

Migration counts at Falsterbo, Sweden

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Abstract: Standardised migration counts have been carried out at Falsterbo in southwestern-most Sweden since 1973 as a part of a National Monitoring Scheme run by the Swedish Environmental Protection Agency. Counts are performed 1 August – 20 November by 1–2 observers. Observations start before dawn and normally continue until 2 p.m. CET. Most species are counted and juveniles are separated from adults in raptors and a number of larger species. In the order of 150 different species are counted allowing for an analysis of demographics of species and migration phenology. Large annual variations, primarily due to the weather and the production of young, mean that longer time series are needed to calculate significant population changes. In general there have been more species increasing than decreasing over the 47 years. Detailed information as well as annual reports can be found on www.falsterbofagelstation.se/index_e.html

History and methods

The Falsterbo peninsula constitutes the southwesternmost point of Scandinavia (Fig. 1). Large numbers of migrants, especially those reluctant to cross large bodies of open water, concentrate here during the autumn. The birds pass over the peninsula in a westerly to southwesterly direction towards Denmark (closest distance 25 km to Stevns klint).

Systematic counts of migrating birds at Falsterbo were carried out for the first time during 1942–1944 by Gustaf Rudebeck (Rudebeck 1950). During 1949–1960 counts were organised by the Ornithological Society of Scania. Most counts were carried out from Nabben, the southwesternmost point of the peninsula (Ulfstrand *et al.* 1974). A large number of observers took part in the counts over the years. Depending in the availability of observers, the coverage of the migration season varied between years.

In the autumn of 1973 strictly standardised counts were introduced, with Gunnar Roos as the responsible observer. The annual observation period was set to 11 August – 20 November. The observations started at about 30 minutes before sunrise every day and continued till 2 p.m. (CET). One single observer at Nabben counted the migrating birds. In 1978, the project was included in the National Monitoring Scheme run by the Swedish Environmental Protection Agency

(Naturvårdsverket), and has remained there since then. All migrants were counted except Great Cormorant *Phalacrocorax carbo*, larger gulls and Sandwich Tern *Sterna sandwicensis*. These species feed in large numbers in the area, making it hard to separate true migrants. A number of species, less easy to separate, were put together in pairs: Black-throated/Red-throated Diver *Gavia stellata/arctica*, Common/Arctic Tern *Sterna hirundo/paradisaea*, Chaffinch/Brambling *Fringilla coelebs/montifringilla* and Parrot/Common Crossbill *Loxia curvirostra/pytyopsittacus*. During the first years there were also some groups of species-undetermined birds like goose sp., buzzard sp., swallow sp. etc. No ageing or sexing of the birds was carried out.

During the autumns of 1986–2000 a special study of the raptor migration was carried out by Nils Kjellén (Kjellén 1999). The observation period was 1 August – 20 November and the daily effort was from dawn for as long as significant migration was going on. All raptors were counted and, if possible, aged and sexed. Additionally, when time allowed, a number of other species were counted. Most species occurring in relatively small numbers were always counted, while for example Common Eider *Somateria mollissima* and Wood Pigeon *Columba palumbus* were registered more irregularly and common passerines were left out.

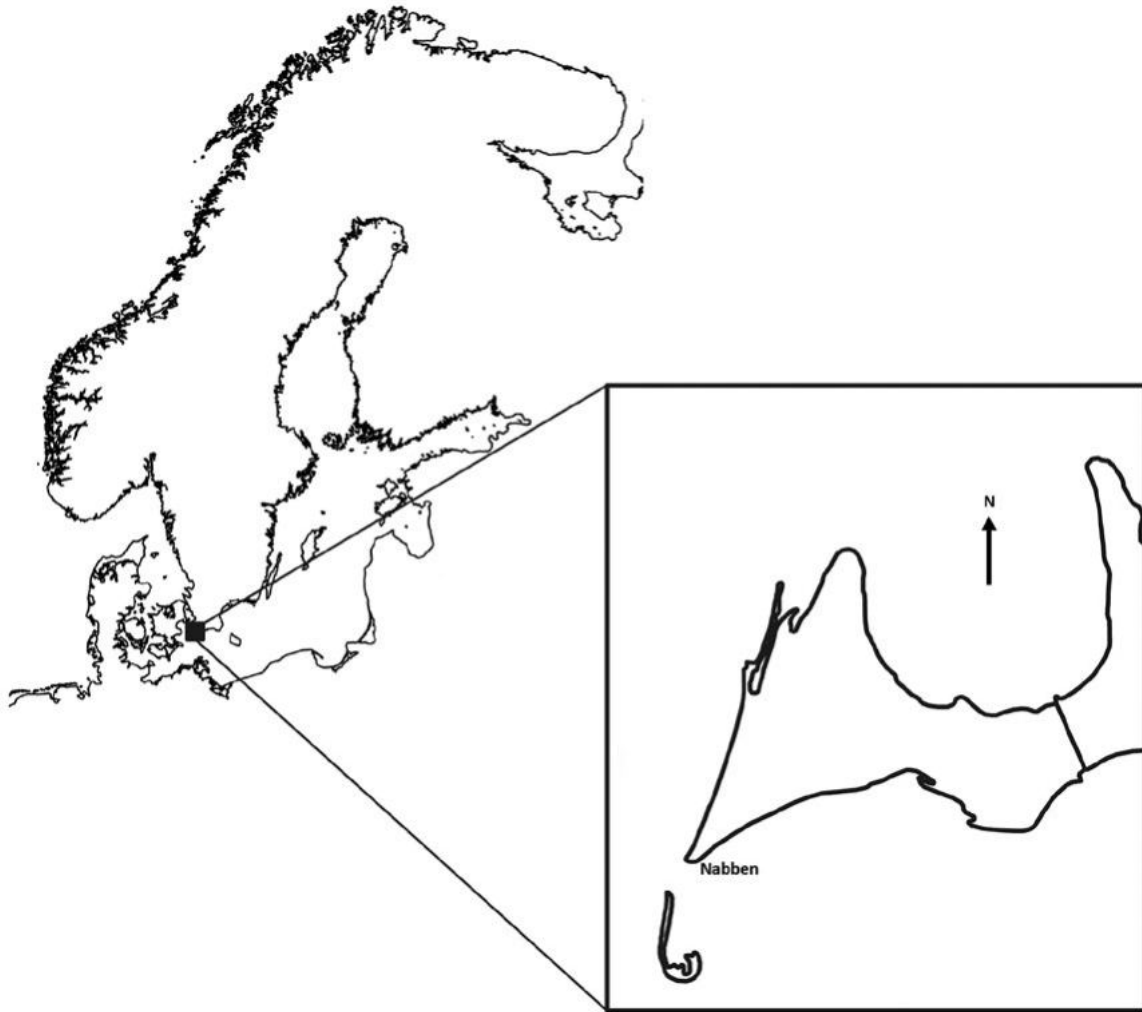


Figure 1. The position of the counting place on the Falsterbo peninsula, Sweden

In 2001 the standardised counts were slightly modified when the author took over. Since then, the counts start on 1 August and two observers work together 11 August – 10 November. The season ends on 20 November as before. All species are counted until 2 p.m. (CET), while raptors are counted for as long as significant migration is going on. Exceptionally, during bad weather conditions when no birds migrate, the counts are stopped before 2 p.m. All migrating species are counted, except Great Cormorant, Herring Gull *Larus argentatus*, Great Black-backed Gull *Larus marinus* and Sandwich Tern. A varied sample of swans, geese, raptors, cranes, gulls and terns are aged in order to get an indication of annual breeding success. The results are presented in an annual report (Kjellén 2019 and earlier reports). In order to increase the comparability between the standardised counts carried out before and after the change, some recalculations were made. GR's counts were completed with numbers from the

Falsterbo Bird Observatory log on days when the species in question was not counted by NK (during 1986–2000). The amount of additional material varies between years, but this should be of less importance in the long-term perspective view. Averages from Gunnar Roos's 1986–2000 counts were then compared to the corresponding numbers in the raptor counts. Most species, that were counted simultaneously by GR and NK show significant correlations and thus they were easy to recalculate, mainly by enumerating GR's numbers with the average difference, since the numbers in the raptor counts generally were larger. In some raptors and sparsely occurring passerines the original figures were tripled with this method of recalculation. It also includes compensation for the first ten days in August and for raptor counts continuing after 2 p.m. (CET). Other groups of species, like waders and terns, migrating already during the first ten days in August, were enumerated with the average percentages from the same period 1986–2000.

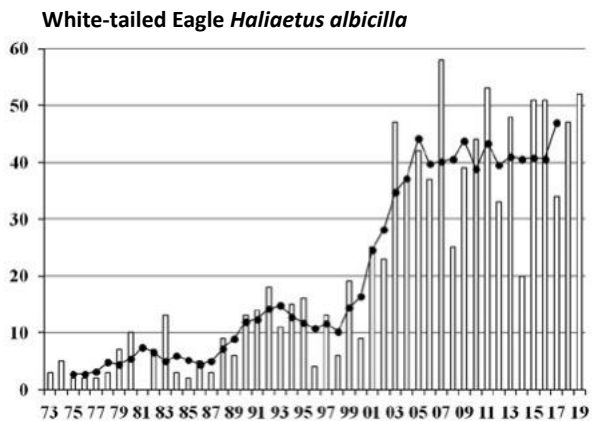
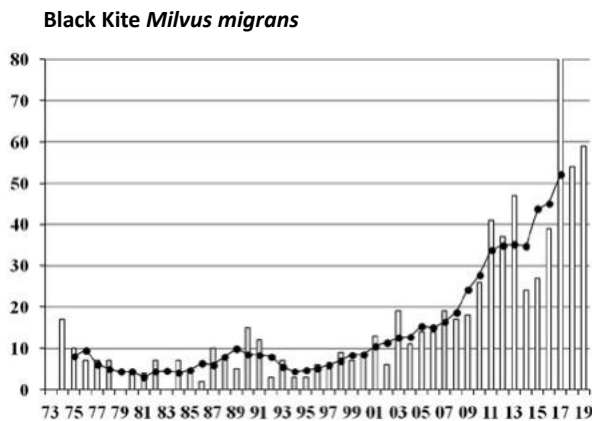
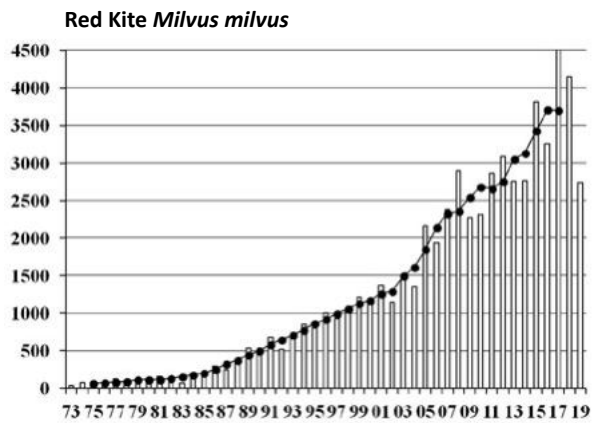
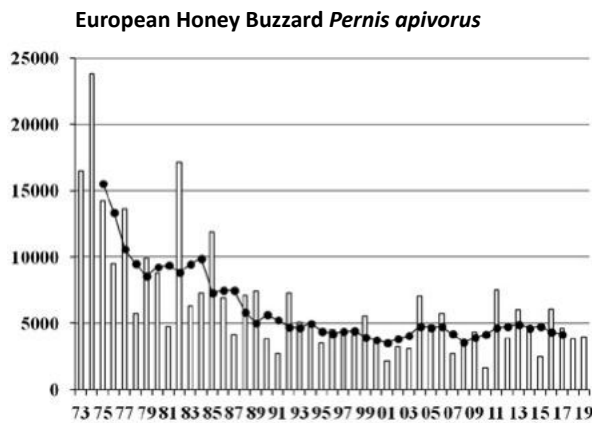
Results

Results are presented on the homepage of Falsterbo Bird Observatory: www.falsterbofagelstation.se/index_e.html. Here you can find totals from single days, years and decades. In addition, long-term trends and correlations for all but the more sparse species are depicted, along with top-ten lists of daily and annual totals. The information is updated in January each year. Also earlier annual reports can be downloaded. During the migration season in autumn daily totals of different migrants and the running annual total as well as the average from earlier years are updated every day on the national report system Artportalen: www.artportalen.se.

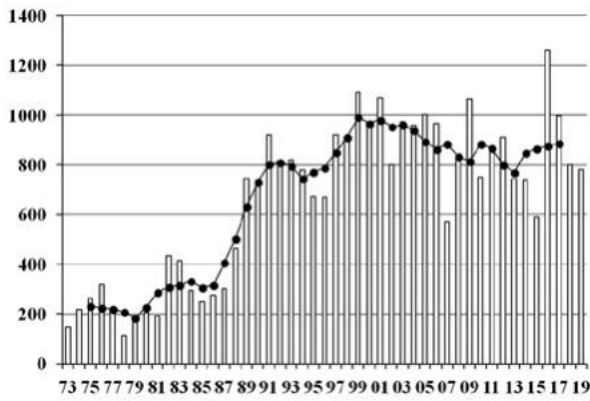
Most visitors come to Falsterbo to view the raptor migration. Compared to places like the Bosphorus and Gibraltar numbers are not as impressive, with an annual average of 46 thousand migrating raptors and falcons. The birds are however generally at a lower altitude and thus more easily studied. The most common species are Eurasian Sparrowhawk *Accipiter nisus* and Common Buzzard *Buteo buteo* with around 10–30 thousand migrants per species annually. In later years the Red Kite *Mil-*

vus milvus has exceeded Eurasian Honey Buzzard *Pernis apivorus* as the third most common species with around 4,000 migrants. Figure 2 shows annual totals with running 5-year averages in the 16 most common raptors and falcons at Falsterbo, 1973–2019. Similar graphs of all regular species can be found on the homepage.

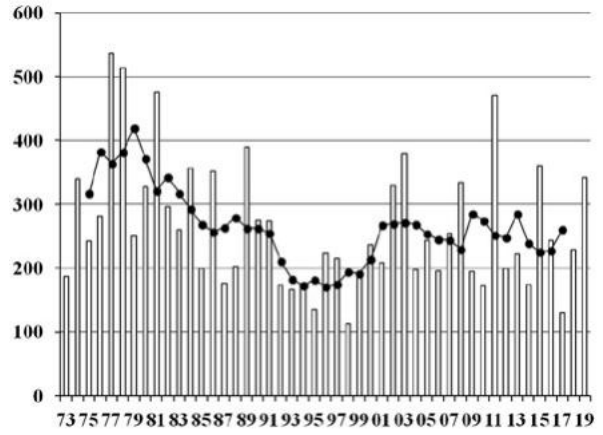
Compared to most other migration sites the passage of non-raptors is more impressive at Falsterbo. In the order of 150 different species are counted in numbers allowing for an analysis of the population trend. Most common is the species-pair Chaffinch/Brambling with an average of around one million annually, of which the great majority are Chaffinch. This is followed by an increasing number of Wood Pigeons, reaching one million for the first time in 2019. On the third place we find Barnacle Goose *Branta leucopsis*, which probably soon will reach half a million in a season. After this Common Starling *Sturnus vulgaris*, Western Jackdaw *Corvus monedula* and Common Eider occur in numbers close to 100 thousand annually. On a good day in the order of half a million Chaffinches or 200 thousand Wood Pigeons are counted, an impressive experience.



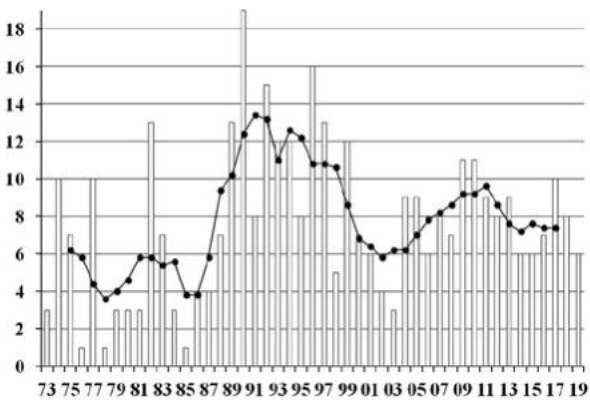
Western Marsh Harrier *Circus aeruginosus*



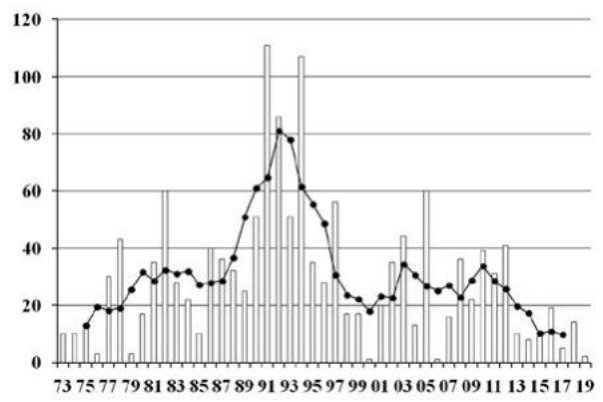
Hen Harrier *Circus cyaneus*



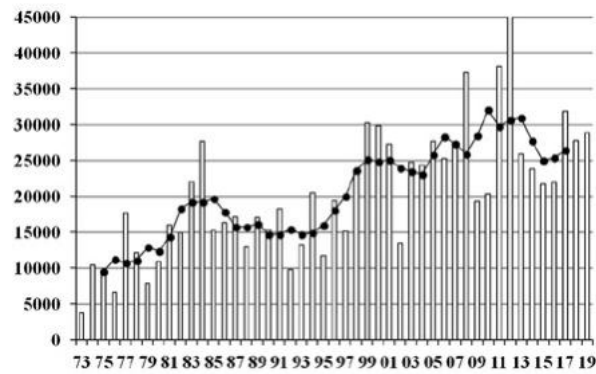
Montagu's Harrier *Circus pygargus*



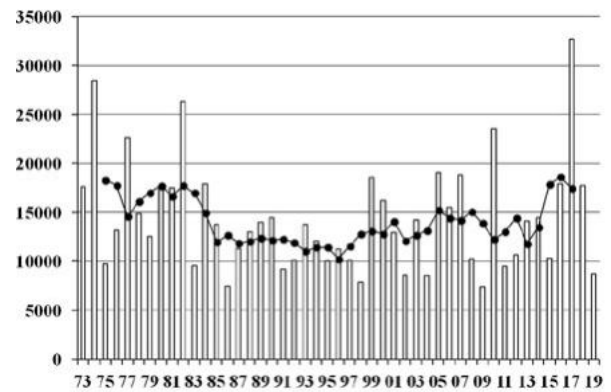
Northern Goshawk *Accipiter gentilis*



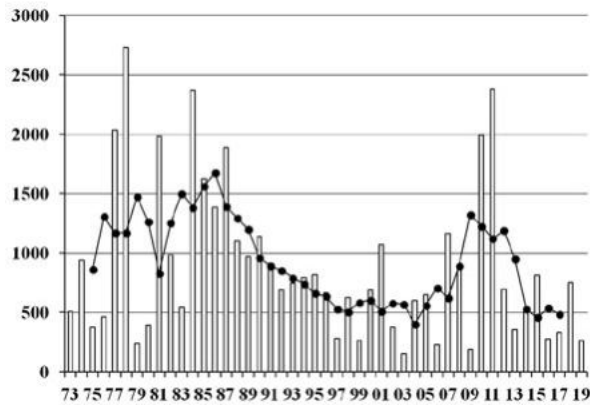
Eurasian Sparrowhawk *Accipiter nisus*



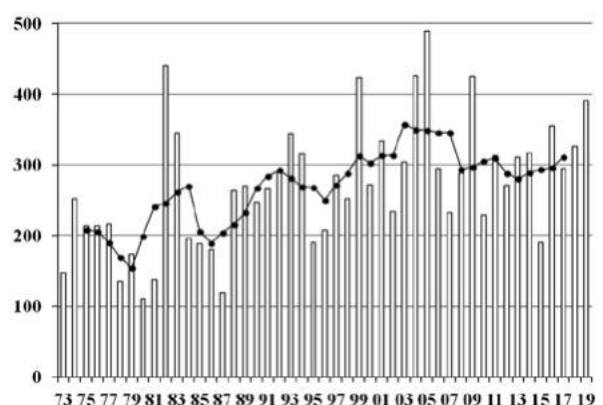
Common Buzzard *Buteo buteo*



Rough-legged Buzzard *Buteo lagopus*



Osprey *Pandion haliaetus*



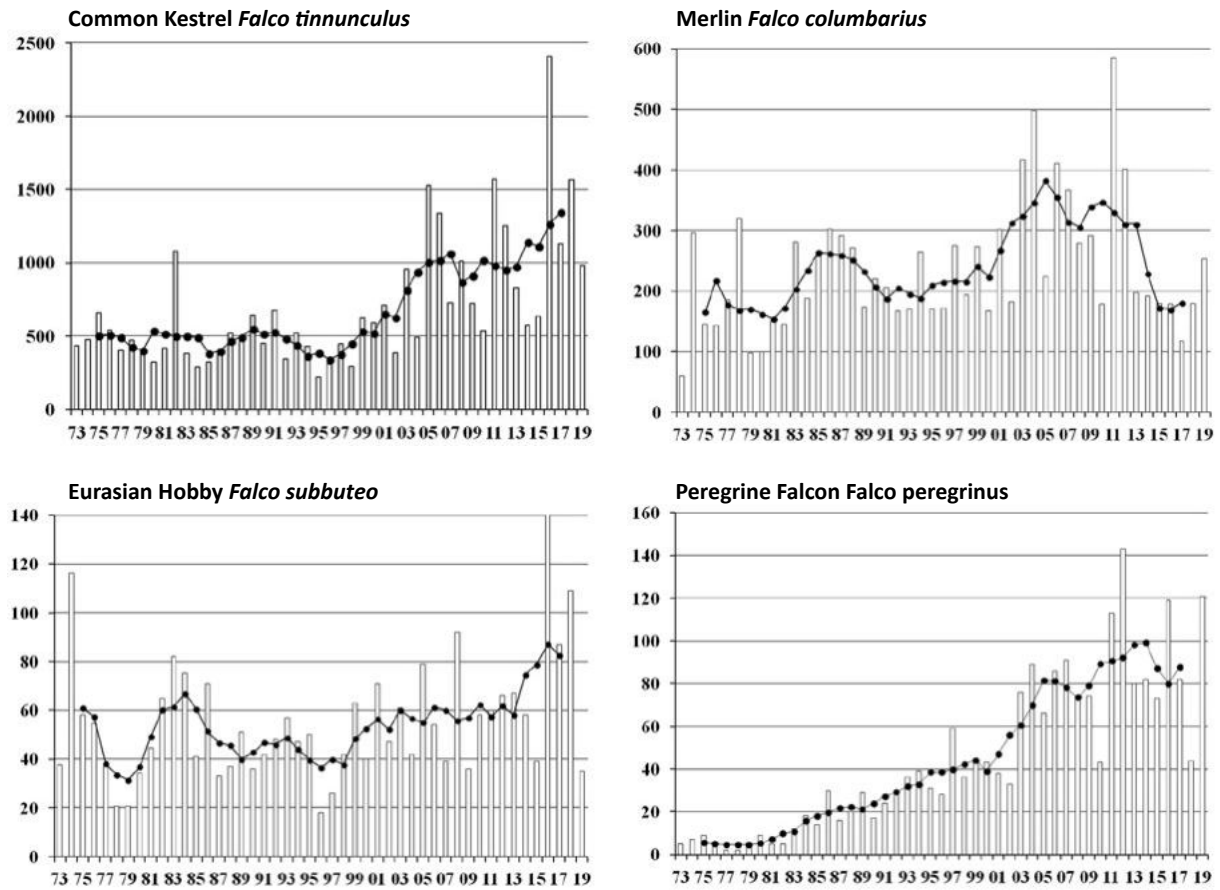


Figure 2. The migration of 16 different raptors at Falsterbo 1973–2019 with rolling five-year averages

Trends

There are two main factors affecting the numbers counted in a single year. Most important is the weather. Normally more birds are seen in westerly winds, when migrants travel against the wind and thus generally fly at a lower altitude. This makes them more visible for the observers. In easterly and in weaker northerly winds birds tend to fly at a higher altitude, making them harder to observe from the ground. The other main factor is that productivity can vary quite a lot between years in some species. For instance, raptors like Eurasian Honey Buzzard and Rough-legged Buzzard *Buteo lagopus* produce varying numbers of juveniles depending on the number of wasps and rodents respectively. The general temperature and precipitation during summer may also affect the production of young in many passerines. Thus, annual totals at Falsterbo may vary quite a lot from one season to the next. It is therefore necessary to have longer series when comparing population trends. In Table 1, the annual averages during the 47 years are presented. Also given

is the trend over the whole period as well as for the last ten years. This is measured by Spearman Rank correlation. Many species have fluctuated up and down to a varying degree.

In general, there were more species with decreasing numbers from the 1970's up to the turn of the century, especially during the last decade. After this there has been an increase in the majority of migrants. In a few species this may be partially explained by a better coverage with two observers, but the general trend is similar in the Fennoscandian breeding censuses. The table shows examples of general increases (like Red Kite, Barnacle Goose and Grey Heron *Ardea cinerea*) as well as long-term decreases (for example Hooded Crow *Corvus corone cornix*, Tawny Pipit *Anthus campestris* and Ortolan Bunting *Emberiza hortulana*). Rather pronounced changes in the trend over the period are found in species like Canada Goose *Branta canadensis*, Rook *Corvus frugilegus*, Common Starling, Yellow Wagtail *Motacilla flava* and Black Tern *Chlidonias niger*.

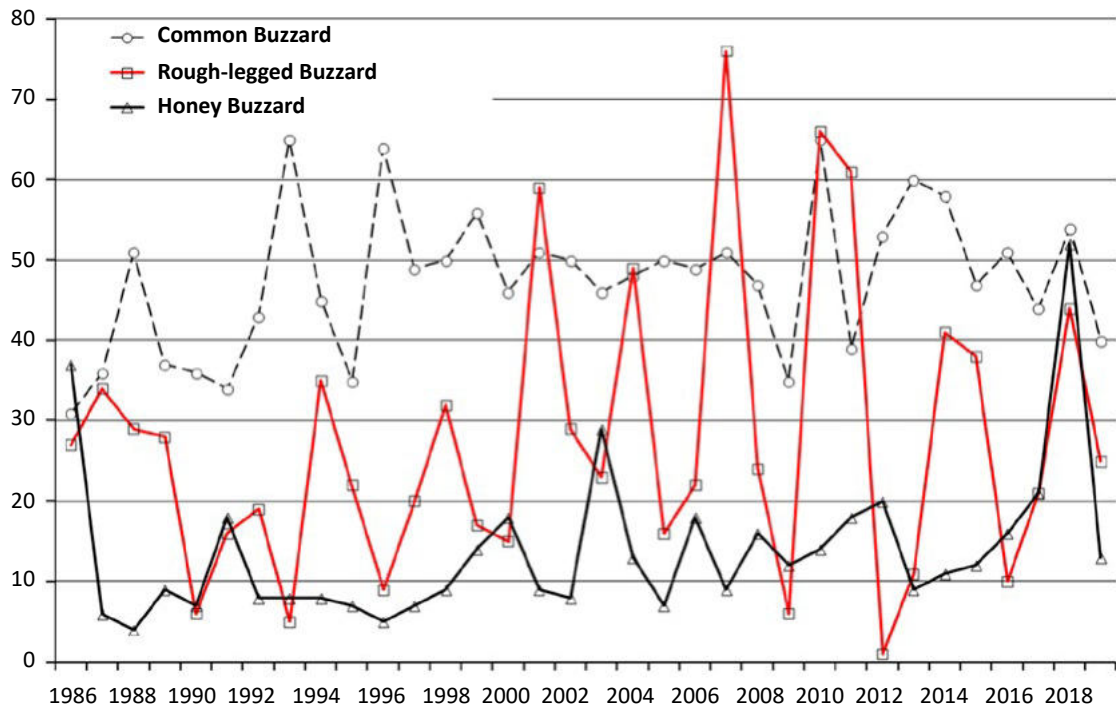


Figure 3. Proportion of juveniles at Falsterbo in Common Buzzard *Buteo buteo*, Rough-legged Buzzard *Buteo lagopus* and European Honey Buzzard *Pernis apivorus* 1986–2019

Proportion of juveniles

Since 1986 the proportion of young birds among the migrants have been studied in a number of larger species (Table 2). In general, a varying sample of migrants are aged and then unaged birds are converted according to the proportion of aged birds of the same species in different decades. In most species the proportion of young varies without any general trend. One exception is Red Kite, where an increase in proportion of adults since 1986 most likely reflects decreasing numbers of fledged juveniles per breeding attempt in the rapidly increasing Swedish population. On the other hand, it is promising to see a slightly better result over the period in European Honey Buzzard, for which a long-term negative trend has stopped the last ten years (Tables 1–2). Figure 3 shows the variation over 35 years in three species of buzzards. The annual production is much lower in European Honey Buzzard, compared to a more stable production on a higher level in Common Buzzard. The production of Rough-legged Buzzard has much greater fluctuation than the two other species, depending on rodent numbers in Northern Scandinavia.

The concentration rate of different raptors and falcons i.e. proportion of birds migrating through Falsterbo in relation to the overall breeding pop-

ulation in Sweden, as well as between adults and juveniles, varies to a certain degree (Kjellén 1997). The highest concentration rate is found in Red Kite, where a majority of the Swedish population is found in Scania close to Falsterbo. In many other species a varying degree of the migrants at Falsterbo have their origin in other countries in Fennoscandia or Russia.

Timing of migration

The temporal passage, i.e. autumn phenology, at Falsterbo varies between species. One way to compare this is to talk about the median date, indicating when 50 % of the annual total has passed. In these days of climate change it is interesting to investigate if this migration peak has changed over the years. Table 3 shows the species with the most obvious change towards a later or earlier passage over the 47-year period. One general explanation may be that short-distance migrants stay longer on the breeding grounds if temperature and food availability makes this possible, with Greylag Goose *Anser anser* and Hen Harrier *Circus cyaneus* as good examples. In extreme cases, the later passage may lead to a higher proportion spending the winter north of Falsterbo, as in Whooper Swan *Cygnus cygnus* and Mallard

Anas platyrhynchos, leading to declining migration numbers. In Afro-Palearctic migrants such as Wood Sandpiper *Tringa glareola* and Tree Pipit *Anthus trivialis* an earlier breeding due to rising

temperatures makes it possible to migrate earlier in order to secure a good winter territory and/or have time for the energy-demanding moult (Jenni & Kery 2003, Lehikoinen & Jaatinen 2012).

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Table 1. Average number of migrants at Falsterbo 1973–2019 in regular species. The correlation trend measured by Spearman Rank (r) is given for the whole period as well as for the last ten years: * = p < 0.05, ** = p < 0.01, * = p < 0.001.**

Species	Scientific name	Av. 73-19	r (47 y.)	r (10 y.)
Brent Goose	<i>Branta bernicla</i>	11219	0.65***	0.00
Canada Goose	<i>B. canadensis</i>	128	0.63***	-0.72*
Barnacle Goose	<i>B. leucopsis</i>	60054	0.94***	0.79**
Greylag Goose	<i>Anser anser</i>	3913	0.79***	-0.41
Bean Goose	<i>Anser fabalis</i>	219	0.05	-0.05
Greater White-fronted Goose	<i>A. albifrons</i>	739	0.80***	0.20
Mute Swan	<i>Cygnus olor</i>	605	-0.02	-0.20
Tundra Swan	<i>C. columbianus</i>	221	0.70***	0.01
Whooper Swan	<i>C. cygnus</i>	194	0.66***	-0.11
Common Shelduck	<i>Tadorna tadorna</i>	433	0.32*	-0.03
Northern Shoveler	<i>Anas clypeata</i>	194	0.66***	0.50
Gadwall	<i>A. strepera</i>	17	0.71***	-0.14
Eurasian Widgeon	<i>A. penelope</i>	8018	0.83***	0.24
Mallard	<i>A. platyrhynchos</i>	422	0.07	0.18
Northern Pintail	<i>A. acuta</i>	1032	0.69***	0.04
Eurasian Teal	<i>A. crecca</i>	1078	0.35*	0.46
Common Pochard	<i>Aythya ferina</i>	43	-0.23	-0.24
Tufted Duck	<i>A. fuligula</i>	466	-0.06	0.35
Greater Scaup	<i>A. marila</i>	213	-0.48***	0.12
Common Eider	<i>Somateria mollissima</i>	92294	-0.17	-0.16
Velvet Scoter	<i>Melanitta fusca</i>	330	0.48***	0.32
Common Scoter	<i>M. nigra</i>	6623	0.87***	0.61
Long-tailed Duck	<i>Clangula hyemalis</i>	55	0.12	0.37
Common Goldeneye	<i>Bucephala clangula</i>	325	-0.46**	0.17

Common Merganser	<i>Mergus merganser</i>	39	0.00	0.09
Red-breasted Merganser	<i>M. serrator</i>	1528	0.36*	0.13
Red-throated Diver	<i>Gavia stellata</i>	381	0.73***	0.31
Black-throated Diver	<i>G. arctica</i>	123	0.30	-0.06
Red-necked Grebe	<i>Podiceps grisegena</i>	23	0.68***	0.11
Grey Heron	<i>Ardea cinerea</i>	190	0.94***	0.64*
Great Egret	<i>A. alba</i>	10	0.70**	0.89***
Osprey	<i>Pandion haliaetus</i>	270	0.55***	0.49
European Honey Buzzard	<i>Pernis apivorus</i>	6491	-0.61***	-0.08
Lesser Spotted Eagle	<i>Clanga pomarina</i>	3	0.12	-0.18
Greater Spotted Eagle	<i>Clanga c.</i>	1	0.31	0.02
Golden Eagle	<i>Aquila chrysaetos</i>	2	0.05	0.06
Eurasian Sparrowhawk	<i>Accipiter nisus</i>	20364	0.75***	0.14
Northern Goshawk	<i>A. gentilis</i>	30	-0.15	-0.75**
Western Marsh Harrier	<i>Circus aeruginosus</i>	659	0.73***	0.20
Hen Harrier	<i>C. cyaneus</i>	264	-0.24	0.14
Pallid Harrier (86-19)	<i>C. macrourus</i>	7	0.85***	0.46
Montagu's Harrier	<i>C. pygargus</i>	8	0.24	-0.48
Red Kite	<i>Milvus milvus</i>	1305	0.98***	0.47
Black Kite	<i>M. migrans</i>	16	0.73***	0.62
White-tailed Eagle	<i>Haliaeetus albicilla</i>	21	0.88***	0.14
Rough-legged Buzzard	<i>Buteo lagopus</i>	889	-0.29*	-0.69*
Common Buzzard	<i>B. buteo</i>	14383	-0.08	0.05
Common Crane	<i>Grus grus</i>	2191	0.84***	-0.04
Eurasian Oystercatcher	<i>Haematopus ostralegus</i>	300	0.03	-0.18
Pied Avocet	<i>Recurvirostra avosetta</i>	64	0.04	-0.08
Northern Lapwing	<i>Vanellus vanellus</i>	603	-0.15	0.14
European Golden Plover	<i>Pluvialis apricaria</i>	704	0.61***	0.47
Grey Plover	<i>P. squatarola</i>	331	0.56***	0.31
Common Ringed Plover	<i>Charadrius hiaticula</i>	1176	0.43**	0.53
Lesser Ringed Plover	<i>Ch. dubius</i>	4	0.40*	0.30
Whimbrel	<i>Numenius phaeopus</i>	20	0.27	-0.09
Eurasian Curlew	<i>N. arquata</i>	234	0.10	0.10
Bar-tailed Godwit	<i>Limosa lapponica</i>	297	0.57***	-0.12
Ruddy Turnstone	<i>Arenaria interpres</i>	37	0.42**	-0.37
Red Knot	<i>Calidris canutus</i>	595	0.36*	0.00
Ruff	<i>C. pugnax</i>	214	0.33*	0.25
Curlew Sandpiper	<i>C. ferruginea</i>	112	0.25	0.32
Temminck's Stint	<i>C. temminckii</i>	4	0.57***	-0.08
Sanderling	<i>C. alba</i>	65	0.14	-0.47
Dunlin	<i>C. alpina</i>	5553	0.09	0.33
Little Stint	<i>C. minuta</i>	94	-0.13	0.02
Common Snipe	<i>Gallinago gallinago</i>	271	-0.51***	-0.49
Common Sandpiper	<i>Actitis hypoleucos</i>	44	0.38*	-0.19
Green Sandpiper	<i>Tringa ochropus</i>	16	0.51***	0.66*
Common Redshank	<i>T. totanus</i>	194	0.06	-0.14
Wood Sandpiper	<i>T. glareola</i>	110	0.32*	0.25
Spotted Redshank	<i>T. erythropus</i>	71	0.10	0.10
Common Greenshank	<i>T. nebularia</i>	183	0.28	0.11
Black-legged Kittiwake	<i>Rissa tridactyla</i>	11	0.17	-0.26

Black-headed Gull	<i>Croicocephalus ridibundus</i>	7659	-0.05	0.16
Little Gull	<i>Hydrocoloeus minutus</i>	455	0.57***	0.03
Common Gull	<i>Larus canus</i>	3562	0.85***	0.26
L. Black-backed Gull (01-19)	<i>L. fuscus</i>	110	0.73	0.20
Caspian Tern	<i>Hydroprogne caspia</i>	11	0.39**	0.37
Little Tern	<i>Sternula albifrons</i>	67	-0.19	0.64*
Common Tern	<i>Sterna hirundo</i>	2890	0.80***	0.64*
Arctic Tern	<i>S. paradisaea</i>	340	0.57***	0.21
Black Tern	<i>Chlidonias niger</i>	54	0.30*	-0.43
Pomarine Skua	<i>S. pomarinus</i>	8	-0.05	-0.08
Arctic Skua	<i>S. parasiticus</i>	44	0.30*	0.00
Long-tailed Skua (86-19)	<i>S. longicaudus</i>	11	0.45**	-0.11
Common Guillemot	<i>Uria aalge</i>	216	-0.65***	-0.43
Razorbill	<i>Alca torda</i>	48	-0.14	-0.07
Stock Dove	<i>Columba oenas</i>	8783	0.21	0.67*
Common Wood Pigeon	<i>C. palumbus</i>	311922	0.70***	0.60
Eurasian Collared Dove	<i>Streptopelia decaocto</i>	45	-0.62***	0.09
Common Cuckoo	<i>Cuculus canorus</i>	2	-0.31	0.25
Short-eared Owl	<i>Asio flammeus</i>	3	-0.15	0.06
Common Swift	<i>Apus apus</i>	7212	0.09	0.45
Common Kestrel	<i>Falco tinnunculus</i>	690	0.60***	0.33
Merlin	<i>F. columbarius</i>	236	0.28	-0.45
Eurasian Hobby	<i>F. subbuteo</i>	55	0.27	-0.11
Red-footed Falcon	<i>F. vespertinus</i>	2	-0.15	0.79**
Peregrine Falcon	<i>F. peregrinus</i>	45	0.93***	0.17
Great Grey Shrike	<i>Lanius excubitor</i>	21	0.05	-0.10
Western Jackdaw	<i>Corvus monedula</i>	40291	0.46**	0.83**
Rook	<i>C. frugilegus</i>	6315	-0.47***	0.78**
Carrion Crow	<i>C. corone</i>	2942	-0.93***	-0.60
Coal Tit	<i>Parus ater</i>	628	0.19	-0.18
Eurasian Blue Tit	<i>Cyanistes cyanus</i>	28899	0.32*	-0.07
Great Tit	<i>Parus major</i>	860	0.09	-0.26
Eurasian Penduline Tit	<i>Remiz pendulinus</i>	5	0.75***	-0.57
Bearded Reedling	<i>Panurus biarmicus</i>	40	0.68***	0.59
Wood Lark	<i>Lullula arborea</i>	1336	0.57***	0.41
Eurasian Skylark	<i>Alauda arvensis</i>	1871	0.32*	0.29
Horned Lark	<i>Eremophila alpestris</i>	9	-0.49***	0.38
Sand Martin	<i>Riparia riparia</i>	3365	-0.22	0.65*
Barn Swallow	<i>Hirundo rustica</i>	25566	0.09	0.28
Common House Martin	<i>Delichon urbicum</i>	4693	-0.51***	-0.21
Common Starling	<i>Sturnus vulgaris</i>	113260	-0.45**	0.41
Fieldfare	<i>Turdus pilaris</i>	9385	-0.27	-0.52
Redwing	<i>T. iliacus</i>	4235	-0.25	-0.02
Song Thrush	<i>T. philomelos</i>	948	-0.08	-0.15
Mistle Thrush	<i>T. viscivorus</i>	647	0.73***	0.17
Eurasian Tree Sparrow	<i>Passer montanus</i>	320	-0.22	0.42
Yellow Wagtail	<i>Motacilla flava</i>	39768	0.01	0.70*
Grey Wagtail	<i>M. citreola</i>	211	0.73***	0.39
White Wagtail	<i>M. alba</i>	1235	-0.11	-0.02
Tawny Pipit	<i>Anthus campestris</i>	24	-0.90***	-0.63*

Meadow Pipit	<i>A. pratensis</i>	10653	0.38**	0.10
Tree Pipit	<i>A. trivialis</i>	25047	0.41**	0.49
Red-throated Pipit	<i>A. cervinus</i>	52	-0.65***	-0.67*
Rock Pipit	<i>A. petrosus</i>	36	0.00	0.35
Chaffinch/Brambling	<i>Fringilla coelebs/montif.</i>	844621	0.23	0.14
Hawfinch	<i>Coccothraustes coccothraustes</i>	16	0.62***	-0.53
Eurasian Bullfinch	<i>Pyrrhula pyrrhula</i>	970	0.18	-0.29
Common Rosefinch	<i>Carpodacus erythrinus</i>	4	-0.36*	-0.70*
European Greenfinch	<i>Chloris chloris</i>	35183	-0.05	-0.64*
Twite	<i>Linaria flavirostris</i>	1978	-0.27	0.84**
Common Linnet	<i>L. cannabina</i>	26331	0.04	0.69*
Redpoll	<i>Acanthis flammea</i>	3722	0.61***	-0.08
Parrot Crossbill	<i>Loxia pytyopsittacus</i>	787	0.26	-0.16
Red Crossbill	<i>L. curvirostra</i>	3276	0.23	-0.20
European Goldfinch	<i>Carduelis carduelis</i>	4659	0.86***	0.23
European Serin	<i>Serinus serinus</i>	8	0.76***	0.73*
Eurasian Siskin	<i>Spinus spinus</i>	42706	0.64***	-0.72*
Yellowhammer	<i>Emberiza citrinella</i>	2703	-0.46**	-0.40
Ortolan Bunting	<i>E. hortulana</i>	32	-0.74***	-0.86**
Common Reed Bunting	<i>E. schoeniclus</i>	1626	0.25	0.03
Lapland Longspur	<i>Calcarius lapponicus</i>	14	-0.30*	-0.58
Snow Bunting	<i>Plectrophenax nivalis</i>	137	-0.32*	-0.10

Table 2. Proportion of juveniles (%) among some migrants at Falsterbo 1986–2019.

Species	Mean	1986–1990	1991–2000	2001–2010	2011–2019
Brant Goose <i>Branta bernicla</i>	13	19	12	9	14
Mute Swan <i>Cygnus oler</i>	5	-	-	6	5
Tundra Swan <i>C. columbianus</i>	10	15	10	12	6
Whooper Swan <i>C. cygnus</i>	9	6	9	11	8
Osprey <i>Pandion haliaetus</i>	49	50	56	46	45
European Honey Buzzard <i>Pernis apivorus</i>	14	13	10	14	19
Golden Eagle <i>Aquila chrysaetus</i>	71	43	72	88	69
Eurasian Sparrowhawk <i>Accipiter nisus</i>	79	79	77	79	82
Northern Goshawk <i>A. gentilis</i>	94	96	97	89	96
Western Marsh Harrier <i>Circus aeruginosus</i>	73	76	78	71	66
Hen Harrier <i>C. cyaneus</i>	66	60	62	71	70
Pallid Harrier <i>C. macrourus</i>	52	25	43	59	59
Montagu's Harrier <i>C. pygargus</i>	58	51	60	66	51
Red Kite <i>Milvus milvus</i>	71	83	75	71	61
Black Kite <i>M. migrans</i>	21	15	8	26	33
White-tailed Eagle <i>Haliaeetus albicilla</i>	38	36	32	45	38
Rough-legged Buzzard <i>Buteo lagopus</i>	28	25	19	37	28
Common Buzzard <i>B. buteo</i>	48	38	49	49	50
Common Crane <i>Grus grus</i>	12	25	18	11	10
Black-legged Kittiwake <i>Rissa tridactyla</i>	87	84	73	92	96

Little Gull <i>Hydrocoloeus minutus</i>	50	62	65	45	33
Lesser Black-backed Gull <i>Larus fuscus</i>	29	-	-	30	28
Caspian Tern <i>Hydroprogne caspia</i>	15	15	14	14	17
Little Tern <i>Sternula albifrons</i>	55	-	-	-	55
Common Tern <i>Sterna hirundo</i>	32	34	39	28	29
Arctic Tern <i>S. paradisaea</i>	37	26	39	37	41
Black Tern <i>Chlidonias niger</i>	88	77	96	81	91
Pomarine Skua <i>Stercorarius pomarinus</i>	64	29	46	77	89
Parasitic Skua <i>S. parasiticus</i>	54	55	62	54	43
Long-tailed Skua <i>S. longicaudus</i>	98	80	95	100	100
Common Kestrel <i>Falco tinnunculus</i>	78	70	77	81	81
Red-footed Falcon <i>F. vespertinus</i>	79	50	97	75	74
Merlin <i>F. columbarius</i>	84	88	84	86	81
Eurasian Hobby <i>F. subbuteo</i>	86	89	86	86	83
Peregrine Falcon <i>F. peregrinus</i>	32	40	26	32	33

Table 3. Species showing an obvious positive or negative trend in median migration date at Falsterbo 1973–2019. Spearman Rank (r): * = p < 0.05, ** = p < 0.01, * = p < 0.001.**

Later median				Earlier median			
English name	Scientific name	r	Sign	English name	Scientific name	r	Sign
Tundra Swan	<i>Cygnus columbianus</i>	0.66	***	Black-throated Diver	<i>Gavia arctica</i>	-0.57	***
Greylag Goose	<i>Anser anser</i>	0.56	***	Common Shelduck	<i>Tadorna tadorna</i>	-0.56	***
Coal Tit	<i>Parus ater</i>	0.53	**	Common Scoter	<i>Malanitta nigra</i>	-0.54	***
Western Jackdaw	<i>Corvus monedula</i>	0.48	**	Wood Sandpiper	<i>Tringa glareola</i>	-0.54	***
Red-throated Diver	<i>Gavia stellata</i>	0.43	**	Greater Ringed Plover	<i>Charadrius hiaticula</i>	-0.51	***
Red Kite	<i>Milvus milvus</i>	0.42	**	Canada Goose	<i>Branta canadensis</i>	-0.48	**
Gadwall	<i>Anas strepera</i>	0.41	*	White-tailed Eagle	<i>Haliaeetus albicilla</i>	-0.47	**
Eurasian Widgeon	<i>A. penelope</i>	0.40	**	Eurasian Oystercatcher	<i>Haematopus ostralegus</i>	-0.47	**
Hen Harrier	<i>Circus cyaneus</i>	0.39	**	Lesser Ringed Plover	<i>Charadrius dubius</i>	-0.45	*
Stock Dove	<i>Columba oenas</i>	0.37	*	Grey Plover	<i>Pluvialis squatarola</i>	-0.42	**
Great Crested Grebe	<i>Podiceps cristatus</i>	0.35	*	Arctic Skua	<i>Stercorarius parasiticus</i>	-0.41	**
Common Merganser	<i>Mergus merganser</i>	0.35	*	Green Sandpiper	<i>Tringa ochropus</i>	-0.40	**
White Wagtail	<i>Motacilla alba</i>	0.34	*	Whimbrel	<i>Numenius phaeopus</i>	-0.38	*
Greater Scaup	<i>Aythya marila</i>	0.34	*	Common Sandpiper	<i>Actitis hypoleucos</i>	-0.36	*
Whooper Swan	<i>Cygnus cygnus</i>	0.33	*	Barn Swallow	<i>Hirundo rustica</i>	-0.36	*
Black Stork	<i>Ciconia nigra</i>	0.29		Rook	<i>Corvus frugilegus</i>	-0.36	*
Common Buzzard	<i>Buteo buteo</i>	0.29	*	Tree Pipit	<i>Anthus trivialis</i>	-0.35	*
Eurasian Bullfinch	<i>Pyrrhula pyrrhula</i>	0.28		Red Crossbill	<i>Loxia curvirostra</i>	-0.35	*
Northern Shoveler	<i>Anas clypeata</i>	0.28		Grey Heron	<i>Ardea cinerea</i>	-0.34	*
Northern Pintail	<i>A. acuta</i>	0.26		Dunlin	<i>Calidris alpina</i>	-0.33	*
Hawfinch	<i>C. coccythraustes</i>	0.25		Pied Avocet	<i>Recurvirostra avocetta</i>	-0.32	*
Tawny Pipit	<i>Anthus campestris</i>	0.24		Eurasian Sparrowhawk	<i>Accipiter nisus</i>	-0.31	*
Common Crane	<i>Grus grus</i>	0.23		Lesser Spotted Eagle	<i>Clanga pomarina</i>	-0.29	
Black Kite	<i>Milvus migrans</i>	0.23		Marsh Harrier	<i>Circus aeruginosus</i>	-0.28	
Common House Martin	<i>Delichon urbica</i>	0.23		Little Tern	<i>Sternula albifrons</i>	-0.28	
Mallard	<i>Anas platyrhynchos</i>	0.22		Common Guillemot	<i>Uria aalge</i>	-0.28	
Eurasian Tree Sparrow	<i>Passer montanus</i>	0.20		Sand Martin	<i>Riparia riparia</i>	-0.28	