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Oskarshamn site investigations

Bird monitoring in Simpevarp 2002–2009

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Abstract

This report is a summary of the monitoring of breeding birds species in Simpevarp 2002–2009. The report summarizes the population development of eight selected listed species (Swedish Red List and/or the European Unions' Birds Directive) in the area. The aim of the report is to evaluate possible impacts from the now completed site investigations, conducted by SKB, on the breeding bird fauna. Selected listed species were monitored in the whole regional model area with specially designed methods. For most species selected for detailed monitoring proper data is now available for seven years.

The general conclusion from the more detailed monitoring of selected listed species is that the site investigations, associated potentially disturbing activities and increased human presence in the area, have had very little impact on the breeding birds of the area.

For listed species selected for detailed monitoring, the general stable or positive population development recorded in earlier years continued in 2009. Six of the eight species (honey buzzard, white-tailed eagle, wryneck, lesser spotted woodpecker, nightjar and red-backed shrike) show stable or increasing numbers during the whole study period. Only one species, the osprey, have decreased in local numbers during the period. On a larger regional scale the ospreys show tendencies of an increase in numbers and the decrease in Simpevarp is thus regarded as a re-distribution of birds rather than a decrease in population size. Another species, the eagle owl show tendencies for decreasing numbers around Simpevarp.

Comparing results between 2008 and 2009, five of the eight species remained stable or increased in numbers to 2009 (white-tailed eagle, osprey, wryneck, lesser spotted woodpecker and red-backed shrike). The remaining three species (honey buzzard, eagle owl and nightjar) decreased somewhat in numbers between the last two years, but the decrease was in all cases small and well within what can be regarded as normal variation.

Sammanfattning

Denna rapport är en sammanfattning av övervakningen av häckande fåglar i Simpevarpsområdet under perioden 2002–2009. Populationsutvecklingen hos åtta listade arter (Svenska Rödlistan och/eller arter listade i EU:s Fågeldirektiv Annex 1), utvalda för årlig övervakning redovisas. Dessa följdes upp med specialdesignade metoder inom hela det regionala modellområdet. För de flesta utvalda listade arterna finns nu data från minst en sjuårsperiod.

Den övergripande slutsatsen från övervakningen av listade arter är att platsundersökningarna, med tillhörande provborrning, andra potentiellt störande aktiviteter och en generellt ökad mänsklig närvaro i området, har haft en mycket liten påverkan på de häckande fåglarna.

De listade arterna utvalda för mer detaljerad uppföljning fortsatte precis som tidigare år att i stort uppvisa stabila eller ökande bestånd. Sex av åtta arter (bivråk, havsörn, göktyta, mindre hackspett, nattskärra och törnskata) uppvisar stabila eller ökande lokala populationer under perioden i sin helhet. Endast en art, fiskgjuse, har minskat i antal kring Simpevarp under perioden. Sett till en större regional skala tenderar dock fiskgjusarna att öka i antal och minskningen i Simpevarp tolkas därför mer som en omfördelning av fåglar än en reell populationsminskning. För berguvarna finns en viss tendens till minskande antal, men trenden är inte statistiskt säkerställd.

Jämför man utvecklingen mellan 2008 och 2009 för de studerade arterna finner man att fem arter (havsörn, fiskgjuse, göktyta, mindre hackspett och törnskata) höll sig på en stabil nivå eller ökade i antal. Tre arter minskade något i antal (bivråk, berguv och nattskärra) mellan 2008 och 2009, men i samtliga fall var minskningarna av liten omfattning och håller sig väl inom vad som kan klassas som normal variation.

Contents

1 Introduction

This document reports the data gathered within the monitoring bird surveys, one of the activities within the site investigations in Simpevarp, in 2009. The bird surveys have now been going on for eight years. For most of the species presented more in detail here, data enabling proper comparisons are available from 2003 onwards, allowing comparisons during a seven-year period. The aim of this report is to evaluate the effects of the now finished site investigations on the breeding bird fauna in the area for a number of selected listed species (according to the Swedish Red List and/or the European Union Birds Directive). The surveys were made according to activity plan AP PS 400-09-003 which is SKB's internal document. The project has been conducted by the Department of Animal Ecology, Lund University. The report covers the whole regional model area east of highway E22 for selected listed species.

2 Objective and scope

The site investigations in Simpevarp started in 2002. SKB has from the start of the investigations aimed at monitoring the effects from all the activities on the fauna in the area. This in order to ensure that the site investigations were carried out in such a way that disturbances to the fauna, especially sensitive and vulnerable species, could be held at a minimum level (without hindering the essential parts of site investigations).

Simpevarp is an area rich in birds, holding high densities of both common species and more rare or threatened ones such as species listed in the Swedish Red List /Gärdenfors 2005/ and the European Union Birds Directive 79/409/EEG: Annex 1, (www.naturvardsverket.se) (cf. /Green 2003, 2004, 2005, 2006, 2006b, 2007, 2008/). The monitoring part of the bird surveys aim at tracking changes in overall bird numbers for certain listed species (Swedish Red List and the EU:s Birds Directive) in the whole regional model area. In addition to looking at overall numbers for these species, the programme aims at investigating breeding success when this is possible.

The monitoring programme has been carried out at different levels, both geographically and regarding which birds that has been monitored. More details about these levels are presented in /Green 2003, 2004, 2005, 2006, 2006b, 2007, 2008/.

Regional model area. This is a level covering an area of about 270 km^2 (area of possible large-scale effects). In Simpevarp the land area of the regional model area is about 150 km^2. This area is shown by a thick unbroken line in Figure 2-1. Within this area a number of selected species listed in the Swedish Red List and/or the EU Birds Directive are monitored (from 2004 onwards, but during 2002 and 2003 all listed species as well as non-listed raptors and owls were monitored). The aim of the surveys is to find out the yearly number of breeding pairs within the area, and for a few species also to establish the breeding success of these. The parts of the regional model area situated west of highway E-22 (shaded in Figure 2-1) are excluded from our surveys as these are situated far away from the main activities within the site investigations. Hence, a land area of about 130 km^2 is monitored.

Local area. This level involves a smaller area covering all the drilling sites used in 2003–2007, the core area of the site investigations. The size of the area in Simpevarp is about 20 km^2 (in 2002 a larger preliminary local area of about 50 km^2 was used, but this was scaled down to the present one before the surveys in 2003). The local area is shown with a thick, broken line in Figure 2-1. Also in this area special attention is directed at listed species.

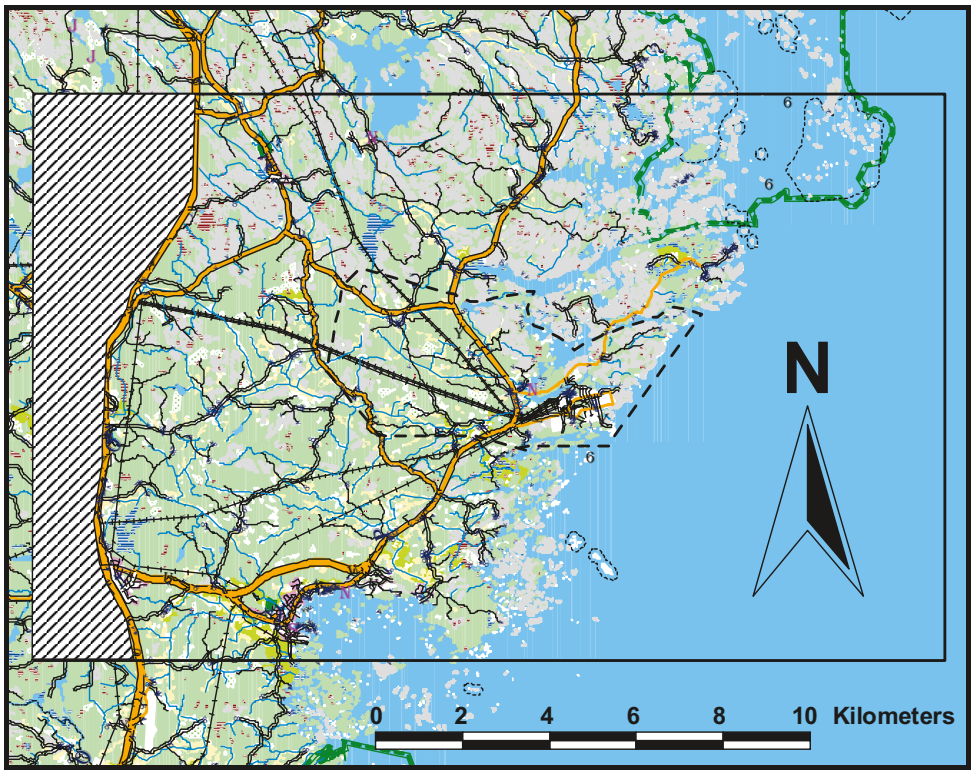

Figure 2-1. *Map of the survey area in Simpevarp. The regional model area is shown with a thick unbroken line (shaded part west of highway E-22 is excluded from the surveys); the local area is shown with a thick, broken line. From GSD-Terrängkartan © Lantmäteriverket Gävle 2001. Consent M2001/5268.*

3 Equipment

3.1 Description of equipment

The following equipment was used when conducting the bird surveys.

- GPS (Garmin 12 or Garmin GPS 60).
- Binoculars and telescopes.
- Field maps showing each days work.
- Note books and paper forms.
- Vehicles for transport to and from the study area.
- Cell phones (safety equipment when working alone in the field).

4 Methods

The methods used are described in detail in activity plan AP PS 400-09-003 – SKB's internal controlling document.

An overview of the methods used for monitoring purposes is presented below.

4.1 Listed species (Swedish red list; EU Birds Directive Annex 1)

The species occurring in Simpevarp and included in the Swedish Red List and/or the EU Birds Directive, together with the latest updates on estimated local population size in Simpevarp are shown in Appendix 1.

Starting from 2004, a selection of these species has been monitored on a yearly basis. The species in question are shown in Table 4-1. Selection of monitoring species was made according to a set of different criteria. A species was included for further monitoring if one or several of these criteria were fulfilled: **i)** Simpevarp is a vital area for the species in a larger (e.g. national) perspective; **ii)** The species in question is suspected to be sensitive to disturbances and could thus possibly have been affected in a negative way by the site investigations; **iii)** The species show a negative long-term population trend at the national level (but not necessarily in Simpevarp and not necessarily during later years); **iiii)** Simpevarp holds high densities of the species.

These species were monitored in 2009 by visiting known nesting places/territories used in 2002–2008, combined with visits to habitats suspected to possibly hold the species in question. Visits to nest sites/territories/suitable habitats were made during relevant periods when presence of the birds is expected to be easy to detect. Detailed following up of breeding results was made for some species, i.e. white-tailed eagle, osprey and eagle owl. All observations of the selected listed species were registered with data on bird species, number of birds, position (from GPS or recorded on field maps) and date during the field work. For one of the more numerous species, monitoring was not made in the whole regional model area but in a selected part of this (red-backed shrike).

4.2 Execution

The main part of the monitoring field work in 2009 was carried out between 2009-05-17–2009-08-13. The field work was partly made by local ornithologists, mainly Tommy Larsson but also Arne Schönbeck participated in the follow ups of breeding results of white-tailed eagles, ospreys and eagle owls. The white-tailed eagle work is carried out within the ongoing national project concerning this species (through Björn Helander, Swedish Museum of Natural History, Stockholm). Tommy Larsson also made the main part of the honey buzzard field work. Martin Green carried out the remaining part of the surveys of listed species (lesser spotted woodpecker, wryneck, nightjar and red-backed shrike).

Table 4-1. Listed species selected for monitoring in the Simpevarp area during 2004–2009.

English name	Swedish name
Honey Buzzard	Bivråk
White-tailed Eagle	Havsörn
Osprey	Fiskgjuse
Eagle Owl	Berguv
Wryneck	Göktyta
Lesser spotted Woodpecker	Mindre hackspett
Nightjar	Nattskärra
Red-backed shrike	Törnskata

4.3 Data handling

In the field all registered birds of the selected species were recorded in notebooks with data on species, number of individuals and position together with additional data on bird behaviour and circumstances where such data were relevant. Observations of selected listed species were registered with exact position individually taken directly from the GPS in the field. Positions for selected listed species have the same resolution as the GPS-system. After each days field work the bird data were transferred to pre-made paper forms. Data were then entered into an Excel-file from paper forms where after the file was cross-checked against the field notes by the project leader. This base-file with data on species, numbers and positions can then be used for different GIS applications, for evaluating bird densities and further calculations.

4.4 Analyses and interpretations

Changes in numbers of territories at the species level for selected listed species are statistically tested in this report. The same procedure is also used for comparing breeding results in a few cases. Statistical power will however still be low (i.e. there is a low probability of finding statistically significant results even though true, biologically significant changes may have occurred), due to the short time frame. Another way to put it is that large differences is required (strong trends) to reach statistical significance.

For most species the actual numbers of recorded territories/nests/pairs are reported and shown in figures. For the red-backed shrike however, population change is shown in the form of a chain-index. The reason for not using the recorded number of territories directly in this case is that the monitored areas have not remained exactly the same during the years. To come around this problem, but still be able to compare the population development in an easily understandable way, a chain index is constructed. The chain index is created by comparing *areas checked equally well* in two following years and calculating the change in percent between these two. Then the procedure is repeated for next two following years and the new change (in percent) is added/subtracted to/from the figure. In the red-backed shrike case the calculation was made as follows (in this case with regional model area, excluding the local area as an example).

- Index for the start year is set to 1. This is the basis for all future comparisons.
- In our first year with a reasonable coverage of shrikes in Simpevarp (2003), 34 occupied territories were recorded. Of these, 13 were in areas covered equally well also in the following year (index calculations can only be made when at least two years of data is collected, since it is made in a back-wards calculating mode).
- In 2004, our second year of good coverage, 54 occupied territories were recorded. Of these, 19 were in parts checked equally well in 2003.
- The index for 2004 is calculated as: ((19–13)/13) + 1 = 1.46. Interpreted as a 46% increase in numbers between 2003 and 2004.
- There were 35 recorded territories in 2004 in areas covered equally well also in 2005.
- 30 occupied territories were recorded in these parts in 2005.
- The index for 2005 is then calculated as: ((30–35)/35) + 1.46 = 1.32. Interpreted as a 14% decrease in numbers between 2004 and 2005 (but still on average a 32% increase from 2003 to 2005!).
- Coverage in 2006 was identical to 2005. 24 occupied territories were registered. Hence, the index will be ((24–30)/30))+ 1.32 = 1.12.
- In 2007, 53 occupied shrike territories were found in areas covered during 2006. Coverage in both years was identical. The index for 2007 will then be ((53–24)/24))+1.12 = 2.33.

and so on.

For statistical tests of trend data the Spearman rank correlation test /Sokal and Rohlf 1997/ was used. This test is a non-parametric correlation test where one simply test whether a variable y (number of bird pairs in most of our cases) has changed in a significant direction (upwards or downwards) in relation to variable x (year in this case). Statistical results presented are the correlation coefficient $\mathbf{r_s}$ which varies between –1 and 1. A value of 0 means that there is no correlation at all, the higher the value of $\mathbf{r_s}$, the stronger the positive correlation (increase in this case), the lower the value of $\mathbf{r_s}$ the stronger the negative correlation (decrease in this case). **p** is the probability that the true result is actually different from the obtained result, or to put it in other words, the probability to find the significant result by random. **N** is number of data points entered into the correlation. Hence, a high or low $\mathbf{r_s}$ value (close to 1 or –1) means that there is a strong correlation and will yield a low **p**-value. Non-parametric tests were used to avoid assumptions about data distributions. All tests were performed in the software SPSS 16.0. for Windows /SPSS inc./.

5 Results

5.1 Listed species

Listed species selected for monitoring

The following section gives a summary of the population development in the last five-seven years of eight selected species listed as endangered, threatened or vulnerable according to the Swedish Red List /Gärdenfors 2005/, and/or listed in the European Unions' Birds Directive Annex 1 (79/409/EEG) within the Simpevarp area. These eight species were selected for monitoring because they are of high conservation concern or because the Simpevarp area is a stronghold for the species in question. The information presented is based on data gathered in all eight years (2002–2009) although a complete coverage of the regional model area was not gained until 2003.

The text covering breeding success of white-tailed eagles is written by Björn Helander, Swedish Museum of Natural History, Stockholm.

Honey Buzzard *Pernis apivorus* Bivråk (Sw. Red List; EU Annex 1)

The number of occupied honey buzzard territories in Simepvarp-Misterhult has been very stable over the six years from which there are good monitoring data. Ten occupied territories were recorded in 2009 which falls nicely within the annual variation of between nine and 12 territories in earlier years. At least three territories had parts reaching into the local area, also a figure within the variation from earlier years. There is no significant trend in overall numbers of honey buzzards in Simpevarp (Spearman's rank correlation $r_s = 0.35$, $p = 0.49$, $N = 6$ for the whole area), nor for the local area as such (Spearman's rank correlation $r_s = –0.62$, $p = 0.19$, $N = 6$).

No efforts were made to follow up breeding results in any detailed way this year, but incidental observations indicate that breeding success was lower than in for example 2008. Still, at least one and possibly four pairs produced young. The cold and wet weather in June and early July may be the reason behind the somewhat lower breeding output this year, although it seems as if success was higher in this area compared to many other parts of Sweden, with even worse weather (own observations).

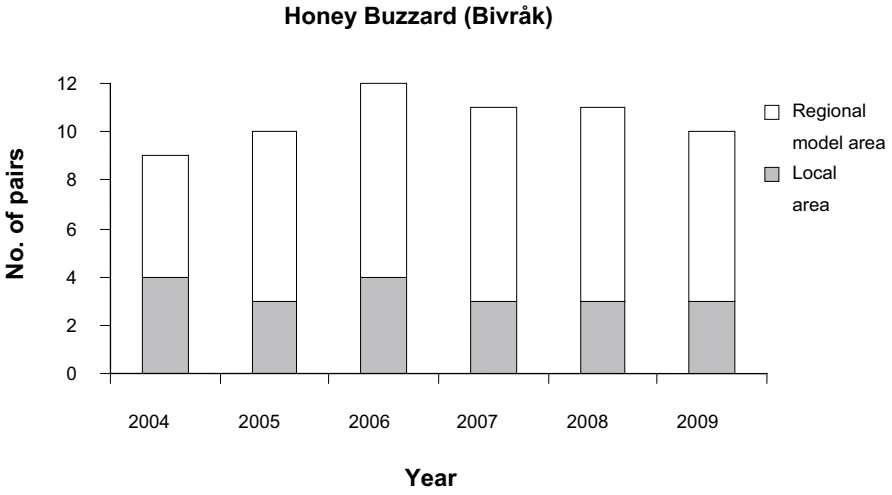

Figure 5-1. *Number of territorial pairs of Honey Buzzards in Simpevarp in 2004–2009. Shaded parts show the number of territories with parts extending into the local area.*

The honey buzzard is classified as 'Endangered' (starkt hotad) in the Swedish Red List. National population size has declined with 50–70% during the last three decades and was estimated to about 5,000 pairs in 2004. The main causes of the decline are thought to be large-scale landscape changes due to both agriculture and forestry, at the same time as conditions along the migration routes and in the wintering areas have deteriorated /Tjernberg and Svensson 2007/. The national population has however probably remained fairly stable during the last ten years /Ottvall et al. 2008/.

White-tailed eagle *Haliaeetus albicilla* Havsörn (Sw. Red List; EU Annex 1)

The breeding success of white-tailed eagles in the Simpevarp area and reference areas is summarized in Table 5-1. This year's breeding success was near the same as the average for 1998–2001, a reference period from before the site investigations began within the local area. The overall breeding success in Simpevarp was 65 % in 2002–2009, as compared to 78 % in 1998–2001. A similar decline in breeding success can be seen in the reference areas over the study period. Except for 2003, when the site investigations by SKB started and lead to a strong increase in human disturbance in the area, there is no conclusive evidence that the activities in the local area have had any impact on the breeding success of the eagles at Simpevarp.

Osprey *Pandion haliaetus* Fiskgjuse (EU Annex 1)

The situation around Simepvarp has been very stable in the last three years after the sudden decrease in numbers of pairs between 2005 and 2007. As in most earlier years, there was an occupied (and again successful) nest just outside the regional model area in 2009. Both pairs within the regional model area produced large young in 2009 and three young were fledged. Breeding success of the present pairs was in other words again above average. The local population trend in Simpevarp is significantly negative (Spearman's rank correlation $r_s = –0.93$, $p = 0.003$, $N = 7$) for the period 2003–2009.

Table 5-1. Percent successfully breeding pairs of white-tailed eagle in 1998–2002 (background, before site investigations) and in 2003–2009 (during and after site investigations) at Simpevarp (N = number of checked territorial pairs).

Area	1998–2002	2003	2004	2005	2003–2005	2006	2007	2008	2009	2006–2009	N
Simpevarp	**82**	0	100	100	**71**	100	25	33	75	**57**	32
Reference	**79**	75	88	75	**75**	57	60	71	71	**59**	85

(Report by Björn Helander, Swedish Museum of Natural History, Stockholm).

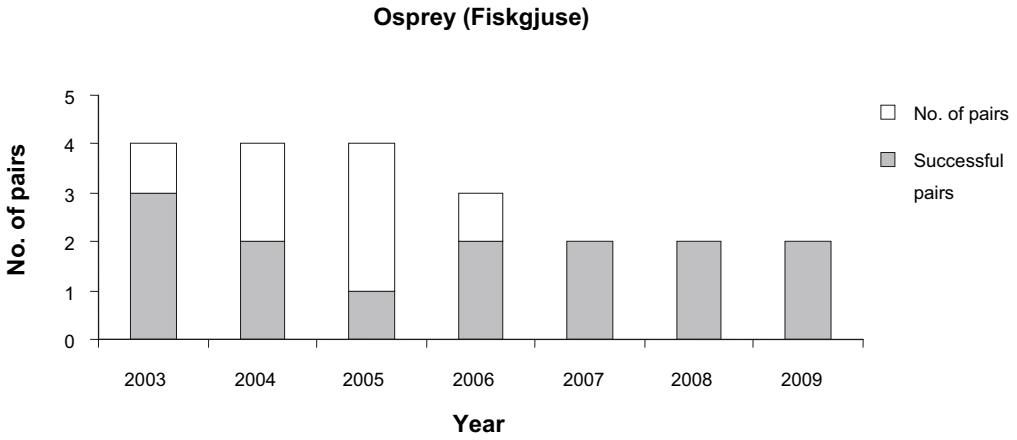

Figure 5-2. *Number of breeding pairs of Ospreys (Fiskgjuse) in the regional model area at Simpevarp 2003–2009. Shading shows the number of successful pairs.*

Ospreys are surveyed annually over a larger area along the coast of eastern Småland, and has been so for eleven years now. Data for the whole area (including the SKB regional model area) have been provided by Tommy Larsson and Arne Schönbeck since 1999 (1998 was a start-up year with a smaller coverage) and are shown in Table 5-2.

The number of breeding attempts and the breeding success in 2009 was close to the average for the whole period, at a high level well above what is needed for sustaining the population. There is a tendency for a significant increase in the number of recorded breeding attempts from 1999 to 2009 (Spearman's rank correlation $r_s = 0.54$, $p = 0.09$, $N = 11$). The number of breeding attempts/controlled nests has increased significantly (Spearman's rank correlation $r_s = 0.66$, $p = 0.03$, $N = 11$). The proportion of successful breeding attempts has been very stable during the period (Spearman's rank correlation $r_s = –0.18$, $p = 0.60$, $N = 11$) and so has the number of produced large young per breeding attempt (Spearman's rank correlation $r_s = –0.03$, $p = 0.94$, $N = 11$). In general terms the results show that the numbers of breeding birds are increasing and that breeding success is stable on a high level. In other words that the ospreys in coastal areas of eastern Småland are doing just fine.

The breeding results in the SKB regional model area (SKB RMO) are shown in Table 5-3 in comparison with results from the parts of the coast of eastern Småland outside of the regional model area (REF), here used as a reference area. There is no statistical difference in the proportion of successful breeding attempts (Wilcoxons' sign rank test, $Z = 0.84$, $p = 0.40$, $N = 7$) or in breeding success (Wilcoxons' sign rank test, $Z = 0.34$, $p = 0.74$, $N= 7$) between the regional model area and the surrounding reference area during 2003–2009.

Table 5-2. Breeding results of Ospreys along the Mönsterås–Oskarshamn–Simpevarp coast (including the SKB regional model area) during the last eleven years.

Year	Controlled nests	Breeding attempts	Successful nests	% successful breeding attempts	No. of large young per breeding attempt
1999	15	11	7	64	1.0
2000	20	12	10	83	1.8
2001	17	12	11	92	1.2
2002	18	15	12	80	1.4
2003	21	18	11	61	1.4
2004	23	18	10	56	1.2
2005	22	15	11	73	1.8
2006	18	14	9	64	1.5
2007	19	17	11	65	1.1
2008	19	16	12	75	1.4
2009	19	15	10	67	1,2
Mean	19	15	10	71	1.4

Table 5-3. Breeding success of ospreys in the regional model area at Simpevarp compared to the reference area south of this in 2003–2009.

Year	SKB RMO % successful breeding attempts	SKB RMO No. of large young per breeding attempt	REF % successful breeding attempts	REF No. of large young per breeding attempt
2003	75	2.0	50	1.1
2004	50	1.0	57	1.3
2005	25	0.8	91	2.2
2006	67	1.3	64	1.5
2007	100	2.0	60	1.0
2008	100	1.5	71	1.4
2009	100	1.5	62	1.2
Mean	74	1.4	65	1.4

The local decrease in osprey numbers has been discussed in earlier reports /Green 2008/ and is probably in no way connected to the now finished site investigations. National population size of ospreys have remained fairly stable during the last ten years after a period of large-scale increase in numbers during the previous decades /Ottvall et al. 2008/.

Eagle owl *Bubo bubo* Berguv (Sw. Red List; EU Annex 1)

The number of occupied territories decreased to three again in 2009. At one of the traditional breeding sites no birds were recorded this year. The situation has been fairly stable during the study years but there is a tendency for a decreasing number of occupied territories (Spearman's rank correlation $r_s = –0.63$, $p = 0.09$, $N = 8$). Number of successful pairs do however not show any trend at all during the study years (Spearman's rank correlation $r_s = 0.55$, $p = 0.28$, $N = 8$). Breeding output has been consistently low all through the eight years.

Breeding output for the regional model area and the reference area as a comparison is shown in Table 5-4.

The significant difference between the SKB-area and the reference area, see /Green 2008/, remains (Wilcoxons' sign rank test, $Z = –2.20$, $p = 0.03$, $N = 8$) also after 2009, with lower numbers of young produced in the former even if success actually was higher in the SKB-area compared to the reference area in 2009 as such (see Table 5-4). The reason behind this difference is still unknown but points out that the local population can not be sustained without immigration from other areas with higher reproductive output.

Table 5-4. Breeding results (number of young/controlled territory) for Eagle Owls in the regional model area (SKB RMO) and reference areas north and south of this (REF) in 2002–2008.

Year	SKB RMO No. of large young per territory	REF No. of large young per territory
2002	0	1.0
2003	0	2.3
2004	0.8	1.3
2005	0.8	1.3
2006	0	0
2007	0	1.2
2008	0.5	0.8
2009	0.7	0.5
Mean	0.3	1.1

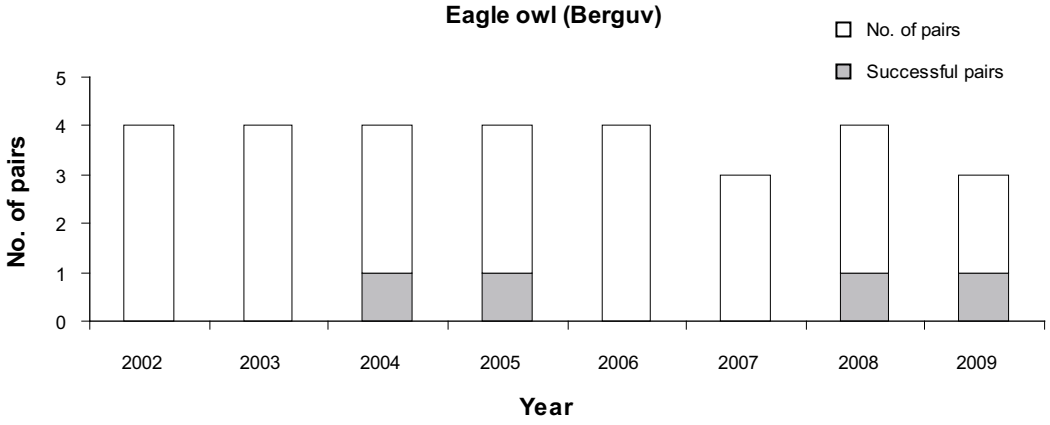

Figure 5-3. *Number of Eagle owl (Berguv) pairs in the regional model area in Simpevarp 2002–2009. Shaded parts show number of successful pairs.*

Wryneck *Jynx torquilla* Göktyta (Sw. Red List)

The increase in wryneck numbers continued and 56 occupied territories were recorded in 2009, the highest number during the study period. The overall increase during the seven years with good survey data is highly statistically significant (Spearman's rank correlation $r_s = 0.96$, $p < 0.001$, $N = 7$), and numbers have increased both in the regional model area (Spearman's rank correlation $r_s = 0.93$, $p = 0.003$, $N = 7$) and in the local area (Spearman's rank correlation $r_s = 0.93$, $p = 0.003$, $N = 7$). The positive local population trend seemingly following the present national trend, even though the observed increase in Simpevarp is much stronger than the one recorded on the national level so far.

The wryneck is classified as 'Near-Threatened' (missgynnad) in the Swedish Red List /Gärdenfors 2005/. The number of wrynecks in Sweden decreased with over 50% between 1975 and the late 1990-ies, but the numbers have increased quite dramatically again in later years /Ottvall et al. 2008, Lindström et al. 2009/. National numbers are however still below the numbers found in the mid 1970-ies, despite the recent increase. The reason behind the large decline is probably loss of suitable habitats as a large proportion of small-scale farms in largely forested areas were abandoned in the mid 1900-s. National population size is estimated to be 5,500–15,000 pairs /Tjernberg and Svensson 2007/. After the increase in recent years the latter figure is probably closer to the present situation.

Lesser spotted woodpecker *Dendrocopus minor* Mindre hackspett (Sw. Red List)

The slight decrease in numbers recorded between 2007 and 2008 was directly followed by an increase again between 2008 and 2009. The number of territories recorded in 2009 was almost as high as in 2007 (31 vs 32). Patterns were the same in both the local area and in the regional model area outside of this. The overall increase in the whole area 2003–2009 is statistically significant (Spearman's rank correlation $r_s = 0.89$, $p = 0.007$, $N = 7$). The whole increase has taken place in the parts of the regional model area outside of the local area (Spearman's rank correlation $r_s = 0.94$, $p = 0.002$, $N = 7$) while numbers within the latter have remained stable (Spearman's rank correlation $r_s = 0.35$, $p = 0.44$, $N = 7$) with some variation between years.

Possible reasons behind the difference between the two parts of the study area has been reported before /Green 2008/. There are no reasons to think that disturbance from the site investigations could be the main reason behind the difference.

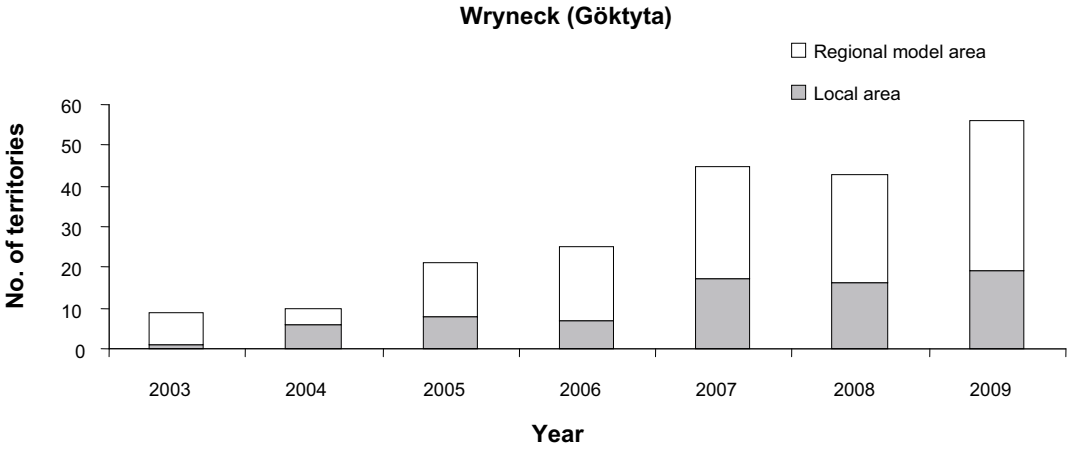

Figure 5-4. *Number of recorded occupied territories of Wrynecks (Göktyta) in Simpevarp 2003–2009. Shaded parts show the number of territories within the local area.*

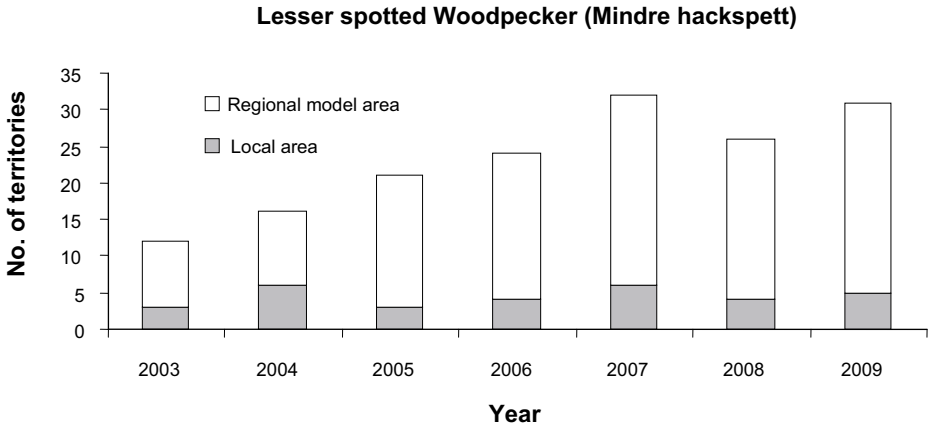

Figure 5-5. *Number of occupied territories of Lesser spotted woodpecker (Mindre hackspett) in Simpevarp 2003–2009. Shaded parts show number of territories within the local area.*

The lesser-spotted woodpecker is classified as 'Near-Threatened' (missgynnad) in the Swedish Red List. National numbers decreased with about 50% between 1975 and 1990, but recovered remarkably during the last decade, especially during last few years /Ottvall et al. 2008/. The lesser-spotted woodpecker was negatively affected by the loss of dead wood due to modern forestry and also by the conversion of mixed and deciduous forests to monoculture conifer forests. National population size was earlier, after the strong decrease, estimated to about 3,000 pairs /Tjernberg and Svensson 2007/, but may now again be even higher than in the mid 1970-ies. The reasons behind the recent increase have not been studied in detail but the new forestry policy introduced in the 1990-ies have resulted in that the amount of deciduous trees and the amount of dead wood, both factors favouring lesser spotted woodpeckers, have increased again in later years /http://www-riksskogstaxeringen.slu.se/.

Nightjar *Caprimulgus europaeus* Nattskärra (Sw. Red List; EU Annex 1)

Fewer nightjars were recorded in 2009 compared to the two years before this. (112 occupied territories in 2009 vs 144 and 140 in 2007 and 2008). All of this decrease was found in the regional model area while numbers in the local area actually increased slightly. The general increase in numbers 2003–2009 shown in Figure 5-7 is statistically significant for the whole area (Spearman's rank correlation $r_s = 0.82$, $p = 0.023$, $N = 7$), for the regional model area excluding the local area (Spearman's rank correlation $r_s = 0.82$, $p = 0.023$, $N = 7$) and for the local area (Spearman's rank correlation $r_s = 0.99$, $p < 0.001$, $N = 7$).Coverage was not complete in 2003, and the observed increase in the regional model area is probably somewhat overestimated.

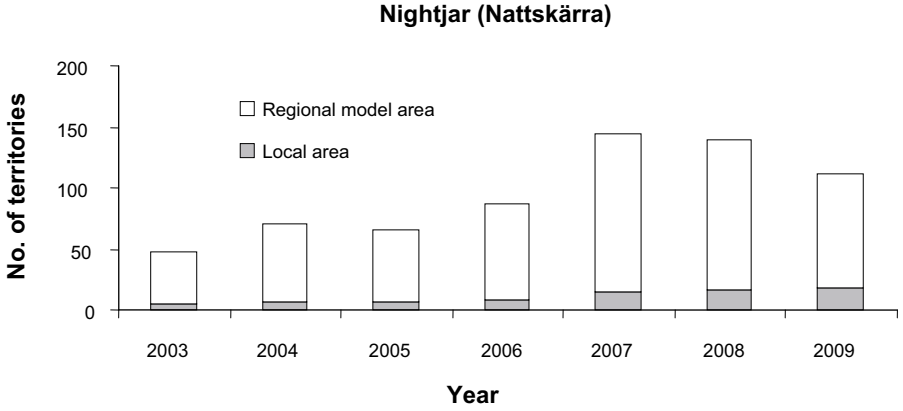

Figure 5-6. *Number of occupied Nightjar (Nattskärra) territories in the regional model area of Simpevarp 2003–2009. Shaded parts show the number of pairs in the local area. Note that coverage of the area was not complete in 2003, probably making showed numbers in that year an underestimate of true numbers.*

Numbers of nightjars present in 2009 may in reality not have been lower compared to earlier years. Cold and wet weather during the survey in 2009 probably made bird activity lower than if ideal conditions with warm, dry and still nights, had prevailed.

The nightjar is classified as 'Vulnerable' (sårbar) in the Swedish Red List. National numbers probably decreased with up to 20% between 1975 and 1995. This certainly applies to the more northern parts of the distribution range in Norrland and Svealand. If a similar decrease also took place in the southern parts of Sweden remains uncertain. The factors behind the decrease were probably related to large-scale changes in forestry and agricultural practises. National numbers have probably increased again during the last decade /Ottvall et al. 2008/.

A national survey of the species was made in 2007, and this yielded an estimate of the national population size of 7,200 pairs, /Wärnbäck 2009/. The Simpevarp area holds the highest recorded densities of nightjars in Sweden and, as pinpointed earlier, the area is to be regarded as of national importance for the species.

Red-backed shrike *Lanius collurio* Törnskata (Sw. Red list, EU Annex 1).

Red-backed shrike numbers increased within the local area between 2008 and 2009, but remained completely unchanged in the regional model area. The population development of red-backed shrikes in Simpevarp is, as in earlier years shown by an index, below in Figure 5-7, where the percent change between areas checked equally well in years following each other are compared. Index for 2003 (the first year with decent coverage of the species) is set to one.

Overall there has been a statistically significant increase in numbers over the study period (Spearman's rank correlation $r_s = 0.86$, $p = 0.014$, $N = 7$). During the whole period index within the local area and the regional model area outside of the local area has followed each other relatively well, although with some variation during the later years. The increase in the local area is statistically significant (Spearman's rank correlation $r_s = 0.86$, $p = 0.014$, $N = 7$), while the increase in the remaining parts only tend to be so (Spearman's rank correlation $r_s = 0.74$, $p = 0.058$, $N = 7$).

The red-backed shrike is classified as 'Near-Threatened' (missgynnad) in the Swedish Red List /Gärdenfors 2005/. National numbers have according to existing data decreased strongly over the last 30 years but tend to increase again during the last ten years /Lindström et al. 2009, Ottvall et al. 2008/.

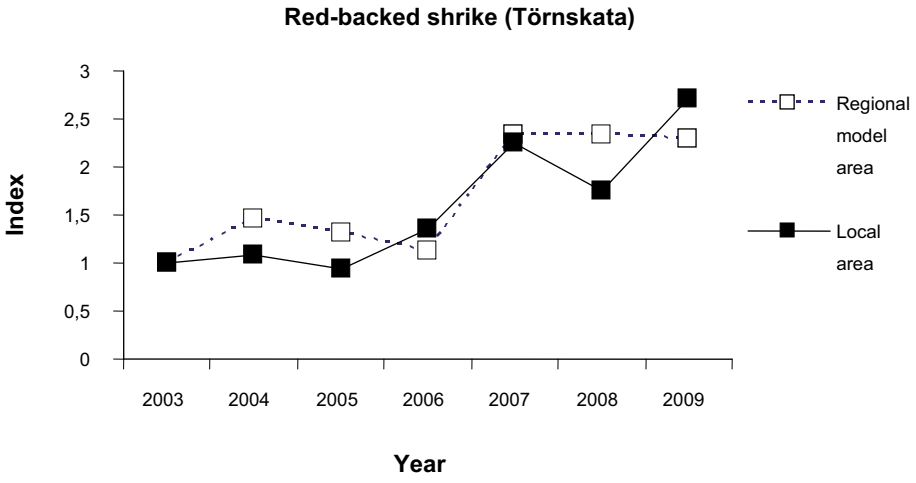

Figure 5-7. *Population development of red-backed shrikes in Simpevarp 2003–2009 shown as a chain index. Index for year 2003 is set to 1. See text for further explanations.*

Table 5-5. Population changes of selected listed species in Simpevarp between 2008 and 2009. A + sign means that the number of territories has increased, a – sign means that it has decreased, a 0 that there is no major change and ? denotes that the situation is unclear. Long-term trend means the trend between 2002 and 2009 in the whole regional model area.

Species	Regional model area	Local area	Whole area	Long-term trend
Honey Buzzard	–	0	–	0
White-tailed Eagle	0		0	+
Osprey	0	0	0	–
Eagle Owl	–	0	–	–?
Wryneck	+	+	+	+
Lesser Spotted Woodpecker	+	+	+	+
Nightjar	–	+	–	+
Red-backed shrike	0	+	0	+

6 Discussion

The underlying question to answer when the monitoring activities started was if selected listed bird species were affected in any way by the site investigations. This question has been quite convincingly answered on a general level in earlier reports. The answer was no, there were no large general impacts on the breeding bird fauna around Simpevarp from the site investigations /Green 2003, 2004, 2005, 2006, 2006b, 2007, 2008/. General changes in the local bird fauna have instead followed large-scale patterns at the national level. This means that there is not very much to discuss here, but to conclude that that the birds around Simpevarp are seemingly doing fine.

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http://www-riksskogstaxeringen.slu.se

Appendix

Listed bird species in Oskarshamn

Table A-1. List of all listed (Swedish Red List, SRL, and EU Birds Directive Annex 1, EU) bird species, possibly breeding in Simpevarp and recorded during 2002–2007. The listing follow the updated version of the Red List /Gärdenfors 2005/.

English name	Swedish name	Latin name	Listing	Estimated population size (pairs/territories) in Simpevarp (regional model area)
Whooper Swan	Sångsvan	*Cygnus cygnus*	EU	3–4
Shoveler	Skedand	*Anas clypeata*	SRL	0–1
Velvet Scoter	Svärta	*Melanitta fusca*	SRL	5
Hazelhen	Järpe	*Bonasia bonasia*	EU	10
Black Grouse	Orre	*Tetrao tetrix*	EU	20
Capercaillie	Tjäder	*Tetrao urogallus*	EU	10–15
Black-throated Diver	Storlom	*Gavia arctica*	EU	2
Bittern	Rördrom	*Botaurus stellaris*	SRL, EU	1
Honey Buzzard	Bivråk	*Pernis apivorus*	SRL, EU	10–12
White-tailed Eagle	Havsörn	*Haliaeetus albicilla*	SRL, EU	4
Marsh Harrier	Brun kärrhök	*Circus aeruginosus*	EU	2
Osprey	Fiskgjuse	*Pandion haliaetus*	EU	2
Crane	Trana	*Grus grus*	EU	30–40
Turnstone	Roskarl	*Arenaria interpres*	SRL	5
Common Tern	Fisktärna	*Sterna hirundo*	EU	30
Arctic Tern	Silvertärna	*Sterna paradisaea*	EU	180
Caspian Tern	Skräntärna	*Sterna caspia*	SRL, EU	1
Stock dove	Skogsduva	*Columba oenas*	SRL	20
Pygmy Owl	Sparvuggla	*Glaucidium passerinim*	EU	13
Tengmalms Owl	Pärluggla	*Aegolius funereus*	EU	0–2
Eagle Owl	Berguv	*Bubo bubo*	SRL, EU	4
Nightjar	Nattskärra	*Caprimulgus europaeus*	SRL, EU	65–150
Wryneck	Göktyta	*Jynx toruilla*	SRL	50–60
Black woodpecker	Spillkråka	*Dryocopus martius*	EU	>30
Lesser Spotted Woodpecker	Mindre hackspett	*Dendrocopus minor*	SRL	31
Wood Lark	Trädlärka	*Lullula arborea*	EU	40–50
Skylark	Sånglärka	*Alauda arvensis*	SRL	10
Wheatear	Stenskvätta	*Oenanthe oenanthe*	SRL	25
Grashopper warbler	Gräshoppsångare	*Locustella naevia*	SRL	0–1
Red-breasted Flycatcher	Mindre flugsnappare	*Ficedula parva*	SRL, EU	5
Marsh Tit	Entita	*Parus palustris*	SRL	350–400
Red-backed Shrike	Törnskata	*Lanius collurio*	SRL, EU	150–200
Nutcracker	Nötkråka	*Nucifraga caryocatactes*	SRL	10
Linnet	Hämpling	*Carduelis cannabina*	SRL	?–20
Scarlet Rosefinch	Rosenfink	*Carpodacus erythrinus*	SRL	20