ORNIS SVECICA 9:11–18, 1999

Different migration strategies among Swedish Common Buzzards *Buteo buteo* revealed by the proportion of white birds

NILS KJELLÉN

Abstract

Migrating Common Buzzards *Buteo buteo* were counted and aged at Falsterbo, Sweden in the autumns of 1990–1996. The study included a total of 48,000 individuals. Among these migrants, birds with a primarily white plumage were separated. Such birds form a significant proportion of the buzzards breeding in Scania, the southernmost Swedish province, but are very rare further north. The proportion of white buzzards at Falsterbo in autumn was also compared with the proportion among birds wintering in Scania. Using white buzzards as indicators of a southern population and comparing them with more normal/dark buzzards breeding further north in Sweden I demonstrate the following differences: (1) The southern population migrates earlier than normal/dark buzzards, adults as well as juveniles. (2) A larger proportion of juveniles than of adults migrates in the southern population. (3) Especially adults in the southern population are resident to a higher degree than more northerly breeders. Such a pattern of leap-frog migration among Swedish Common Buzzards is also supported by ringing recoveries.

Nils Kjellén, Department of Animal Ecology, Ecology Building, S-223 62 Lund, Sweden

Received 9 March 1999, Accepted 25 March 1999, Editor: S. Svensson

Introduction

In some raptors, the individual variation in plumage is far greater than the general differences between age groups. One species with an extreme plumage variation, from almost pure white to almost black, is the Common Buzzard *Buteo buteo* (Cramp & Simmons 1980, Forsman 1984, Génsbøl 1995). Since the variation is continuous, it is difficult to divide birds into distinct colour phases. The Common Buzzard breeds over much of the Northern Palearctic with different populations varying from being residents to long-distance migrants (Alerstam 1990). Buzzards from eastern Europe, belonging to the subspecies *vulpinus*, show a generally more rufous colour tone (Cramp & Simmons 1980, Shirihai & Forsman 1991). Among birds of this eastern subspecies migrating through Eilat (Israel), individuals with a predominantly white plumage are rare but regular (Shirihai & Forsman 1991, Shirihai 1996). The nominate race breeding in Western Europe merges into *vulpinus* in northernmost Fennoscandia (Cramp & Simmons 1980). Ulfstrand (1977) studied a large number of skins from Sweden and concluded that the western limit of *vulpinus* must be located east of the Baltic Sea. While buzzards with a predominantly white plumage have long been known to occur in Scania, the southernmost Swedish province (Figure 1 and 2), they are virtually unknown in northern Sweden. Ulfstrand (1977) divided Sweden into six geographical regions and found that pale birds were significantly more common in Scania compared to all more northerly areas. It is thus clear that white Scandinavian buzzards primarily originate from Scania and thus are part of a southern population. Most Common Buzzards breeding in Sweden migrate to Western Europe, while some remain to winter primarily along the coast in southernmost Sweden (SOF 1990).

At Falsterbo, the southwesternmost point of Scandinavia (Figure 1), autumn bird migration has been studied since the early 1940s (Rudebeck 1950, Ulfstrand et al. 1974). The development of better optical equipment and more advanced field guides has facilitated the ageing and sexing of many species. In the autumn 1986, I started a detailed study of the raptors passing the peninsula, distinguishing ages and sexes as far as possible. Earlier publications have dealt with the differential timing between sex and age

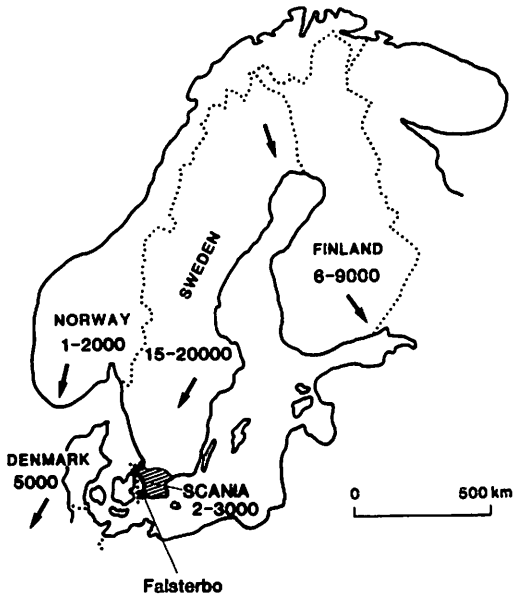

Figure 1. The study area in southernmost Sweden. Numbers indicate the estimated number of breeding pairs of Common Buzzard in the Nordic countries (Koskimies 1993). The number from Scania is based on recent census work (Sören Svensson pers. comm.). Arrows indicate general migratory direction.

Studieområdet i sydligaste Sverige. Antalen anger beståndsuppskattningar av antalet häckande ormvråkar i de nordiska länderna (Koskimies 1993). Beståndsuppskattningen för Skåne baseras på sentida inventeringar (Sören Svensson muntl.). Pilarna anger generella sträckriktningar.

groups (Kjellén 1992) and the annual variation in age and sex ratio during the ten years 1986–1995 (Kjellén 1998).

Since 1990 Common Buzzards with a primarily white underside among the migrants at Falsterbo were separated from dark individuals. The purpose of this paper is to investigate if light buzzards, presumed representatives of the southernmost population, differ from other buzzards with respect to the timing of passage and the proportion of juveniles at Falsterbo. The percentage of white birds among the autumn migrants has also been compared with the proportion of white birds among the Common Buzzards wintering in Scania (Kjellén 1994).

Methods

During 1990–1996, raptor migration over the Falsterbo peninsula was recorded from 1 August through 20 November. Observations started at dawn and continued as long as any migration was observed (normally some time in the afternoon). On days with bad weather, such as storm and rain, when Common Buzzards do not migrate, the counts were often cancelled. Depending on the prevailing wind conditions, different observation points on the peninsula were chosen to be as close as possible to the main stream of migrants. Buzzards passing close enough were separated into adults (second-year birds or older) and juveniles, using characters described by Forsman (1984) and Génsbøl (1995). Most observations were performed by the author, but on days with many birds at least two observers were normally working together. We used 10x40 binoculars and wide-angle 30x70 telescopes. The ambition was to count, sex and age as many as possible of the raptors passing Falsterbo (see Kjellén 1992 for a more detailed discussion on the coverage).

Ulfstrand (1977) classified Swedish buzzard skins using a procedure of quantitative plumage description resulting in a paleness index by summing up figures representing the colour patterns of 16 different body parts (Ulfstrand 1970). Since birds migrating past Falsterbo are often observed only from below it is generally not possible to see the colour of the upperside. Consequently, I have only recorded pattern on the underside of the passing buzzards. Only birds which were primarily white below were classified as 'white'. All pale buzzards with larger, distinct dark patches on, for instance, throat or belly (like in a Rough-legged Buzzard *B. lagopus*) were excluded from this category. The only distinct dark patches that were allowed to occur on birds classified as 'white' were those at the carpal joint. White birds in this study are therefore on the extreme end of the colour scale (illustrations in Génsbøl 1995: L and M would be included in the 'white' category, the pale birds in Jonsson (1992) would not be included). Generally, buzzards that are really white underneath are also principally white on the upperside, but there are a few exceptions. It is not possible to compare directly with Ulfstrand's index, but all white birds in this study would probably be well above paleness index 1200 and thus classified as 'pale' by Ulfstrand. Most likely they would be more comparable to the upper end of his scale with an index above 2000.

Migrating Common Buzzards were primarily divided into two categories. Uncontrolled birds were those passing too far away to be aged or checked for white individuals. Among the others, the controlled category, white birds were separated according to the criteria given above. The majority of white birds

were aged along with a varying proportion of the other controlled buzzards. Ageing white birds using plumage characters is generally more difficult than ageing darker birds (Forsman 1984). However, in autumn adults show traces of moult, while juveniles have a fresh plumage and a different wingshape. The overall seasonal timing and total proportions of different age classes were estimated on the basis of the samples of aged individuals, weighted by the total number of individuals observed during ten-day periods. For example, if 20% of the aged Common Buzzards in the last ten-day period of September during one year were juveniles, 20% of those controlled for colour, but unaged, in the same period were also assumed to be juveniles and the rest adults. The white birds were treated separately in the same way. The difference in seasonal timing (the median date) between ages and between white and other buzzards was tested with a Kolmogorov-Smirnov two-sample test, with sample sizes equal to the number of identified individuals (Siegel 1956).

Results

The total numbers of Common Buzzards of different categories recorded during 1990–1996 are given in Table 1. Between 12% and 58% of the migrants were not controlled for white birds during single years, and the total of 28,191 uncontrolled buzzards in seven seasons, equal to 37% of all migrants, are excluded from further analyses in this paper. The number of controlled buzzards varied between 4080 and 11,791 annually resulting in a total of 48,013 individuals (Table 1). Of these, roughly 63% were not aged but this proportion was considerably lower among the white birds (7%), due to the special attention to this category. The proportion of white buzzards (corrected for unaged birds as described above) varied around an average of 0.7% in adults and 1.7% among the juveniles (Table 2). Since the plumage is not correlated with age (Cramp & Simmons 1980) it is clear that among the white buzzards significantly more juveniles than adults migrate south compared to other Common Buzzards (χ^2 = 138, df=1, P<0.001).

The difference in median date between the ages was 11 days in all buzzards during 1986–1990, with adults culminating on 30 September followed by juveniles on 11 October (Kjellén 1992). Due to weather conditions proportionally more birds migrated later in the season during the present study period. This resulted in corresponding median dates five days later, although the age difference of eleven days remained (Table 2). The similarity between the ages in single years is a result of the migration often being markedly concentrated to a few peak days. Although the annual variation was fairly large, white buzzards on average migrated five days earlier than birds with darker plumage among adults and four days ahead among juveniles (Table 2). These differences are statistically significant in both adults (χ^2 = 8.4, df=1, P<0.05) and juveniles (χ^2 = 20, df=1, P<0.001), showing that the southernmost population, represented by the white birds, on average leaves Sweden earlier than buzzards breeding further north. The seasonal distribution of the whole material of controlled Common Buzzards was divided into decades as described above (Table 3). It is

Table 1. Total number of Common Buzzards of different categories counted at Falsterbo 1990–1996. Birds classified as white are not included in the categories of "adults" and "juvenilws", referring to buzzards with all other colour patterns.

Antal inräknade ormvråkar av olika kategorier i Falsterbo 1990–1996. Fåglar klassade som vita är ej inkluderade bland övriga adulta och juvenila.

Year *År*	1990	1991	1992	1993	1994	1995	1996	Total
Adults *Adulta*	2580	1869	1873	734	1329	1207	957	10549
White ad. *Vita ad.*	37	35	24	22	20	20	9	167
Juveniles *Juvenila*	879	866	1168	1122	879	768	1193	6875
White juv. *Vita juv*	74	42	40	65	39	23	48	331
Unaged *Ej åldersbestämda*	8209	3853	970	4634	2610	4519	5256	30051
Unaged white *Dito vita*	12	13	5	0	0	1	9	40
Controlled *Kontrollerade*	11791	6678	4080	6577	4877	6538	7472	48013
Uncontrolled *Ej kontrol.*	1619	1573	5199	6361	6816	3350	3273	28191
%	12	19	56	49	58	34	30	37
Total *Totalt*	13410	8251	9279	12938	11693	9888	10745	76204

Table 2. Median date of white and other Common Buzzards and the percentage of white birds among migrants at Falsterbo 1990–1996.

Mediandatum för vita och övriga ormvråkar samt procentandelen vita bland utsträckarna i Falsterbo 1990–1996.

Year *År*	1990	1991	1992	1993	1994	1995	1996	Average *Medel*
Adults *Adulta*	27 Sep	7 Oct	29 Sep	15 Oct	24 Sep	6 Oct	18 Oct	5 Oct
White ad. *Vita ad.*	27 Sep	28 Sep	29 Sep	15 Oct	23 Sep	6 Oct	26 Sep	30 Sep
Juveniles *Juvenila*	17 Oct	20 Oct	7 Oct	15 Oct	16 Oct	21 Oct	18 Oct	16 Oct
White juv. *Vita juv.*	17 Oct	10 Oct	30 Sep	15 Oct	8 Oct	21 Oct	18 Oct	12 Oct
% white ad. *% vita ad.*	0.5	1.0	1.0	1.0	0.7	0.5	0.4	0.7
% white juv. *% vita juv*	1.9	2.0	2.7	1.5	1.8	0.9	1.2	1.7

Table 3. Numbers in ten-day periods and percentage of white birds among migrating Common Buzzards at Falsterbo 1990–1996.

Fördelning på 10-dagarsperioder och procentandel vita bland ormvråkar i Falsterbo 1990–1996.

Month *Månad*	Aug 1	Aug 2	Aug 3	Sep 1	Sep 2	Sep 3	Oct 1	Oct 2	Oct 3	Nov	Total
Adults *Adulta*	6	152	543	2442	3730	5568	5241	5732	2611	337	26362
White ad. *Vita ad.*	0	2	11	16	31	46	33	23	16	3	181
Juveniles *Juvenila*	26	507	982	1184	1283	1543	1739	7657	5770	422	21113
White juv. *Vita juv.*	2	23	29	25	24	23	42	82	100	7	357
Total *Totalt*	34	684	1565	3667	5068	7180	7055	13494	8497	769	48013
%	0	1	3	8	11	15	15	28	18	2	100
% white ad. *% vita ad.*	0.0	1.3	2.0	0.7	0.8	0.8	0.6	0.4	0.6	0.9	0.7
% white juv. *% vita juv*	7.7	4.5	3.0	2.1	1.9	1.5	2.4	1.1	1.7	1.7	1.7

clear that the main southward passage at Falsterbo occurs in September and October, with a total of 93% of the migrants. The highest proportion of white birds is found among the relatively few migrants in August and after this the proportion of adult as well as juvenile white buzzards shows a decrease until October.

Discussion

The separation of white buzzards among the autumn migrants at Falsterbo, assuming that these birds are representatives of the Scanian breeding population, leads to the following conclusions: (1) Buzzards from Scania migrate earlier than northern buzzards. (2) In the southern population a larger proportion of juveniles than of adults migrates. (3) Birds of the southern population are resident to a higher degree than northern buzzards. This supports a pattern of leap-frog migration in the Common Buzzard.

Since Finnish breeders primarily migrate south east of the Baltic Sea and to a great extent winter in southern Africa (Saurola 1977), they are not likely to pass Falsterbo. Some birds breeding in northernmost Sweden seem to use this eastern route, although the great majority of Swedish buzzards migrates southwest (Alerstam 1990). Ringing recoveries show that most Swedish birds winter in western Europe with the majority of birds ringed north of 63° N being recovered in France and most of those ringed south of 60° N in northern Germany and Denmark. Odd birds from the northern population have been found as far south as Morocco, Togo and Liberia. Of winter recoveries of Swedish birds ringed south of 60° N (based on the annual reports from the Bird Ringing Centre 1960–1969; Alerstam 1990) only 13% were made in southern Sweden, with all but two from Scania (Alerstam 1990). Even if wintering birds may be found, especially along the coasts, in the southern third of Sweden Common Buzzards are only common in Scania at this time of year. In comparison, 57% of Danish buzzards recovered during winter were found within 100 km of the ringing site, and may thus be regarded as residents (Nielsen 1977). In Denmark the Common Buzzard is common in winter, with an estimated wintering population of 18,000 birds (Jørgensen 1989). In Great Britain and Germany the majority of Common Buzzards are residents (Cramp & Simmons 1980).

Since the proportion of white birds was signifi-

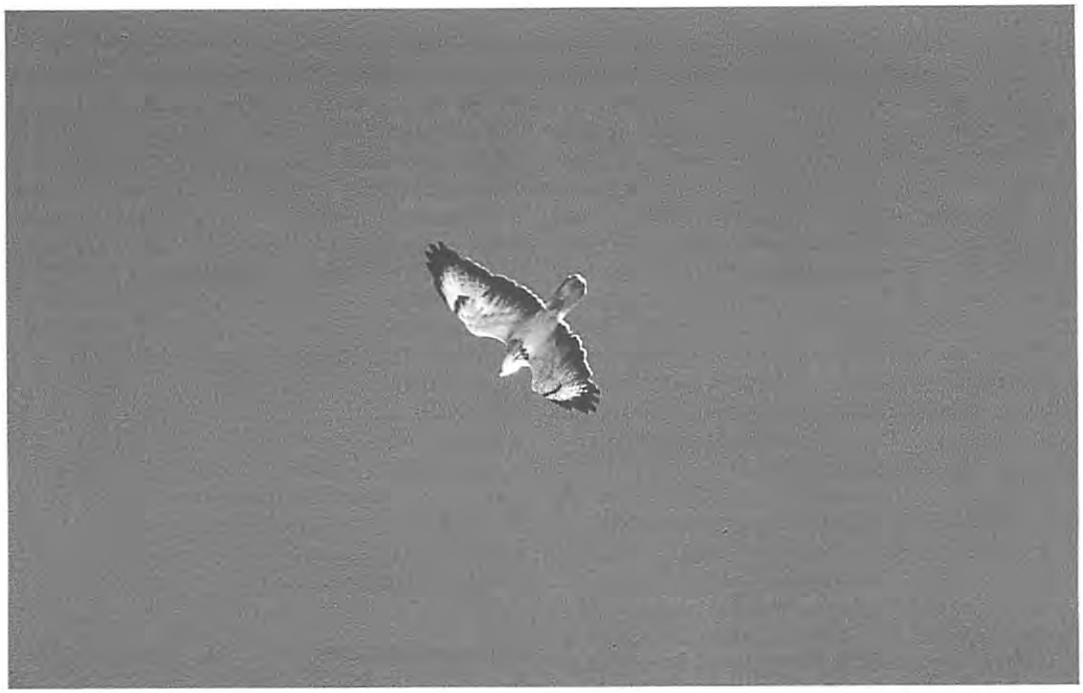

Figure 2. A Common Buzzard *Buteo buteo* belonging to the category "white". This bird is an adult individual. Photo: Nils Kjellén.
En ormvråk tillhörande den vita kategorin. Denna fågel är en adult individ.

cantly higher among Common Buzzards wintering in Scania (8% of adults, n=160 and 10% of juveniles, n=42) compared to the migrants at Falsterbo in the preceding autumn ($\chi^2 = 17$, df=1, P<0.001, n=6584; Kjellén 1994) it is clear that more local birds are found among the wintering birds. The same study revealed a significantly higher proportion of adults among winter buzzards in Scania (80%) compared to the autumn figures at Falsterbo (60%) ($\chi^2 = 112$, df=1, P<0.001, n=15 147). That juveniles generally migrate further than adults is also demonstrated by Danish recoveries, with an average distance of 216 and 160 km from the ringing site of recovered juveniles and adults, respectively (Nielsen 1977). Most breeding adults in Denmark are considered to be residents, while one third of the younger birds leave the country in winter (Jørgensen 1989). Sylvén (1978) showed that Common Buzzards defend individual winter territories in Scania. Most likely many of the resident adults spend the winter in the breeding territory. Old birds are presumably dominant over juveniles, which are forced to leave the natal area in autumn. They then have to winter in peripheral and less favourable areas in Scania or migrate south. Significantly more juveniles (36%, n = 136) were found among Common Buzzards wintering in the coastal region, with less forest and thus fewer breeding territories, compared to inland Scania (16%, n = 184, Kjellén 1994).

Ringing recoveries show that juvenile dispersal in buzzards starts in August (Newton 1979, Cramp & Simmons 1980). The first migrants at Falsterbo are normally recorded in the middle of that month. In August it is common to see small numbers of buzzards soaring over the peninsula, but later moving back inland instead of crossing to Denmark. Occasionally more than one hundred birds may be involved in such movements. Juveniles dominate at this time and many of the adults can be distinguished as second-year birds, with traces of juvenile plumage left. The high proportion of white birds in August suggests that many of these early buzzards originate from Scania, but on average only 5% of the migration occurs in this month (Table 3). The main southward passage takes place in September–October, with some annual variation in median dates (Table 2) primarily depending on weather conditions. The higher proportion of white buzzards in September and the earlier median dates of adults as well as juveniles with white plumage compared to

the buzzards with normal/dark plumage suggests that the southernmost population generally leaves ahead of buzzards breeding further north. This may simply be the effect of an earlier start and completion of the breeding cycle on southern latitudes. It may be advantageous to leave early in order to secure a good winter territory on the Continent. Since adult Common Buzzards normally do not have time to complete the moult before autumn migration there is no reason to believe that any differences in moult strategy are involved. The proportion of white birds rise again among the small numbers in November (Table 3), but the difference compared to October is not significant. Even as late as December–January small numbers of primarily young buzzards may be seen to leave Sweden via Falsterbo in connection with low temperatures and heavy snowfall.

Ulfstrand (1977) classified 14% of 320 Swedish skins of Common Buzzard as pale (with a paleness index > 1200). In his material 11 skins scored an index above 2000. This is equal to 3.4 percent and would seem more comparable to my white birds. Roughly half of the skins originated from Scania which may explain the higher proportion compared to 1.1% white birds among the 48,000 buzzards in this study, where the great majority can be assumed to have a more northerly origin. Also, looking at museum skins there is always a possibility that odd (in this case white) birds are over-represented since they may have been shot to a higher degree. Among 714 wintering buzzards in Scania in 1987–1990 a total of 8 % were classified as 'white' (Kjellén 1994). Looking at the pale birds from Scania, Ulfstrand (1977) found that these made up a smaller proportion among skins from the winter months compared to the summer, but the material is rather small. He explained this with a dilution of dark birds from further north during wintertime. The Swedish recoveries show that some northerly buzzards spend the winter in Scania, but the majority wintering there are probably of local origin. A considerably higher proportion of buzzards ringed as nestlings in Scania and found in winter were recovered within Sweden (28%, n = 36) compared to buzzards ringed further north in Sweden (12%, n = 444). Among the latter almost half were recovered in Scania, having migrated a varying distance south from the area of birth.

Very little is published on the proportion of "white" Common Buzzards in different parts of Europe. It is clear that white birds do occur in most countries in Western Europe but generally the proportion seems to be lower than in Scania. What then are the advantages of having a white instead of a dark plumage? White feathers are considered to provide better thermal insulation compared to darker ones (Salomonsen 1972, Ogilvie 1976). It has been suggested that the insulation capacity of a pale plumage is superior and this would then be favourable to individuals wintering on their breeding grounds in Sweden, at comparatively high latitudes (Ulfstrand 1977). Another possibility is that the white plumage offers a better camouflage during snowy winter conditions. A parallel is the white phase of the Gyr Falcon Falco rusticolus primarily found in the Arctic, at the northern edge of the breeding range (Ogilvie 1976, Génsbøl 1995). If this explanation is true one would likely expect to find an equally high proportion of white individuals among the Danish Common Buzzards, wintering at the same latitude under similar winter conditions. Unfortunately no exact figures are available from Denmark but there is some evidence that the proportion of white buzzards is roughly of the same order or slightly lower than in Scania (Per Bomholt, Hans Erik Jørgensen pers. comm.).

Acknowledgements

A number of different observers contributed on single days at Falsterbo. I would especially like to thank Anders Jönsson, who participated on most days, primarily during the first years. Thord Fransson supplied compilations of the recoveries from the Swedish Museum of Natural History, Stockholm. Thomas Alerstam provided encouraging support during the study and gave many valuable comments on the manuscript. Rob Bijlsma, Bruno Bruderer and Reto Spaar provided a number of constructive comments as referees. This is report number 190 from Falsterbo Bird Observatory.

References

Alerstam, T. 1990. *Bird Migration.* Cambridge University Press, Cambridge.

Cramp, S. & Simmons, K. E. L. (eds) 1980. *The Birds of the Western Palearctic.* Vol. 2. Oxford University Press, Oxford.

Forsman, D. 1984. *Rovfågelsguiden.* Lintutieto, Helsinki.

Génsbøl, B. 1995. *Birds of prey of Europe, North Africa and the Middle East.* GAD, Copenhagen.

Jonsson, L. 1992. *Birds of Europe with North Africa and the Middle East.* Christopher Helm, London.

Jørgensen, H. E. 1989. *Danmarks Rovfugle – en statusoversigt.* Frederikshus, Øster Ulslev.

Kjellén, N. 1992. Differential timing of autumn migration between sex and age groups in raptors at Falsterbo, Sweden. *Ornis Scand.* 23: 420–434.

Kjellén, N. 1994. Differences in age and sex ratio among migrating and wintering raptors in Southern Sweden. *Auk* 111: 274–284.
Kjellén, N. 1998. Annual variation in age and sex ratio among migrating raptors at Falsterbo, Sweden during 1986–1995. *J. Orn.* 139:157–171.
Koskimies, P. 1993. *Population sizes and recent trends of breeding birds in the Nordic countries.* Report from a working group under the Nordic Council of Ministers. National Board of Waters and the Environment, Helsinki.
Newton, I. 1979. *Population Ecology of Raptors.* Poyser, Berkhamsted.
Nielsen, B. P. 1977. Danske Musvågers Buteo buteo trækforhold og spredning. *Dansk Orn. Foren. Tidsskr.* 71: 1–9.
Ogilvie, M. A. 1976. *The Winter Birds.* Michael Joseph, London.
Rudebeck, G. 1950. Studies on Bird Migration. *Vår Fågelvärld,* Suppl. 1: 148 pp.
Salomonsen, F. 1972. Zoogeographical and ecological problems in arctic birds. *Proc. XV Int. Orn. Congr.* (1970): 25–77.
Saurola, P. 1977. Suomalaisten hiirihaukkojen muuttoreitit. *Lintumies* 12: 43–53.
Shirihai, H. 1996. *The Birds of Israel.* Academic Press.
Shirihai, H. & Forsman, D. 1991. Steppe Buzzard morphs at migration and their separation from Long-legged Buzzard. *Dutch Birding* 13: 197–209.
Siegel, S. 1956. *Nonparametric statistics for the behavioral sciences.* McGraw-Hill/Kogakusha, Tokyo.
SOF 1990. *Sveriges fåglar.* 2:a uppl. Swedish Ornithological Society, Stockholm.
Sylvén, M. 1978. Interspecific relations between sympatrically wintering Common Buzzards *Buteo buteo* and Rough-legged Buzzards *Buteo lagopus.* Ornis Scand. 9: 109–115.
Ulfstrand, S. 1970. A Procedure for Analysing Plumage Variation and Its Application to a Series of South Swedish Common Buzzards Buteo buteo. *Ornis Scand.* 1: 107–113.
Ulfstrand, S. 1977. Plumage and size variation in Swedish Common Buzzards Buteo buteo. *Zool. Scr.* 6: 69–75.
Ulfstrand, S., Roos, G., Alerstam, T. & Österdahl, L. 1974. Visible Bird Migration at Falsterbo, Sweden. *Vår Fågelvärld,* Suppl. 8: 245 pp.

Sammanfattning

Skilda flyttningstrategier hos svenska ormvråkar Buteo buteo *speglade av andelen vita individer*

Hos vissa rovfåglar är den individuella dräktvariationen betydligt större än de generella skillnaderna mellan olika åldersgrupper. Ett slående exempel är ormvråken som varierar från en i det närmaste svart till en helvit dräkt (Cramp & Simmons 1980, Forsman 1984, Gensbøl 1995). Arten häckar över stora delar av norra Palearktis och olika populationer varierar från att vara stannfåglar till rena lång-flyttare (Alerstam 1990). Dräktvariationen förefaller rent allmänt vara diskontinuerlig även om t. ex den östliga rasen *B. b. vulpinus* oftare har en mer rödbrun fjäderdräkt. Medan mer eller mindre vita vråkar, s. k. "Börringevråkar", sedan länge är kända från Skåne, förefaller sådana vara närmast okända i norra Sverige. Ulfstrand (1977) som studerade ett stort antal svenska skinn konstaterade att ljusa ormvråkar var signifikant mer förekommande i Skåne jämfört med fem nordligare regioner. Detta innebär at man skulle kunna se dylika vråkar som representanter för en sydlig population.

Sedan 1986 bedriver jag en detaljerad studie av rovfågelsträcket i Falsterbo där jag bl. a. tittat på den tidsmässiga passagen av olika köns- och åldersgrupper samt den årliga variationen i ungfågelsandel och könsfördelning (Kjellén 1992, 1998). Från och med 1990 har ormvråkar med huvudsakligen vit fjäderdräkt separerats från mer normala, mörkare individer. Syftet har varit att undersöka om sträcket av dessa "vita" vråkar, som antas representera en skånsk population, skiljer sig från övriga beträffande sträcktid och ungfågelsandel. Vidare har procentandelen vita bland höststräckarna i Falsterbo jämförts med motsvarande andel bland övervintrare i Skåne.

Flertalet av de sträckande vråkarna i Falsterbo ses endast underifrån. Jag har därför endast använt teckningarna på undersidan vid separeringen av "vita" individer. Endast vråkar med huvuddelen av undersidan vit har urskiljts. Mörka teckningar har endast tillåtits på knogen medan fåglar med tydliga fläckar på strupe och buk (som hos fjällvråk) har uteslutits. Mina "vita" fåglar utgör således extremer på färgskalan (illustrationerna L och M i Gensbøl 1995 skulle inkluderats, medan de ljusa fåglarna i Jonsson 1992 inte hade tagits med). Även om det generellt är svårare att åldersbestämma vita ormvråkar (Forsman 1984), gör skillnader i vingform och ruggningsstatus att detta är förhållandevis lättare höstetid.

I uppsatsen analyseras material från åren 1990–1996. Antalet inräknade ormvråkar uppdelade på olika kategorier framgår av Tabell 1. Totalt sträckte drygt 76.000 vråkar under de sju åren. Av dessa passerade 37% för långt ifrån observatören för att medge detaljstudier. Dessa "ej kontrollerade" vråkar har ej tagits med vidare i denna studie. En varierande andel av de "kontrollerade" vråkarna har åldersbestämts varje höst (sammanlagt c:a 37% av drygt 48.000). Speciell uppmärksamhet har riktats mot de vita individerna vilket resulterat att en proportionellt högre andel (93%) av dessa åldersbestämts (Tabell 1). Hela materialet delades upp på tiodagarsperioder och de ej åldersbestämda fåglarna har fördelats på unga och gamla efter bestämd procentsats. Andelen vita ormvråkar varierade kring ett genomsnitt på 0,7% bland de adulta och 1,7% bland de juvenila (Tabell 2). Eftersom dräktskillnaderna

inte är åldersrelaterade är det således klart att signifikant fler unga än gamla sträcker söderut bland de vita vråkarna.

Skillnaden i mediandatum (då 50% av sträcket passerat) mellan gamla och unga ormvråkar var 11 dagar i hela materialet (Tabell 2). Mindre differenser enskilda år beror på att sträcket ofta är starkt koncentrerat till ett fåtal toppdagar. Även om den årliga variationen var relativt stor kulminerade de vita vråkarna generellt tidigare; fem dagar för adulta och fyra dagar hos ungfåglarna. Differensen är signifikant för båda kategorierna. En uppdelning på tiodagarsperioder visar att huvuddelen av sträcket passerar i september och oktober (Tabell 3). Den högsta andelen vita vråkar iakttogs bland de relativt få sträckarna i augusti.

Separeringen av vita ormvråkar bland sträckarna i Falsterbo, som representanter för en skånsk population, leder till följande slutsatser: (1) Skånska ormvråkar flyttar tidigare än nordligare vråkar. (2) En större andel av ungfåglarna än av adulterna flyttar söderut hos denna sydliga population. 3. Den skånska populationen är stannfågel i högre utsträckning än nordligare vråkar. Detta antyder ett mönster av kedjeflyttning hos ormvråken där de nordligaste häckarna är de som flyttar längst. Finska häckfåglar flyttar normalt söderut öster on Östersjön (Saurola 1977) och passerar sannolikt ej Falsterbo. Ringmärkningsåterfynd visar att flertalet svenska häckare övervintrar i Västeuropa med en majoritet av de som ringmärkts norr om 63° N återfunna i Frankrike och huvuddelen av fåglarna märkta söder om 60° N återfunna i norra Tyskland och Danmark (Alerstam 1990, Ringmärkningscentralen). Även om det, främst längs kusterna, kan påträffas övervintrande ormvråkar i södra tredjedelen av Sverige är arten normalt endast vanlig i Skåne vintertid. Som en jämförelse kan nämnas att 57% av de danska ormvråkarna anses vara stannfåglar (Nielsen 1977). Andelen vita fåglar var signifikant högre bland övervintrare i Skåne jämfört med sträckare i Falsterbo närmast föregående höst (Kjellén 1994). Detta visar på en högre andel lokala fåglar bland övervintrarna. En motsvarande högre andel adulta vråkar visar att ungfåglarna, liksom hos danska ormvråkar, är mer flyttningsbenägna. Sannolikt är det så att adulta fåglar stannar i häckningsreviret, medan ungfåglarna körs bort under hösten och får övervintra i mindre optimala områden i Skåne eller flytta söderut.

Att sydligare häckfåglar flyttar söderut något tidigare kan bara vara en effekt av att häckningen inleds och avslutas tidigare på sydligare breddgrader. En tidigare avfärd ökar chansen att ockupera ett bra vinterrevir på kontinenten. Mycket lite har publicerats om andelen vita ormvråkar i olika delar av Europa. Från Danmark finns inga exakta siffror men muntliga uppgifter från danska ornitologer antyder att andelen vita vråkar skulle vara ungefär jämförbar med den skånska. Tänkbara fördelar med en vit fjäderdräkt skulle kunna vara bättre värmeisolering eller bättre kamouflage under snöiga vinterförhållanden.