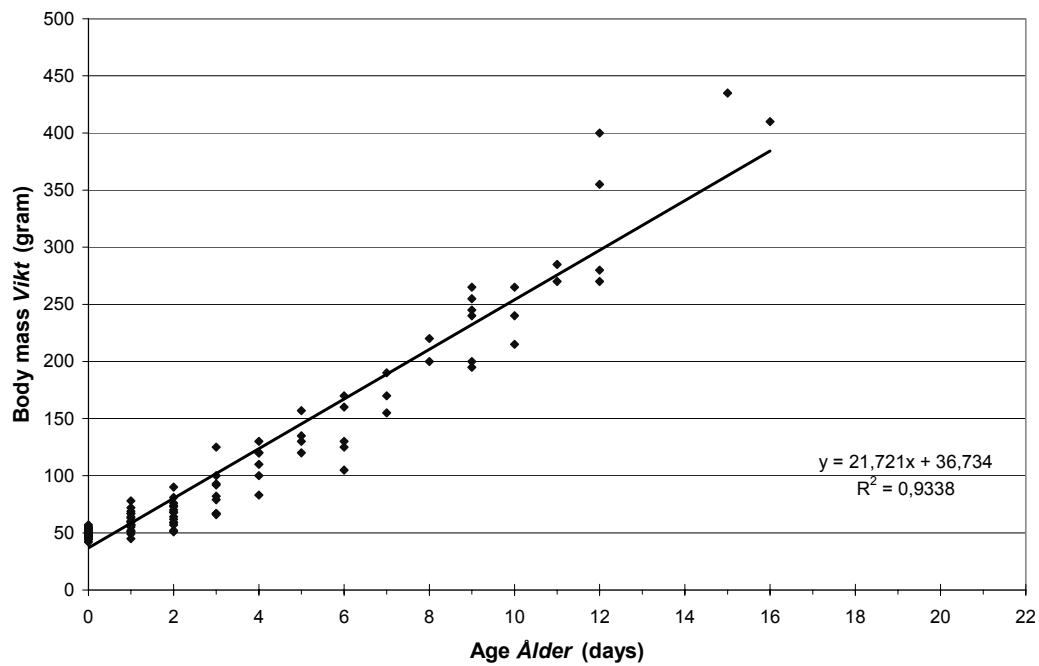


Figure 4. Body weights of Lesser Black-backed Gull chicks with known age at Stora Karlsö in 2003 (upper graph) and 2004 (lower graph), several chicks are weighed at two or more occasions (2003: 116 weights, 52 chicks; 2004: 210 weights, 48 chicks). Regression lines are fitted to the data sets.

*Samtliga vikter på silltrutsungar på Stora Karlsö med känd ålder, flera ungar är vägda vid två eller flera tillfällen (2003: 116 vikter, 52 ungar, övre figuren; 2004: 210 vikter, 48 ungar, nedre figuren). Regressionslinjer är anpassade till datapunkterna.*

but this seems not to be the main reason for the large number of “disappearing” chicks. Diseases, starvation or bad weather conditions are also possible factors for the low chick survival, but neither of these seemed to be the obvious (or only) cause of the poor fledging success observed in this study.

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### Sammanfattning

Nominatrasen av silltrut *Larus fuscus fuscus* har under 1900-talets andra hälft minskat drastiskt i hela dess utbredningsområde, d.v.s. Östersjöområdet, det finländska inlandet, Estland, ryska Karelen och norra Norge (Bergman 1982, Hario 1990, Lyngs 1992, Strann & Vader 1992, Lorentsen 2003). Den svenska populationen av nominatrasen har minskat från ca 17 000 par i slutet av 1970-talet till 4 000–5 000 par i slutet av 1990-talet (Svensson et al. 1999). Som en följd av denna minskning är rasen upptagen på den Svenska Rödlistan under kategorin ”Hotad” (Gärdenfors (ed), 2000). Orsaken till tillbakagången är inte helt kartlagd, men flera faktorer har föreslagits (Bergman 1982, Kilpi 1983, Hario 1990, 1994, Lyngs 1992, Strann & Vader 1992, Hario & Rudbäck 1996, 1999, Svensson et al. 1999, Hario et al. 2004): 1) konkurrens med gråtrut *Larus argentatus*, 2) födobrist i häckningsområdet, 3) negativa faktorer i övervintringsområden, 4) predation och 5) sjukdomar.

Stora och Lilla Karlsö hyser tillsammans det största beståndet av silltrut i egentliga Östersjön och de boinventeringar som genomförts på Stora Karlsö mellan 1976 och 1998 visar på en neråtgående trend (Hedgren & Kolehmainen 2000). På Lilla Karlsö har antalet silltrutsbon räknats kontinuerligt sedan början på 1970-talet. Syftet med denna studie var att följa upp och utvärdera de tidigare inventeringarna av Karlsöarnas silltrutspopulation samt att göra en pilotstudie av grundläggande häckningsparametrar.

Studien utfördes från maj till augusti 2003 och 2004 på öarna Stora Karlsö (57°17'N, 17°58'E) och

Lilla Karlsö (57°19'N, 18°04'E), utanför Gotlands västkust (Figur 1). Boinventering genomfördes på båda öarna där ett område på respektive ö ("studieområdena", se Figur 2) studerades mer noggrant. Ungar ringmärktes och vägdes första gången de hittades och därefter vägdes de vid varje tillfälle de återfanns. Observationsstudier utfördes från gömslen med hjälp av tubkikare. Flygga ungar räknades i slutet av häckningssäsongerna på båda öarna.

Totalt hittades 658 (2003) och 613 (2004) bon på öarna. De 126 respektive 136 bon (Figur 3) som hittades på Lilla Karlsö är sannolikt väl överensstämmande med det verkliga antalet eftersom silltrutarna där häckar i öppen färbetad mark som är relativt lättinventerad. Till skillnad från Lilla Karlsö häckar de flesta silltrutarna på Stora Karlsö i tät och svårinventerad vegetation, framförallt under buskar som vejsel *Prunus mahaleb* eller en *Juniperus communis*. Därför tror vi att de 532 och 477 lokaliserade bona (Figur 3) är en viss underskattning av antalet häckande par silltrut på Stora Karlsö.

Antalet häckande par silltrut på Stora Karlsö har tidigare bestämts genom boräkningar gjorda 1976, 1980, 1985 och 1998 (Fredriksson 1977, Fredriksson 1992, Hedgren & Kolehmainen 2000) då man fann 654, 414, 375 samt 323 bon. Dessa siffror visar på en tydlig neråtgående trend, men resultatet av 2003 och 2004 års inventeringar tyder på ett häckande bestånd i nivå med det på slutet av 70-talet. Den tid som avsatts för att söka efter bon har varierat mellan de olika tillfällena vilket kan resultera i olika kvalitet på inventeringarna. Den stora ökningen av funna bon 2003 kan dock inte bara förklaras av skillnader i inventeringsmetodik – en verklig ökning av populationen har sannolikt skett.

På Lilla Karlsö har den häckande populationen av silltrut minskat från ca 140 par i mitten på 70-talet till ungefär 40–60 par i slutet av 80-talet och början av 90-talet. Därefter har den åter ökat till en nivå jämförbar med 70-talets mitt (Figur 3). Antalet bon varierar dock mycket mellan vissa år. Det är osäkert om populationen på Stora Karlsö har varierat på ett liknande sätt mellan enskilda år.

Den övergripande slutsatsen av inventeringarna för båda öarna är att silltrutspopulationen i Karlsöområdet har ökat de senaste åren och är nästan i nivå med 1970-talets siffror.

Kullstorleken i studieområdet på Stora Karlsö var i genomsnitt 2,81 (2003) och 2,91 (2004)

ägg, motsvarande siffror för studieområdet på Lilla Karlsö var 2,75 respektive 2,82 (Tabell 2). Frekvensen okläckta och prederade ägg var låg och varierade mellan 1,3 och 4,4 % respektive 0,6 och 13 %, kläckningsfrekvenserna varierade mellan 84 och 98 % (Tabell 2). Upprepade räkningar av flygga ungar utefter stränderna på Stora Karlsö 2003 gav en totalsiffra på ca 60, vilket antyder ett häckningsresultat på ca 0,1 flygga ungar/bo. Säsongen 2004 hittades endast 11 ungar i flygg ålder vilket gav ett resultat på 0,02 flygga ungar/bo. På Lilla Karlsö var häckningsframgången 0,16 och 0,07 flygga ungar/bo under 2003 respektive 2004.

Under 52 observationstimmar i studieområdet på Stora Karlsö, där ca 30 bon kunde övervakas med avseende på predation, blev 10 silltrutsungar tagna av gråtrut och 4 ungar tagna av havstrut. I ett annat område på Stora Karlsö (område 5, Figur 2), där 10 bon studerades, noterades ingen predation under 12,5 observationstimmar. På Lilla Karlsö sågs endast en unge bli prederad under 41 observationstimmar i studieområdet (36 bon övervakades) – av en silltrut.

Jämförelse med ungvikter hos silltrut i skärgården i Finska Viken mellan åren 1981 och 1989 (Hario 1990, fig.7) visar att ungarna på Stora Karlsö ökar i vikt minst lika bra (Figur 4) som de finska ungarna gjorde under vad Hario kallar "goda år". Detta indikerar att födotillgången för silltrutarna i Karlsöområdet var bra under 2003 och 2004 och att ungarna inte led av svält.

Orsakerna bakom den mycket låga häckningsframgången hos silltrut på Lilla och Stora Karlsö under 2003 och 2004 är inte helt klarlagda. Predation kan vara en bidragande faktor i vissa områden, men orsaken till det stora "försvinnandet" av ungar är inte utränt. Hario et al. (2004) konstaterar att den observerade populationsnedgången hos silltrut i Finska Viken beror på en hög ungdödlichkeit på grund av en sjukdom som verkar korrelera med en förhöjd DDE/PCB kvot. Sjukdom kan mycket väl förekomma hos silltrutsungarna på Karlsöarna. Säsongen 2003 hittades dock endast en död unge utan spår av predation medan det 2004 hittades flera ungar varav några samlades in för analys. Obduktion av ungarna gav dock inget svar på orsaken till den höga ungdödlichkeit då majoriteten av de insamlade ungarna var kraftigt förruttnade. Sjukdom, predation, svält och dåligt väder är möjliga faktorer till låg överlevnad hos ungar men ingen av dessa tycks vara den uppenbara (eller enda) orsaken till den dåliga häckningsframgången hos silltrut i denna studie.