

# Seasonal variation of birds on a feeding site in a suburban area near Oslo, Norway

Kåre Elgmork

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The birds visiting a feeding site near a villa in a suburban, residential area in Bærum municipality, west of Oslo, were monitored daily during 1997-99, and at irregular intervals during 1993-96. Sixteen species had a frequency of more than one week during 1997-99. The most common species were: Magpie, Great Tit, Blue Tit, Greenfinch, and Tree Sparrow, all of which occurred during most of the year. There was a clear seasonal pattern in the occurrence of most species. Three species, Siskin, Redpoll, and Brambling, were irregular and occasionally present in relatively large numbers. Invasions occurred especially during cold spells. Among migrant birds, the Blackbird was regularly present during winter. The Robin overwintered irregularly, especially in mild winters.

*Key words:* avifauna, suburban areas, residential areas, garden birds, seasonal variation, invasions.

*Kåre Elgmork, Department of Biology, Division of Zoology, University of Oslo, P.O. Box 1050 Blindern, N-0316 Oslo, Norway*

## INTRODUCTION

Urban and suburban development is producing the most rapidly increasing landscapes and habitats, both in Norway and globally (Bevanger 1992). Few detailed studies of the bird faunas have been made in such habitats, especially studies over several years. This investigation adds to our limited knowledge of the dynamics of suburban bird populations based on daily observations at close range over several years of a feeding site outside the author's kitchen window. The site is a mosaic, suburban, residential area located on a gradient between climax spruce forest and urban areas of Oslo city. In addition, the accumulated data gave insight into the influence of environmental factors, of which climate seems important.

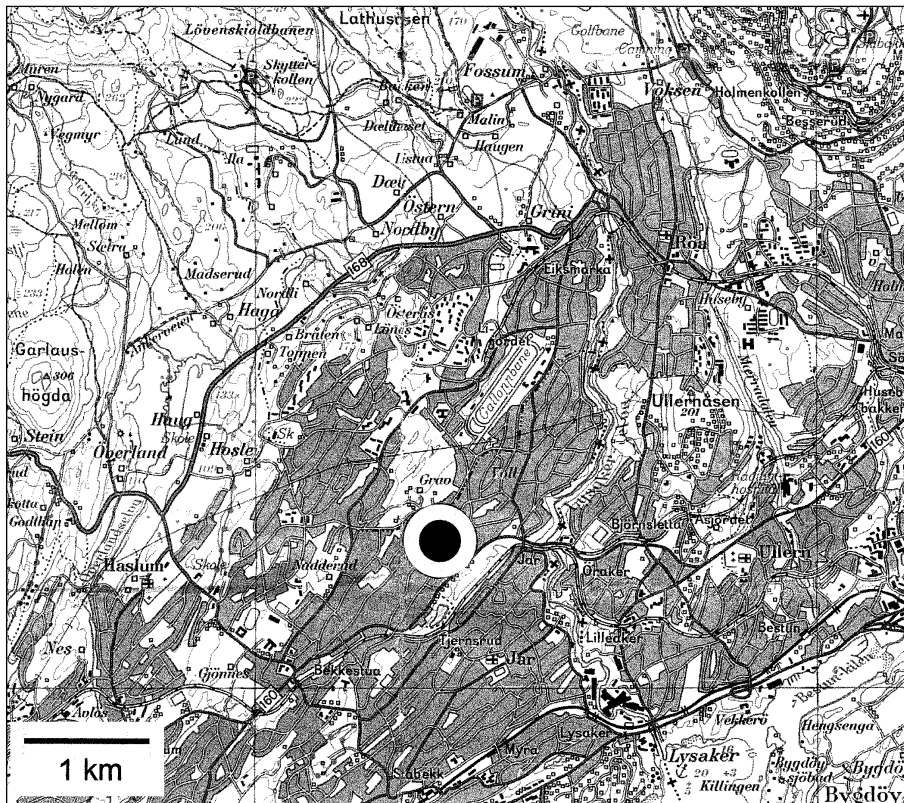
## LOCATION AND SURROUNDINGS

The observation site in the Bærum municipality is situated 105 m above sea level in a large, continuous residential area with gardens and villas at about 59° 55' North and 10° 35' East (Figure 1). It is about 5 km from the downtown area of Oslo and about 2.5 km from the climax spruce forests to the northwest. The immediate surroundings of the study site are a heavily populated area with small gardens and small houses (Figure 2).

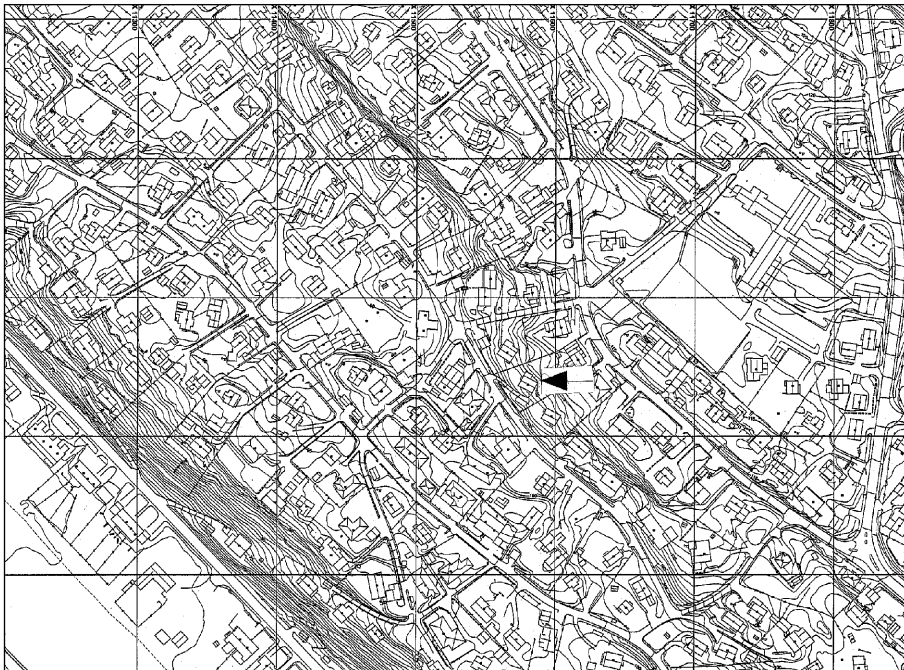
The gardens in the residential area consist of lawns, small garden bushes and large trees. The area has many large trees, mostly deciduous, but also pines and spruces. This is characterised as a good garden area by Thompson et al. (1993). The immediate surroundings of the feeding site consist of large birches and bushes and a few smaller spruces.

The feeding site was on the north side of the house, 2.5 m outside a panorama window. A small hill a few meters high rises from the feeding post and is included in the definition of the feeding site (Figure 2). The slope is covered with tall grass and a young spruce tree that is situated only 4 m away from the feeding site. According to Cowie & Simons (1991) the small distance from the house may represent a strain on the birds. This may be compensated for by the cover found in the nearby young spruce tree which was used extensively by the birds for cover.

The predation pressure was very low, represented only by the Sparrowhawk (*Accipiter nisus*) and cats. Attacks by Sparrow Hawks were observed only a few times during the 5-year study period. Cats were regularly present, but attacks on birds were very moderate. Most cats just passed through the feeding site.



**Figure 1**  
The location of the feeding site near Oslo, indicated by a black and white circle. *Grey:* Villas with gardens. *Light:* cultivated fields or forests.



**Figure 2**  
Surroundings of the feeding site. The grid mesh size is 100m x 100 m. Small irregular rectangles are villas.

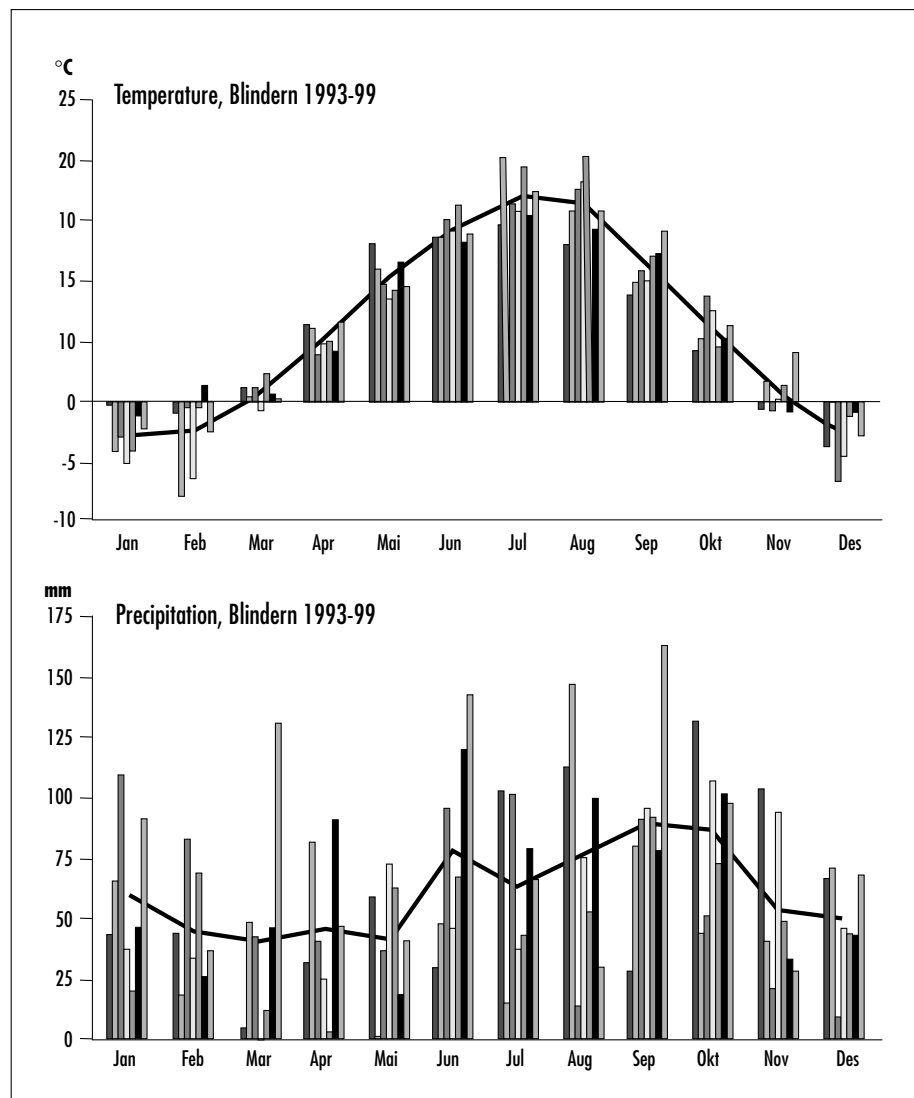
## CLIMATE

A digital thermometer was mounted on the feeding site, about 2 m above ground. Many comparisons showed that the temperature deviations were less than one degree from those at the Norwegian Meteorological Institute during all seasons. The Meteorological

Institute in Oslo was 6 km away and only 10 m lower in elevation than the feeding site. The records of the Meteorological Institute are thus regarded as representative for the temperature and precipitation at the feeding site (Figure 3).

**Figure 3**

Monthly average for temperature and precipitation at the Norwegian Meteorological Institute in Oslo for the years 1993-99 (bars). The 30-year normal values are indicated (lines).



## METHODS

To attract the birds to the observation site, feed was presented continually and in surplus throughout the year. The staple food consisted of sunflower seeds (*Helianthus* spp.) and "tit balls" made commercially of fat and seeds. Occasionally pieces of bread were also presented. The seeds were given in a hanging container, the tit balls fastened to the wall in a cage protected by netting to exclude the magpie (*Pica pica*). This also led to the exclusion of the Spotted Woodpecker (*Dendrocopos major*). Seeds scattered by the birds, especially by the Tree Sparrow (*Passer montanus*), fell down on a plateau that became an important feeding site. Here was also placed a small container with drinking water.

During 1997-99 the birds were monitored continually throughout the year several times a day. Up to 3 hours per day of observations

could be made with two persons participating. Breaks in the observation series when whole weeks were not covered, amounted to 14 weeks during 1997-99, representing about 9% of the time of observation. Time without observations never exceeded 2 weeks. The presence of birds during weeks without observations were interpolated from occurrences before and after the break.

The Redpoll (*Carduelis flammea*) and Brambling (*Fringilla montifringilla*) were monitored in detail from 1993-99, the Robin (*Erithacus rubecula*) from 1995-99, all others from 1997-99. Time unit for frequency was one week. Species frequency of occurrence was recorded as presence or absence during one week. Abundance was classified as  $>10$  or  $\leq 10$  individuals present simultaneously during one week.

## RESULTS

### Frequencies

Five species dominated at the feeding site. The most common species was the Magpie (*Pica pica*), occurring during all weeks. Frequency of other species exceeding occurrence in one week per year is shown in Figure 4. Great Tit (*Parus major*), Blue Tit (*Parus caeruleus*), Greenfinch (*Carduelis chloris*), and Tree Sparrow occurred in more than 35 weeks per year on average. This is in accordance with the fact that most bird communities are dominated by a few abundant species (Clergeau et al. 1998).

The Brambling was the least frequent visitor among the species presented in Figure 4, with an average of 1.6 weeks for the 8 years 1992-99. Among rare species with a frequency averaging less than 1 week during 1993-99 (Table 1).

### Seasonal occurrence (Figs. 5-9)

The Great and Blue Tit occurred continuously throughout the year, irrespective of differences in climate in the different years (Figure 5). The other species showed marked differences among the seasons.

Among species with the highest frequencies, most occurrences of the Greenfinch and the Tree Sparrow were during summer, autumn, and early winter (Figure 5). The Siskin (*Carduelis spinus*) and The Robin were the most discontinued in occurrence (Figure 6).

The Chaffinch (*Fringilla coelebs*), Woodpigeon (*Columba palumbus*), and the House Sparrow (*Passer domesticus*) occurred primarily during spring and summer (Figure 7). These species showed approximately the same occurrence patterns from year to year. The two first mentioned species are migrant birds, while the

House Sparrow is known to be very local (Haftorn 1971). That the House Sparrow showed the same pattern may indicate that this species stays elsewhere locally during autumn and winter.

The Collared Dove (*Streptopelia decaocto*) and the Nuthatch (*Sitta europaea*) occurred mostly in autumn and sporadically during winter (Figure 8).

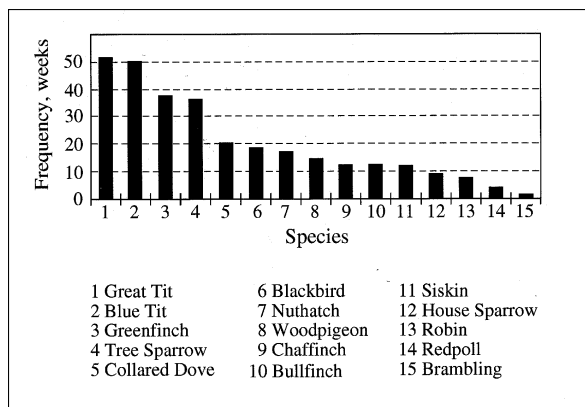
Typical winter species that were absent from June to October were the Blackbird (*Turdus merula*), Bullfinch (*Pyrrhula pyrrhula*), the Redpoll, and the Brambling (Figure 9). The first two occurred in small numbers, while the two last occurred sporadically in large numbers.

The present results show that the Blackbird is present during the winter also inland in contrast to the suggestion of Gjershaug et al. (1994) that overwintering takes place along the south and west coast. This is also said to be the case with the Chaffinch (Gjershaug et al. 1994), and this species did not overwinter in my area.

The Siskin, Redpoll, and Brambling are invasion species (Haftorn 1971) over large areas characterised by irregular appearances in relatively large numbers throughout the year, and from year to year. Maximum numbers of these species on the feeding site were 20-25 individuals. Siskins and Redpolls tended to occur together in small numbers during winter in 1997 and 1998, and in large numbers in 1999.

### Relation to environment

The number of species observed per week ranged from 2 in January 1997 to 11 in April 1998 with a mean frequency of 5,6, and 7 among the years 1997, 1998, and 1999. The greatest dif-



**Figure 4**

Frequency of the 15 most common species (exclusive of the Magpie, *Pica pica*, which was present during all weeks) as averages for the years 1997-99. Frequency unit is one week.

**Table 1.** Rare species occurring on the feeding site during 1993-99. Frequency: Number of weeks the species are present during the year on average for 7 years.

Species	Frequency	Season
Willow Tit, <i>Parus montanus</i>	0.6	Oct. Nov. Dec.
Fieldfare, <i>Turdus pilaris</i>	0.6	Des. Jan. Mar. Apr.
Wren, <i>Troglodytes troglodytes</i>	0.4	Nov. Jan. Feb.
Yellowhammer, <i>Emberiza citrinella</i>	0.3	Dec.
Hawfinch, <i>Coccothraustes coccothraustes</i>	0.3	Jul. Jan.
European Starling, <i>Sturnus vulgaris</i>	0.3	Mar.
Tree Creeper, <i>Certhia familiaris</i>	0.3	Jan.
Pheasant, <i>Phasianus colchicus</i>	0.3	Nov.
White Wagtail, <i>Motacilla alba</i>	0.3	May. Jul.
Dunnock, <i>Prunella modularis</i>	0.1	Apr.
Redwing, <i>Turdus iliacus</i>	0.1	Dec.
Coal Tit, <i>Parus ater</i>	0.1	Sep.

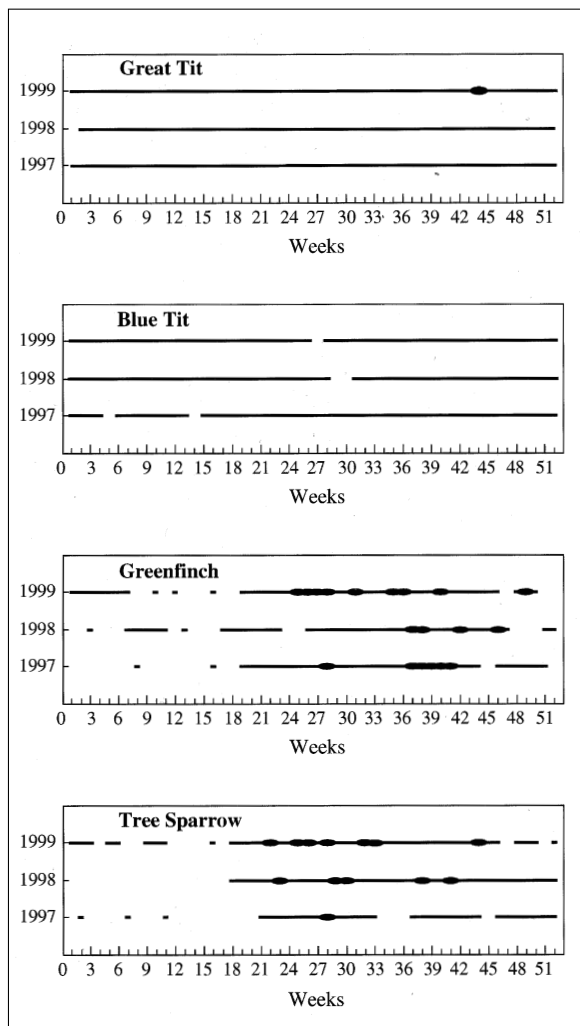


Figure 5

Occurrence of species with high frequency during the year. In addition, the magpie *Pica pica* was present in all weeks. Lines:  $\leq 10$  individuals. Spots:  $> 10$  individuals observed simultaneously.

ferences in frequency were observed in winter and summer. In the period January to March significantly more species were present in 1999 than in the two other years, with mean number of species per week about 3, 4, and 7, for 1997, 1998, and 1999 respectively (Kruskal-Wallis non-parametric ANOVA test,  $P < 0.0001$ ). Among the species, there were exceptionally high frequencies in January into February 1999 of the Greenfinch, Tree Sparrow, and Siskin (Figures 5-6), and the Bullfinch (Figure 9) was also more prevalent in that year. Obviously, the prevalence was influenced by environmental factors. The temperature in January and February 1999 was close to the mean for the 30-year normal values, while March was slightly colder (Figure 3). Precipitation during January, with the highest frequencies, was much greater in 1999. The larger snow cover then may have caused the birds to spend more time at the feeding site.

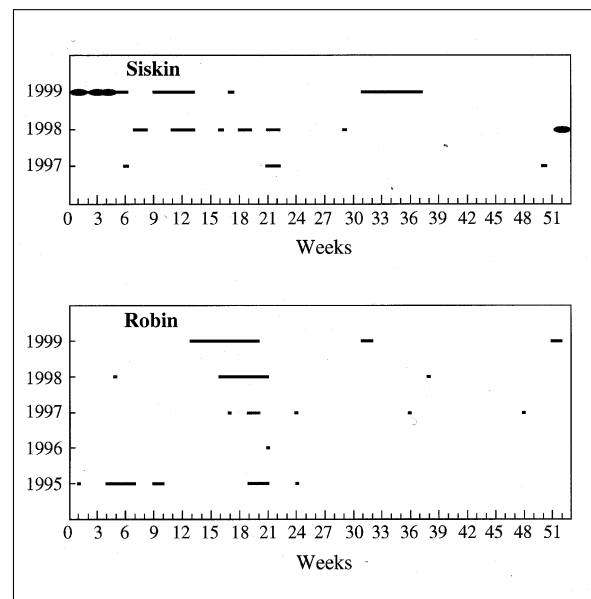


Figure 6

Species with scattered occurrence throughout the year. Legend as in Figure 5.

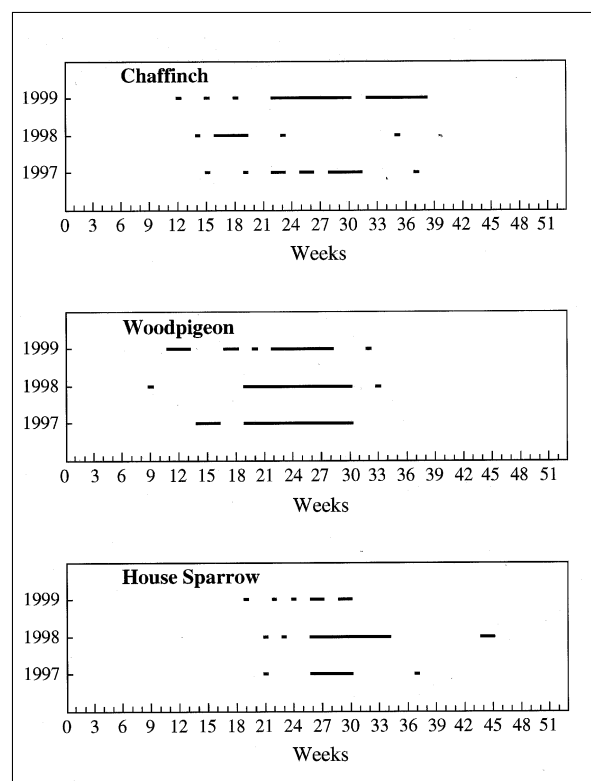
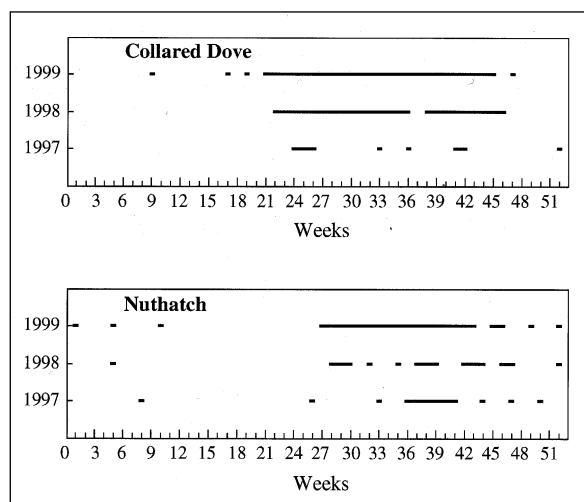


Figure 7

Species present primarily during spring and summer. Legend as in Figure 5.



**Figure 8**  
Species present during autumn. Legend as in Figure 5.

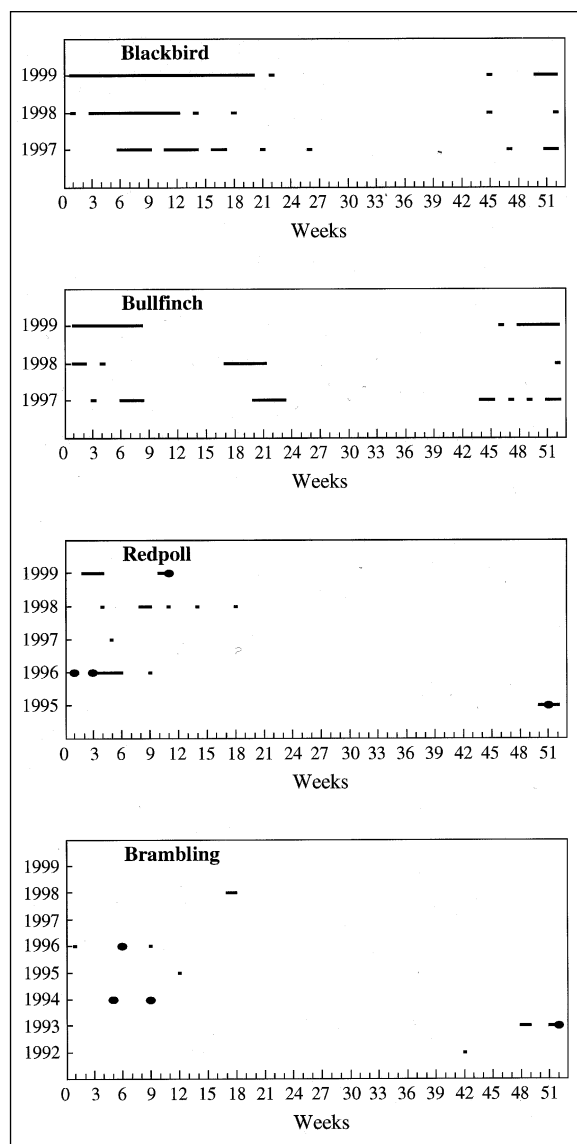
The smallest mean value for any period was found in winter 1997 with a mean frequency of 3 species per week. January was cold that year, while both February and March were warmer than normal (Figure 3). Precipitation was low in January and March, but high in February. Relation to climatic factors is thus uncertain.

During summer (July to August) there were also progressively more species present during the years 1997-99 with mean frequencies about 6, 7, and 8 per week (Kruskal-Wallis  $P < 0.0001$ ). The maximum in 1999 during summer is more difficult to explain than that during winter. The mean temperatures for July and August 1999 were close to the 30-year normal values (Figure 3). This was also true of precipitation in July, but not in August.

Spring (April to June) and autumn (September to November) showed mean frequencies of about 6,6,7 and 5,6,6 respectively for the three years. These means were not significantly different (Kruskal-Wallis  $P = 0.546$  and  $0.249$ ).

A few other correlations to climate may be present. One Robin overwintered during 1994-95 from December to March (Figure 6). This was one of the warmest winters in the study period, especially December, but with the largest snowfall. A Robin also appeared at the end of January 1998. This was mild January with medium precipitation.

The large number of Redpolls that visited the feeding site during 1995-96 occurred in the winter with the lowest mean temperature for the period 1993-99. The maxima of Bramblings in winter 1994 occurred during the coldest February, and the maximum in 1996 during the next coldest. These two species thus seem to move more around during cold spells.



**Figure 9**  
Species present during winter. Legend as in Fig. 5.

### Comments on single species

Adults of the Great Tit, Blue Tit, Greenfinch, and Tree Sparrow brought their young to the feeding site for several weeks. This contributed to the large number of these species present during summer and autumn (Figure 5). Maximum numbers observed simultaneously were 40 Greenfinches and 20 Tree Sparrows. The Robin consumed mostly finely granulated fat from the "tit balls" that had fallen to the ground. Sporadically it could also peck at the balls, or on bread lumps.

A Greenfinch was attacked by a Sparrowhawk in the morning of 9th September 1996. The hawk failed and the Greenfinch sur-

vived the attack. This individual had been ring-marked 9 days earlier about one km to the south of the feeding site in a similar residential area.

The Bullfinch was a typical winter form and generally disappeared from the feeding site at the end of February. Both in 1997 and 1998, however, some Bullfinches reappeared at the end of April and in May and stayed until June (Figure 9). Also in 1992 and 1995 Bullfinches visited the feeding site in May. Nordby (1991) observed Bullfinches during late spring in 1991 about two km to the north in the same residential area, but closer to the spruce forest.

## DISCUSSION

The present results do not reflect the avifauna present in the area around the feeding site. The method gives priority to seed eaters and omnivores. Of the 16 most common species in this study, 12 were mainly seed eaters, at least during winter, 3 more omnivore (Magpie, Great Tit, Blue Tit) and 1 insectivore (Robin). Many other species were observed in the surroundings, even in the same garden, that did not visit the feeding site. During summer the Pied Flycatcher (*Ficedula hypoleuca*), Lesser Whitethroat (*Sylvia curruca*), and Whitethroat (*Sylvia communis*) were present. During autumn the Fieldfare (*Turdus pilaris*) appeared in large numbers in apple trees in the neighbouring gardens, but was very scarce on the feeding site, only 4 observations in 7 years. The White Wagtail (*Motacilla alba*) and the Starling (*Sturnus vulgaris*) bred in the area, but were only sporadically observed on the feeding site.

Some species visited the feeding site only when other food items became scarce. This applies to most species eating insects and other invertebrates during summer. An example may be the Nuthatch, which was absent from March to June. At the end of December 1993 Siskins were abundant in birches around the feeding site, but none visited the feeding post. The Siskin apparently gave priority to sunflower seeds only when birch seeds were scarce.

The number of birds present on the feeding site was very variable throughout the year. Very restricted numbers of all species occurred from December to April. During long periods of the day all birds could be absent. Even the most common species occurred mostly as single individuals. The seed box that in the summer could be emptied during a couple of days, lasted during the winter up to 4-5 weeks. This was true in both cold and mild winters. This indicates that there were movements of birds during the year even for nominally resident species. That such movements took place, was further demonstrated by the ring-marked Greenfinch that moved one km in the course of 9 days in September.

Despite the limited selection of avifauna on the feeding site, the study seems to give a fairly good survey of the composition of the

avifauna in a residential area. This is borne out by a comparison with results from a national survey (Røer 1997) in which birds from gardens were counted, apparently not restricted to a feeding site. Even if only the winter weeks (49-9) are included, the results show similarities to the present study. The 5 most common species in the present study, representing 31% of the species, were among the species representing 28% of individuals in the national survey. Of species with the lowest frequency in the present study (Table 1), 4 were among the least frequent also in the national survey. This indicates that residential areas with gardens show some general features of the avifauna throughout the country.

There were, however, deviations from this pattern. The House Sparrow, the Yellowhammer (*Emberiza citrinella*), and the Brambling were among the most common species in the national survey, but very scarce in the present study. Species absent in the present study but present in the national survey were the Hooded Crow (*Corvus corone cornix*), Jackdaw (*Corvus monedula*), Jay (*Garrulus glandarius*), and Starling. By contrast, the Woodpigeon and the Collared Dove were more common in the present study.

More extensive winter observations from Fennoscandia, including Denmark, are presented in Thompson et al. (1993). That study concentrated on the period November to May 1988-1989, permitting detailed comparisons with my observations of 12 species for the same periods, November to May, in 1997-99 (Table 2). The differences between percentage frequencies of occurrence in my area compared with those in Thompson et al. (1993) were quite small (less than 10% units) for the Great Tit, Tree Sparrow, Nuthatch, Collared Dove, Bullfinch, and Robin. During winter (November to February) the Greenfinch and Woodpigeon could be added to this list. During spring all species except the Great Tit differed by more than 10% units. The greatest differences for the whole period were for the House Sparrow and Chaffinch, which were more common in Fennoscandia at large, and for the Blue Tit and Blackbird, which were more common in my area. Special for spring, the Greenfinch and Bullfinch were more common in Fennoscandia whereas the Robin and Woodpigeon were more frequent in my area.

The differences between my study and that for Fennoscandia would be difficult to explain in detail, since the latter involved many habitats ranging from subarctic areas to deciduous forests in Denmark. For the Blackbird the results may indicate an increase of this species in areas in Southern Norway as also supported by Gjershaug et al. (1994). Also noteworthy is the very low frequency of the House Sparrow in contrast to the Tree Sparrow in my area. The House Sparrow occurred during 9 weeks per year on average and the Tree Sparrow during 36 weeks. Exactly the same relation was observed in Central Norway by Torkild Jensen (pers. comm.), who found the House Sparrow during less than 10 weeks, and The Tree Sparrow during 37 weeks. As in my study (Figure 7), the House Sparrow is reported absent during winter and spring. Also Gjershaug et al. (1994) suggest a reduction in the House

**Table 2.** Comparison with results from Fennoscandia during winter and spring 1988-89, published by Thompson et al. 1993. Values are percentage frequency of occurrence (percentage of weeks when a species occurred)

Species	Winter		Spring		Winter	Spring	Whole period
	A	B	C	D	Diff. A-B	Diff. C-D	Diff. AC-BD
	This study	Fenno-scandia	This study	Fenno-scandia			
Great Tit	98	97	100	94	1	6	4
Blue Tit	98	77	97	62	21	35	28
Blackbird	61	41	67	41	20	26	23
Greenfinch	57	65	45	70	-8	-25	-17
Tree Sparrow	57	45	30	40	12	-10	1
Bullfinch	53	47	15	38	6	-23	-9
Robin	8	21	48	29	-13	19	3
Nuthatch	25	31	3	14	-6	-11	-9
Woodpigeon	0	0	42	12	0	30	15
Collared Dove	12	11	6	17	1	-11	-5
Chaffinch	0	23	30	57	-23	-27	-25
House Sparrow	2	52	3	54	-50	-51	-51

Sparrow and an increase in the Tree Sparrow that is now more numerous than the House Sparrow in both Norway and Sweden. Also in Great Britain a reduction in House Sparrows has been observed (Cannon 1999). This tendency is opposite to the results of the national survey of Røer (1997), in which the House Sparrow in number of individuals, was the 4th most common species, and more common than the Tree Sparrow.

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## SAMMENDRAG

### Årstidsvariasjon i fuglefauna på en foringsplass i et villaområde nær Oslo

Basert på daglige observasjoner 1997-99 og mer uregelmessige observasjoner 1993-96 ble småfuglefaunaen registrert på nært hold på en foringsplass utenfor en villa i Bærum kommune. 16 arter hadde en frekvens på > 1 uke i gjennomsnitt for perioden 1997-99. De vanligste artene var skjære, kjøttmeis, blåmeis, grønnfink og pilfink som opptrådte gjennom det meste av året. Av fuglefaunaen totalt var noen sommer-, noen høst- og noen vinterformer. Denne variasjonen viser ut- og innvandring til området. Tre arter, grønnsisik, gråsisik og bjørkefink hadde en meget uregelmessig opptreden og kunne opptre plutselig i stort antall. Slike invasjon-

er opptrådte særlig i kalde perioder med relativt liten nedbør. Av trekkfugler var svartrost regelmessig til stede om vinteren. Rødstrupe overvintret leilighetsvis, særlig i milde vintre.

## REFERENCES

- Bevanger, K. 1992. Vilt i bymiljø. (Wildlife in urban habitats).- NINA utredning 030:1-42.
- Clergeau, P., Savard, J-P., L. Mennechez, G. and Falardeau, G. 1998. Bird abundance and diversity along an urban-rural gradient: A comparative study between two cities on different continents. – *Condor* 100:413-425.
- Cannon, A. 1999. Opinion. The significance of private gardens for bird conservation. – *Birds Cons. Inter nat.* 9:287-297.
- Cowie, R.J. & Simons, J.R. 1991. Factors effecting the use of feeders by garden birds: I. The positioning of feeders with respect to cover and housing. – *Bird Study* 38:145-150.
- Gjershaug, J.O., Thingstad, P.G., Eldøy, S., Byrkjeland, S. 1994. Norsk Fugleatlas. (Norwegian Bird Atlas). - Norsk Ornitologisk Forening. (In Norwegian).
- Haftorn, S. 1971. Norges fugler. (Norwegian Birds) – Universitetsforlaget. 862 pages. (In Norwegian).
- Nordby, Ø. 1991. Er dompappen iferd med å bli en byfugl? (Is the Bullfinch becoming a city dweller?) – *Fauna* 44:184. (In Norwegian).
- Røer, J.E. 1997. God oppslutning om hagefugltellingene. (Good support for the bird winter counts) - *Vår Fuglefauna* 20:135-137. (In Norwegian).
- Thompson, P.S., Greenwood, J.J.D., Greenaway, K. 1993. – Birds in European gardens in the winter and spring of 1988-89. – *Bird Study* 40:120-134.