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The wintering of Blackcaps *Sylvia atricapilla* (L.) in Sweden

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Abstract

A total of 688 winter observations of Blackcaps in Sweden were compiled for an analysis of distribution, trend in numbers and winter survival. During the last 30 years wintering Blackcaps have been observed annually, with a maximum of 72 individuals reported during the winter 1982/83. The number of reports of wintering Blackcaps increased markedly from the 1960s to the early 1980s. Some possible explanations for this increase are discussed, including a new migratory habit in continental Blackcaps to move northward during autumn. Early winter observations occur over almost the whole country. In northern Sweden, nearly all the Blackcaps (98%) disappeared during the course of the winter, indicating a high mortality. In the southern part of the country, the decrease from November to March was 69%, which means that in this area about one out of three Blackcaps survived the winter, if we assume losses to be mortality. For the country as a whole, the decrease was 72% for males and 81% for females. The habit to feed at bird-tables is widespread. Some Blackcaps were stationary for longer periods, and 19 birds stayed for more than three months.

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Introduction

The migratory behaviour of European Blackcaps *Sylvia atricapilla* is highly diversified. Among the different migration routes described (cf. Berthold & Schlenker 1991) a newly developed autumn migration behaviour, directed WNW from continental Europe towards wintering areas in Great Britain, has attracted much attention (cf. Berthold & Terrill 1988, Berthold et al. 1992). Recently, northward autumn movements from continental Europe towards Scandinavia have been described (Fransson & Stolt 1993). After this finding we decided to compile all available information about the winter occurrence of Blackcaps in Sweden in order to analyse the following questions: 1) How regular and widespread is the occurrence of Blackcaps in Sweden during the winter?, 2) Is there an increasing trend in the number of wintering occurrences, as described from England (Leach 1981) and Belgium (Fouarge 1980)?, and 3) To what extent do birds survive the winter at northern latitudes?

Material and methods

Observations of Blackcaps made in Sweden during winter (November–March) were collected by searching the literature, and by distributing requests to all regional committees of the Swedish Ornithological Society.

The Swedish Ornithological Society has a system with 30 regional committees covering the country (see Tyrberg 1992). The system has been successively built up during the last 30 years. In the journals of the regional ornithological societies the committees publish annual lists of birds for which reports are wanted, and summaries of the reports received. During spring 1993 we sent to the committees a request for all reports on Blackcaps found during the months November–March. In our request, we also asked for observations of the birds' behaviour and on the food taken by them. By the end of October we had received answers from all the committees. In this analysis, we have included observations up to and including the winter 1992/93, even if some observations from the last winter are missing.

Swedish journals with ornithological reports were checked, as well as a number of handbooks and other published faunistical reports. There are certainly some gaps in our survey of the literature, but we believe we covered most of the faunistical reports published during the last hundred years. Important journals are *Fauna och Flora* starting from 1906, *Vår Fågelvärld* from 1942, and a rapidly growing number of regional ornithological journals started during the 1970s and 1980s.

In the present study, we define the northern and the southern part of Sweden as the areas north and south of latitude 61°N, respectively. In order to provide an idea of the general weather situation in southern Sweden in different winters we have compiled, from the official annual publications of SMHI (Swedish Meteorological and Hydrological Institute), the mean January temperatures at Örebro (59°17'N 15°13'E) for the years 1911–1993. We believe that the temperature at this site reflects the situation in southern Sweden fairly well.

Results

Annual occurrence

Our survey resulted in a total of 688 winter observations of Blackcaps from Sweden. Only three of the birds were reported before 1950 (Fig. 1). Observations of Blackcaps have been reported every winter since 1957/58. The number of birds observed increased to a maximum value during the winter 1982/83 when 71 individuals were seen. This is the highest number recorded so far. During the last ten years the number of reported Blackcaps varied between 58 and 18, with the lowest number reported during the winter 1988/89 (Fig. 1). The last winter (92/93), which was incompletely covered, had again one of the highest numbers observed.

The January mean temperature at Örebro (59°17'N 15°13'E) varied without any obvious trend (Fig. 1). During the early 1970s there were some mild winters. The winter 1982/83, when the largest number of Blackcaps was observed, coincided with a mild January. A few years later, during the winter 1986/87, the coldest January since 1911 occurred (Fig. 1). This unusually cold winter was followed by six mild winters, but with a relatively low number of Blackcaps. However, a small increase in the number of wintering Blackcaps is evident during the last three years.

Although the majority of the Blackcaps were recorded in southern Sweden, as many as about 20% of the observations were made in the sparsely populated northern part of Sweden. The first report from this area was in 1964/65. After a peak during the winter 1981/82, the annual number of observations in northern Sweden fluctuated between five and eleven.

Sex ratio

Information about sex is available for 510 birds (74%). Among these, males were more numerous (n=285, 56%) than females (n=225, 44%). The numbers differed significantly from an equal sex ratio (χ^2=6.64, df=1, P<0.01). Birds seen during November–December (n=358), showed a less pronounced and not significant difference between the proportions of the two sexes (54% males vs. 46% females, χ^2=1.75, df=1, p>0.05). In contrast, among late winter observations (February–March) significantly more males (n=59, 61%) than females (n=38, 39%) were observed (χ^2=4.12, df=1, p<0.05).

Geographical distribution

The geographical distribution of Blackcaps reported during different months is shown in Fig. 2. Observations made during November were widespread and occurred in most parts of Sweden. Some concentrations were found in the southwestern part of Sweden and around 60°N, i.e. in areas of the country with a relatively dense human population. In December, observations in the northernmost part of the country decreased, while observations made south of 61°N were still evenly distributed. During the period January–March, observations in northern Sweden were rare while observations in southern Sweden remained relatively common.

In northern Sweden, the number of observed Blackcaps decreased by 98 % from November to March (Fig. 3). The decrease was very rapid during the first part of the winter. The small number of Blackcaps remaining during the latter part of the winter decreased only moderately from January to March. In southern Sweden, the number of observed Blackcaps decreased by 69% from November to March (Fig. 3), the decrease being more gradual than in the north. For the country as a whole, the number of observations decreased by 72% for males and 81% for females from November to March.

In 12 cases, Blackcaps were found dead during the winter. Six of these were found in the northernmost part of Sweden. Some of the dead birds were found in connection with periods of cold weather and much

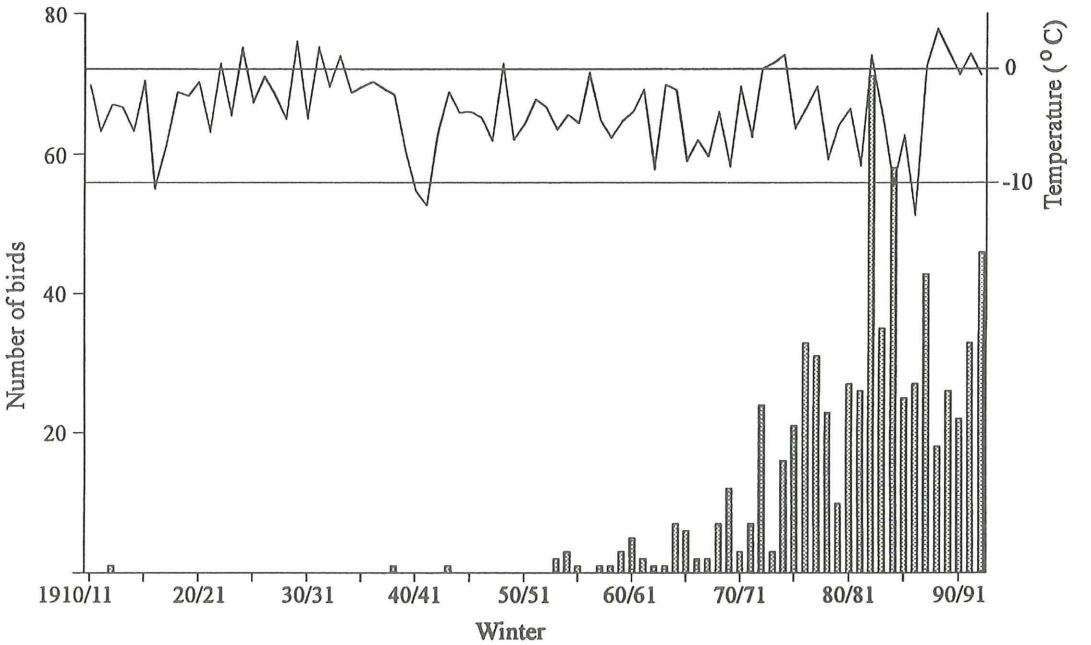


Fig. 1. Annual number of Blackcaps observed in Sweden during winter (November–March) from the period 1910 to 1993. The curve shows the mean temperature during January at Örebro (data from SMHI).

Antalet vinterobservationer av svarthätta i Sverige under perioden 1910–1993. Kurvan visar medeltemperaturen under januari i Örebro (data från SMHI).

snow, and one bird was found dying during snowfall when the temperature was –19°C. In another case, not included in the 12 cases above, a stationary Blackcap disappeared during a snowstorm.

Behaviour and food

In 234 cases (34%) Blackcaps were reported from the same place for more than one day. Several birds were observed during a longer period of time, and 19 individuals stayed more than three months at the same site. About 13% of the Blackcaps were seen at bird-tables. The foodchoice of Blackcaps at bird-tables varied; the most common food items eaten being apples, tallow and bread. Other kinds of food eaten include coconut fat, bananas, pears, raisins, hemp seed, sunflower seeds, cheese, potatoes, butter and liver paste. In some cases the observer mentioned that the Blackcap was aggressive to other birds.

Some Blackcaps were also seen eating berries remaining on trees and bushes, such as berries of Rowan *Sorbus aucuparia*, White beam *S. intermedia*, Wild Cotoneaster *Cotoneaster integerrimus*, Dogwood *Cornus sanguinea*, Wild Asparagus *Asparagus officinalis*, Bryony *Bryonia alba* and Red Currant *Ribes rubrum*.

Discussion

This is the first detailed account of the winter occurrence of Blackcaps in Sweden. Earlier knowledge of winter occurrence in Sweden is only fragmentary. There are, however, some notes in old handbooks. Nilsson (1858) mentions late autumn Blackcaps eating berries and Kolthoff (1898) provides information about a December report from Uppsala. According to the latest edition of the check-list of Swedish birds, winter observations are made almost every winter in south and central Sweden, sometimes also in the northern part (SOF 1990). Our survey shows that winter observations of Blackcaps have been reported regularly in Sweden during the last 30 years and that the geographical distribution includes most of the country.

Many of the observed Blackcaps stayed for a period of time, and some were even seen during almost the whole winter period. If we assume that Blackcaps observed during November stay in Sweden during the following months and that the chance

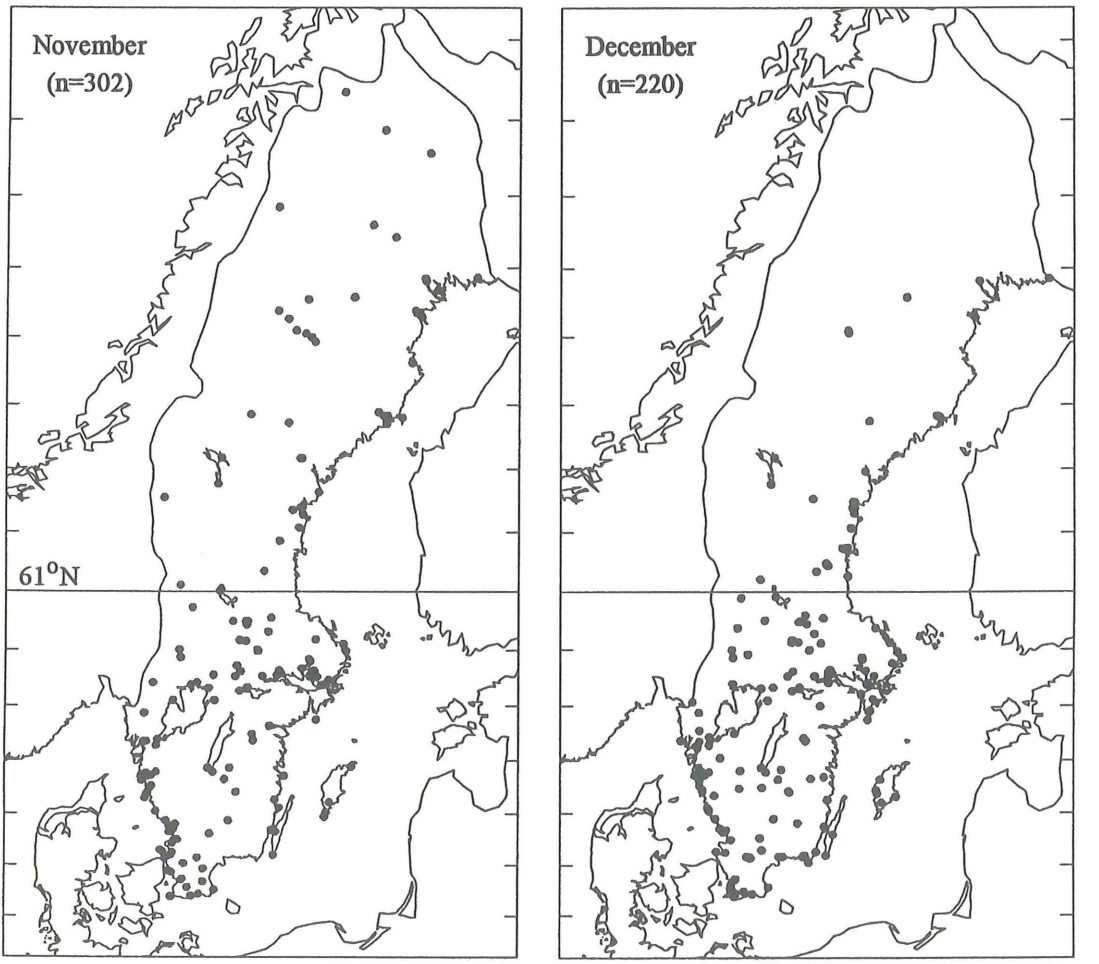
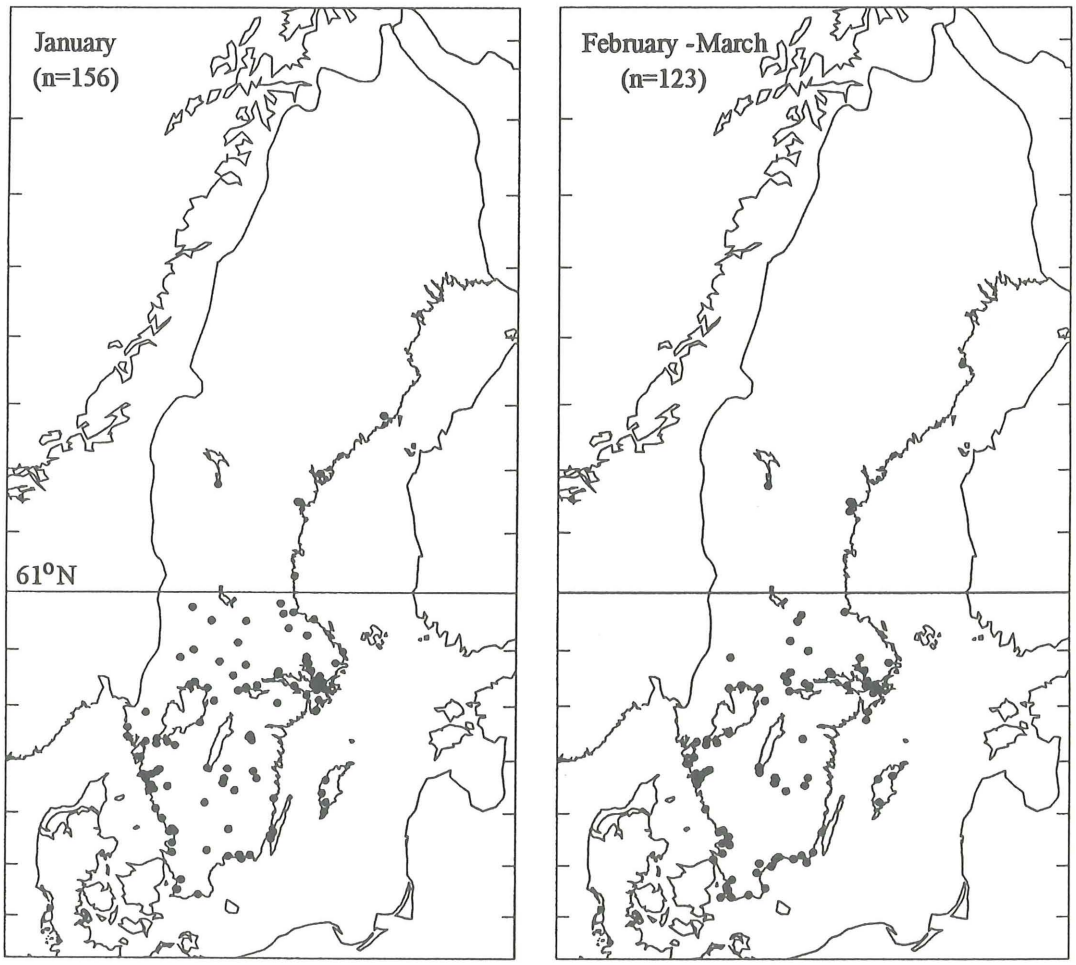


Fig. 2. Geographical distribution of Blackcaps observed in Sweden during different periods of the winter. Each dot represents in some cases more than one individual.

of receiving reports is equal during the course of the winter, the decrease in the number of observed Blackcaps from November–March is a measure of mortality. The large decrease found in northern Sweden indicates a very low winter survival there. In contrast, the decrease in southern Sweden indicates that about one out of three Blackcaps survive in this area. However, a mortality of about 70% during a period of four months is high, especially as first-year mortality in a Continental population of Blackcaps has been estimated at 68% (Bairlein 1978). It is, however, possible that some part of the decrease is not a result of mortality. Even though we have no such information, some winter movements might occur. Observations from southern Europe indicate that winter nomadism occurs (cf. Debussche & Isenmann 1984, Berthold & Schlenker 1991). Individual movements of up to 500 km have been observed in Britain during winter (Leach 1981). It is also possible that some individuals that stay for a long time at one site are reported only when they first appear. This would result in a bias towards a lower number of late winter reports.

In Sweden, a winter predominance of males was found. The same was noted in Britain and Ireland (Leach 1981), but not in Belgium where the sex ratio was equal (Fouarge 1980). Leach gives no explanation of this other than the fact that females of many migrating birds winter, on the average, further south than the males. In North America, a similar distribu-



Geografisk fördelning av svarhättor observerade i Sverige under olika perioder av vintern. Punkterna kan i vissa fall representera mer än en individ.

tion has been found in the Dark-eyed Junco *Junco hyemalis*, and it has been suggested that climate in combination with inter-sexual competition produce this distribution (Ketterson 1976, Ketterson & Nolan 1979). The larger decrease during the winter in observations of females compared to males in the Blackcap, may however indicate that females suffer a higher mortality during winter and also to some extent explain the observed unequal sex ratio.

Several observations show that Blackcaps eat remaining berries, but since this food-source diminishes during the course of the winter, it might in Sweden be most important during early winter. The habit to feed at bird-tables during the winter seems to be common in Sweden, as in Britain and Ireland (Leach 1981). Several observations show that individuals can utilize bird-tables successfully during longer periods of cold weather (Holm 1968, Pärt 1978, Roos pers. comm.). The great flexibility in the food choice and their aggressive behaviour towards other birds are also consistent with results found in Britain and Ireland and facilitate the use of bird-tables.

A number of surveys of wintering Blackcaps have been conducted in Britain and Ireland (Leach 1981), demonstrating a large increase in the number of wintering birds during the 1960s and 1970s. The same pattern was found in Belgium where the numbers of wintering Blackcaps started to increase in about 1960 and continued to increase until the

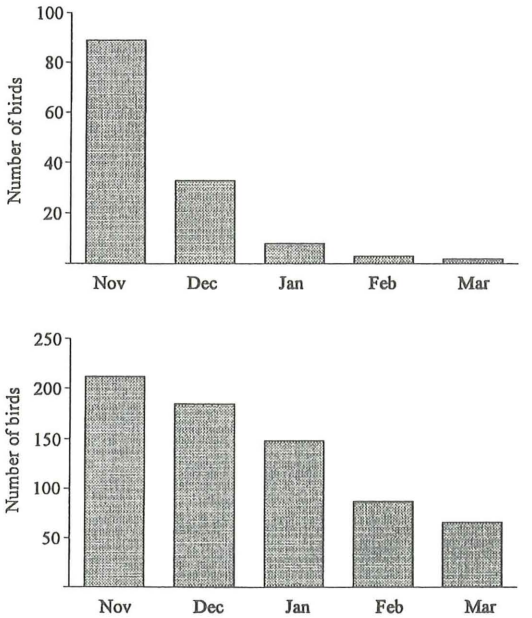


Fig. 3 Monthly distribution of Blackcap observations in northern (above 61°N) and southern (below 61°N) Sweden. Individuals observed for longer periods are included for each month in which they were observed.

Observationer av svarthätta i norra (norr om 61°N) och södra delen av Sverige fördelade på månad. Individer observerade under längre perioder är inkluderade i de månader som de observerats.

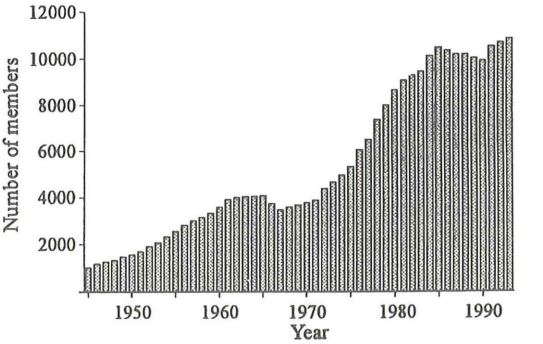


Fig. 4. Annual number of members in the Swedish Ornithological Society during the period 1945–1993.

Antal medlemmar i Sveriges Ornitologiska förening under perioden 1945–1993.

winter of 1977/78, when the study ceased (Fouarge 1980).

We found a corresponding trend in Sweden with an increase in the number of reported observations from the early 1960s to the early 1980s (Fig. 1). For an interpretation of this increase we think that at least four possibilities have to be considered:

1. The observed increase may be the result of a new migratory trait in continental Blackcaps, moving north for the winter. This has been suggested for the birds wintering in Britain. Langslow (1979) showed that Blackcaps wintering in Britain belonged to continental populations. It is supposed that this migratory trait has evolved during recent decades, through increased winter survival at bird-tables, shorter and earlier migration, as well as earlier breeding compared with the traditional migratory pattern (Berthold & Terrill 1988, Terrill & Berthold 1990, Berthold et al. 1992). Ringing recoveries demonstrate that there is also a northward movement of Blackcaps from continental Europe into Scandinavia during the autumn (September–October), and as much as 9% of autumn movements in southern Scandinavia were directed northward (Fransson & Stolt 1993). So far, the only clear evidence of the origin of wintering Blackcaps in Sweden is one bird ringed in Belgium in October 1993 and found dying at Jönköping, southern Sweden on 20 December 1993 (W. Roggeman, pers. comm.).
2. Another possibility is that some Blackcaps spent the winter in Sweden in earlier years too, and that the observed increase is mainly a result of an increased number of birdwatchers and an increased readiness to report winter observations during recent decades. In favour of this interpretation is the fact that the number of members in the Swedish Ornithological Society has increased rapidly during the last 20 years (Fig. 4). This, together with a successful organisation of regional ornithological societies during recent decades, has certainly contributed to a much more efficient faunistical documentation.
3. A third possibility is that the observed increase is a result of a general increase in Blackcap populations, with a small but constant proportion of birds wintering at northern latitudes. In favour of this interpretation it can be argued that the results of a number of bird censuses indicate that a general increase actually has taken place in some of the European Blackcap populations during the last 30 years (Leach 1981, Svensson 1993).
4. The winter temperature probably affects the number of birds seen during winter, but we do not find any evidence that this alone can explain the increasing number of birds seen. It is interesting that recent mild winters coincide with medium,

but slowly increasing, numbers of Blackcaps. One possibility is that the extremely cold winter of 1986/87 had a negative effect on the number of wintering Blackcaps during a sequence of years. In several studies it has been shown that the direction and length of migration in the Blackcap has a heritable component (Berthold 1988, Helbig 1991, Berthold et al. 1992). With this in mind, it seems likely that it will take some years for the number of wintering Blackcaps to recover if the genotype has been strongly decimated during an extremely hard winter.

With the available information it is not possible to identify any single cause for the observed increase in wintering Blackcaps in Sweden. It might well be a combination of different causes. However, we find it reasonable to believe that the number of Blackcaps in Sweden during winter has actually increased during the last 30 years. This would be in accordance with what has been observed in Belgium and in Great Britain (Fouarge 1980, Leach 1981). However, as also pointed out by Leach (1981), the magnitude of the increase might be affected by the increasing number of observers. Information is still lacking on whether local birds from the breeding population also are involved, or if all wintering Blackcaps in Sweden have a continental origin.

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References

Bairlein, F. 1978. Über die Biologie einer sydwestdeutschen Population der Mönchgrasmücke *(Sylvia atricapilla). J. Orn.* 119:14–51.

Berthold, P. 1988. Evolutionary aspects of migratory behaviour in European warblers. *J. evol. Biol.* 1:195–209.

Berthold, P. & Terrill, S. B. 1988. Migratory behaviour and population growth of Blackcaps wintering in Britain and Ireland: some hypotheses. *Ring. & Migr.* 9:153–159.

Berthold, P. & Schlenker, R. 1991. *Sylvia atricapilla*–Mönchsgrasmücke. In: Glutz von Blotzheim, U. N. (ed.). *Handbuch der Vögel Mitteleuropas.* Band 12/II, pp. 949–1020.

Berthold, P., Helbig, A. J., Mohr, G. & Querner, U. 1992. Rapid microevolution of migratory behaviour in a wild bird species. *Nature* 360:668–670.

Debussche, M. & Isenmann, P. 1984. Origine et nomadism des Fauvettes à tête noire (*Sylvia atricapilla*) hivernant en zone mediterranée francais. *L'Oiseau* 54:101–107.

Fouarge, J. 1980. Le point sur les cas d'hivernage de la Fauvette à tête noire (*Sylvia atricapilla*) en Belgique. *Aves* 17:17–27.

Fransson, T. & Stolt, B.-O. 1993. Is there an autumn migration of continental Blackcaps (*Sylvia atricapilla*) into northern Europe? *Vogelwarte* 37:89–95.

Helbig, A. J. 1991. Inheritance of migratory direction in a bird species: a cross-breeding experiment with SE- and SW-migrating blackcaps *(Sylvia atricapilla). Behav. Ecol. Sociobiol.* 28:9–12.

Holm, B. 1971. Om fågelfaunan i Norrbottens län. *Norrbottens Natur* 26(2):1–175.

Ketterson, E. 1976. Geographic variation and its climatic correlates in the sex ratio of eastern-wintering Dark-eyed Juncos *(Junco hyemalis). Ecology* 57:679–693.

Ketterson, E. & Nolan, V. Jr. 1979. Seasonal, annual, and geographic variation in sex ratio of wintering populations of Dark-eyed Juncos *(Junco hyemalis). Auk* 107:490–499.

Kolthoff, G. & Jägerskiöld, L. A. 1898. *Nordens fåglar.* Stockholm.

Langslow, D. R. 1979. Movements of Blackcaps ringed in Britain and Ireland. *Bird Study* 26:239–252.

Leach, I. H. 1981. Wintering Blackcaps in Britain and Ireland. *Bird Study* 28:5–14.

Nilsson, S. 1858. *Skandinavisk fauna. Foglarna, första bandet.* 3rd ed.

Pärt, T. 1979. Övervintrande svarthättor i Gävle. *Fåglar i X-län* 10:34–36.

SOF 1990. *Sveriges fåglar.* 2nd ed. Sveriges Ornitologiska Förening, Stockholm.

Svensson, S. 1993. Fågelövervakning med häckfågeltaxeringar och sträckfågelräkningar. *Vår Fuglefauna,* Suppl. 1:3–12.

Terrill, S. B. & Berthold, P. 1990. Ecophysiological aspects of rapid population growth in a novel migratory blackcap *(Sylvia atricapilla)* population: an experimental approach. *Oecologia* 85:266–270.

Tyrberg, T. 1992. Fågelrapport för 1991. *Vår Fågelvärld* 51:33–63.

Sammanfattning

Vinterförekomsten av svarthätta Sylvia atricapilla *(L.) i Sverige*

Svarthättor från kontinenten har i ökad omfattning funnits övervintra i England (se Berthold & Schlenker 1991) och nyligen har även en nordligt riktad höstflyttning mot Skandinavien påvisats (Fransson & Stolt 1993). Mot denna bakgrund beslöt vi att samla all information om artens vinteruppträdande i landet för att analysera följande frågor: Hur spridd och regelbunden är vinterförekomsten i Sverige? Ökar antalet övervintrande fåglar? I vilken utsträckning överlever fåglarna vintern?

Material och metoder

Uppgifter om vinterobservationer från november till mars insamlades på två sätt, dels genomsöktes tillgänglig litteratur (bl a lokala fågeltidskrifter), dels erhölls material från SOFs samtliga regionala rapportkommitteer. I vår studie har vi skilt på norra och södra Sverige och då dragit gränsen vid 61°N (Fig. 2). För att ge en uppfattning om vintervädret olika år har vi ur SMHIs officiella publikationer sammanställt medeltemperaturen i Örebro i januari för åren 1911–1993.

Resultat

Vår sammanställning resulterade i 688 vinterobservationer, varav endast tre är från perioden före 1950 (Fig. 1). Sedan vintern 1957/58 har förekomsten varit årlig. Det största antalet observationer inföll vintern 1982/83 då 71 svarthättor rapporterades. Den kallaste januarimånaden sedan 1911 inföll vintern 1986/87 (Fig. 1). Därefter följde sex milda vintrar med ett lägre och endast långsamt ökande antal rapporterade svarthättor.

För 510 fåglar finns kön noterat. Under förvintern, november–december, fanns ingen signifikant skillnad i könskvot men under eftervintern, januari–mars, var skillnaden signifikant med 61% hannar och 39% honor (χ^2=4,12, df=1, p<0,05).

Under november månad är fynden geografiskt ganska jämnt fördelade över hela landet (Fig. 2). I december minskar fynden i landets nordligaste delar. Under januari–mars är fynden i norra Sverige få medan förekomsten i södra Sverige förblir ganska jämnt fördelad.

Minskningen av antalet observationer under vinterns lopp skiljer sig dels mellan norra och södra Sverige och dels mellan könen. I norra Sverige är minskningen från november till mars 98% medan den i södra Sverige är 69%. För hela landet minskar antalet observerade svarthättor med 72% för hannar och med 81% för honor.

I 234 (34%) fall sågs svarthättor stanna i mer än en dag och i 19 fall blev fåglarna kvar i mer än tre månader. Svarthättor sågs äta bär av rönn, oxel, kornell, oxbär, sparris och hundrova. Av svarthättorna sågs 13 % vid fågelbord där den vanligaste födan var äpple, talg och bröd, men svarthättorna har också iakttagits äta kokos, banan, päron, russin, hampfrö, solrosfrö, ost, potatis, smör och leverpastej. Flera observatörer uppger att svarthättor varit aggresiva mot andra fåglar vid fågelbordet.

Diskussion

I vårt material ökar antalet övervintrande svarthättor starkt under 1960- och 1970-talen. En samtidig stark ökning har tidigare rapporterats från de Brittiska öarna, Irland och Belgien (Leach 1981, Fourage 1980). Det finns flera möjliga förklaringar till den kraftiga ökningen av rapporter från Sverige. Vi vet att en del svarthättor under hösten flyttar norrut från Centraleuropa till Skandinavien. Detta kan vara ett nytt flyttningsbeteende i likhet med vad som rapporterats för de svarthättor som övervintrar i England (se Berthold & Terrill 1988, Terrill & Berthold 1990, Berthold et al. 1992). De svarthättor som ses i Sverige under vintern skulle därför kunna ha sitt ursprung på kontinenten. Det hittills enda säkra belägget för svarthättornas ursprung är ett vinterfynd i Sverige av en i Belgien ringmärkt svarthätta. Denna fågel märktes i oktober och hittades döende 20 december samma år i Jönköping. En annan förklaring, som ligger nära till hands, är att den starka ökningen av rapporter helt enkelt beror på att den ornitologiska rapporteringsverksamheten byggts ut och ökat kraftigt under samma tid. En tredje förklaring kan vara att beteendet funnits även förut hos en liten andel av svarthättorna och att ökningen är ett resultat av en allmän ökning av antalet svarthättor. Svarthättan har under senare tid också ökat i antal i såväl svenska som västeuropeiska populationer (Leach 1981, Svensson 1993). Det ökade antalet rapporter om övervintrande svarthättor kan mycket väl vara ett resultat av en kombination av olika förklaringar. Vi finner det dock sannolikt att antalet övervintrande svarthättor i Sverige verkligen ökat under de senaste 30 åren. Om några av dessa svarthättor också är svenska häckfåglar eller om de alla kommer hit söderifrån under hösten återstår att visa.