

SDBWS RED DATA SPECIES FIVE YEAR WINTER SURVEY 2011-12 to 2015-16

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INTRODUCTION

For a five year period from the winter of 2011-12 to 2015-16, the Surbiton & District Bird Watching Society (SDBWS) undertook a survey of three Red Data species, House Sparrow, Song Thrush and Starling, the aim of which was to assess the population levels of each species and to monitor change during each winter and between successive winters.

The SDBWS had previously conducted a survey of wintering House Sparrows in members' gardens over five successive winters from 1995-96 to 1999-2000, results of which were published in the Society's 1999 Annual Bird Report. To enable the results of the 2011-12 to 2015-16 House Sparrow survey to be compared to those of the previous survey, the same guidelines were used as for the original House Sparrow survey, by gathering data during the Society's annual Winter Bird Count. This method of collecting data was also used for Song Thrush and Starling.

Most of the records for the Red Data Species Survey were from the SDBWS recording area, which comprises the Ordnance Survey 10km Square TQ16 plus a 2km strip to the north and east, however the survey was not confined to this area. To enable members living outside the recording area to participate in the survey, a small number of sites beyond the boundaries of the recording area were included.

METHOD

For each of the selected species, members were asked to count the maximum number of birds observed on any one day, in each of eight half-monthly periods from 16th November to 15th March each winter and to record the highest figure for each period on the Society's Winter Bird Count Form.

As the previous five-winter study of House Sparrows had been confined to data from members' gardens and the aim was to compare the results of the new survey with those of the previous survey, only garden sites were used in the House Sparrow analysis.

For Song Thrush and Starling, no previous study had been carried out and for these species, the analysis was not confined to gardens but included all sites covered by members.

ANALYSES

Distribution of maximum counts

This analysis made use of all suitable records. For each site, the largest number of birds recorded in any one of the eight half-monthly periods was taken as the maximum count. The percentage of sites having maximum counts from zero upwards was then calculated to give the distribution of maximum counts. For

flocking species, House Sparrow and Starling, the maximum count per site is referred to as flock size.

Variation in population levels throughout the winter

Only those sites covered in all five winters was used for this analysis. For each species, the maximum number in each of the eight half-monthly periods was totalled based on maximum counts recorded for each site. These enabled variations in population levels throughout the winter to be assessed.

Mean total numbers each winter

For those sites covered in all five winters, an average of the total counts for each half-monthly period was calculated to give the mean total of birds present each winter.

Year on year change

The mean totals for each year were compared to calculate percentage change in population levels each year.

RESULTS

House Sparrow

Distribution of maximum flock size 2011-12 to 2015-16 and comparison with the winters of 1995-96 to 1999-2000

This analysis made use of all suitable records. Records were received from 35 gardens in 2011-12, 37 in 2012-13, 38 in 2013-14, 29 in 2014-15 and 26 in 2015-16. The results are summarised below.

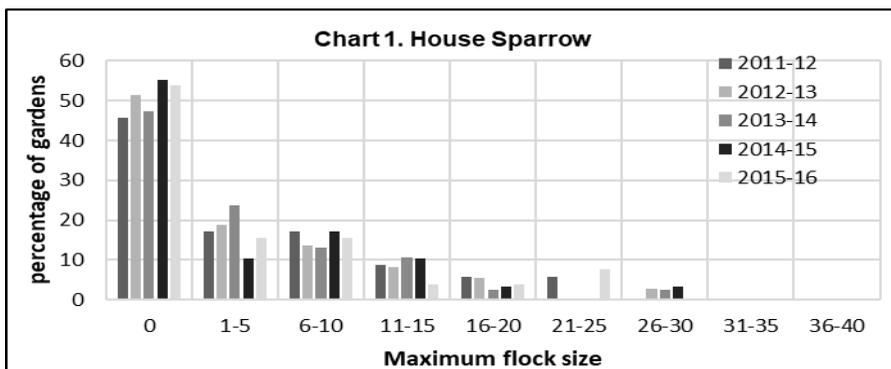
Maximum Flock Size	Table 1. 2011-12 to 2015-16 Survey				
	Percentage gardens				
	2011-12	2012-13	2013-14	2014-15	2015-16
0	45.7	51.4	47.4	55.2	53.9
1-5	17.1	18.9	23.7	10.3	15.4
6-10	17.1	13.5	13.2	17.2	15.4
11-15	8.6	8.1	10.5	10.3	3.9
16-20	5.7	5.4	2.6	3.4	3.9
21-25	5.7	0	0	0	7.7
26-30	0	2.7	2.6	3.4	0
31-35	0	0	0	0	0
36-40	0	0	0	0	0

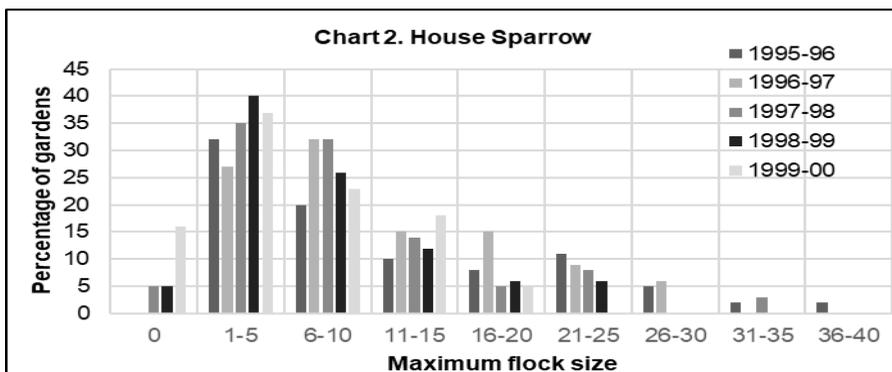
Distribution of maximum flock size 1995–96 to 1999-2000

The following table represents reports from 40 gardens though not necessarily the same gardens each winter. The table was reconstructed from the 3-D chart in the 1999 Bird Report and some minor variation from the actual results is possible.

Maximum Flock Size	Table 2. 1995-96 to 1999-2000 Survey				
	Percentage gardens				
	1995-96	1996-97	1997-98	1998-99	1999-00
0	0	0	5	5	16
1-5	32	27	35	40	37
6-10	20	32	32	26	23
11-15	10	15	14	12	18
16-20	8	15	5	6	5
21-25	11	9	8	6	0
26-30	5	6	0	0	0
31-35	2	0	3	0	0
36-40	2	0	0	0	0

The following charts illustrate results from the preceding two tables.





In the original survey, (Chart 2) in all five winters, at least 50% of gardens recorded flocks of up to 10 birds and in the winters of 1995-96 and 1996-97 all 40 gardens reported House Sparrows. Flock sizes >20 gradually reduced over the five winters with more gardens reporting smaller flocks. In the winter of 1997-98 a few gardens recorded no sparrows for the first time and by 1999-2000, 16% of gardens recorded no sparrows.

The survey conducted from 2011-12 to 2015-16, (Chart 1) showed that the House Sparrow population had declined markedly since the original survey. Gardens reporting no sparrows ranged from 45.7% in 2011-12 to 55.2% in 2014-15. Flocks of up to 10 birds were recorded from less than 35% of gardens in four of the five winters, compared to over 50% of gardens in the previous survey. There was also a reduction in larger flock sizes. In the winters of 1995-96 and 1996-1997 over 38% of gardens reported flock sizes >10 compared to only 20% of gardens in 2011-12 and only 15.5% of gardens in 2015-16.

Variation in population levels during each winter period from 2011-12 to 2015-16

For this analysis, only those sites covered each winter were used. For House Sparrow, 20 gardens were covered in all five winters. The number of House Sparrows seen in all 20 gardens in each of the eight half-monthly periods was totalled based on maximum counts recorded for each garden. The results are shown in Table 3.

Period	Table 3. Total House Sparrows				
	From 20 gardens covered each winter				
	2011-12	2012-13	2013-14	2014-15	2015-16
Nov 16-30	64	45	60	57	64
Dec 01-15	68	56	55	60	65
Dec 16-31	73	64	52	68	83
Jan 01-15	67	73	52	58	84
Jan 16-31	71	77	55	60	63
Feb 01-15	68	62	56	59	64
Feb 16-28	61	53	54	57	76
Mar 01-15	70	63	58	56	52

Variation during each winter period 1995-96 to 1999-2000

This analysis was similar to that of 2011-12 to 2015-16 but with 25 gardens covered.

Period	Table 4. Total House Sparrows				
	From 25 gardens covered each winter				
	1995-96	1996-97	1997-98	1998-99	1999-00
Nov 16-30	350	340	265	250	175
Dec 01-15	325	325	260	240	160
Dec 16-31	360	350	285	250	135
Jan 01-15	340	300	280	245	155
Jan 16-31	325	280	275	240	155
Feb 01-15	355	290	240	210	165
Feb 16-28	300	260	250	210	180
Mar 01-15	320	245	235	205	155

The following charts illustrate results from the preceding two tables.

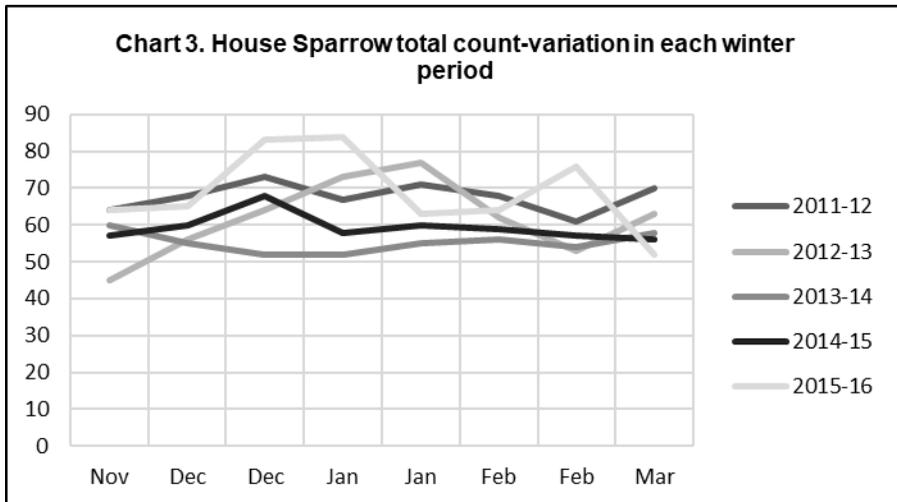
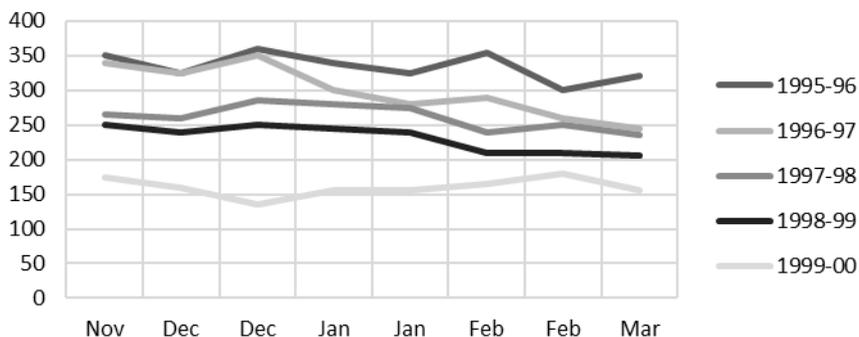


Chart 4. House Sparrow total count-variation in each winter period



Referring to Chart 3, except for 2013-14, numbers of House Sparrows in gardens increased from the start of the winter, reaching peak counts between the last two weeks of December and the end of January. In the earlier surveys from 1995-96 to 1999-2000, 25 gardens were covered each winter and a similar pattern was evident, with peak numbers in the period Dec 16th-31st in four of the five winters. As there is likely to be an increase in observer coverage during the Christmas holiday period, this could account for the late December peaks in both sets of surveys. In the 2011-2015 surveys, with the exception of 2015-16, the March figures were similar to or slightly higher than the November figures, indicating good winter survival rates. The opposite is the case for the 1995-2000 study (Chart 4) where March figures were invariably lower than the November counts. This could have been due to overwinter mortality.

House Sparrow mean total numbers and year on year change 2011-12 to 2015-16

Based on gardens covered in all five winters, an average of the eight half-monthly totals for each site was used to calculate the mean total number of House Sparrows each winter and the year on year changes. The results are shown below.

Table 5. House Sparrow Mean Totals				
Based on 20 gardens covered in all winters				
2011-12	2012-13	2013-14	2014-15	2015-16
68	62	55	59	69

Table 6. Year on year change			
2011-12 to 2012-13	2012-13 to 2013-14	2013-14 to 2014-15	2014-15 to 2015-16
8.8% decrease	11.3% decrease	6.8% increase	14.5% increase

Comparison with House Sparrow Survey 1995-96 to 1999-2000

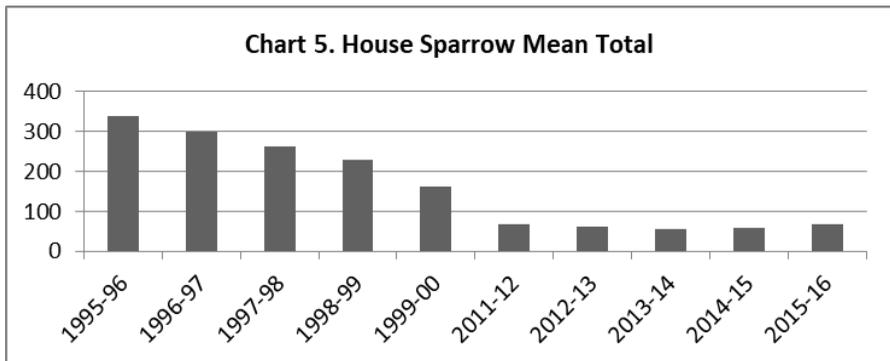
In the House Sparrow Survey conducted each winter from 1995-96 to 1999-2000, 25 members had counted in all five winters. The mean total number of House Sparrows and year on year changes are as follows:

Table 7. House Sparrow Mean Totals				
Based on 25 gardens covered in all winters				
1995-96	1996-97	1997-98	1998-99	1999-2000
340	299	262	230	161

Table 8. Year on year change			
1995-96 to 1996-97	1996-97 to 1997-98	1997-98 to 1998-99	1998-99 to 1999-00
12.1% decrease	12.4% decrease	12.2% decrease	30.0% decrease

Chart 5 below shows a comparison between the two sets of figures for mean total House Sparrows. In the original survey, the population of House Sparrows fell from 340 in 1995-96 to 161 in 1999-2000, a decline of 52.6%.

Results over the five years of the 2011-12 to 2015-16 survey showed the population of House Sparrows was much lower than in the earlier surveys but was more or less stable. The mean total of House Sparrows fell slightly for the first two years, dropping from 68 in 2011-12 to a minimum of 55 in 2013-14. No further decline was evident after this and over the next two years, the population increased slightly. Compared to the first winter of the original survey, when the mean total of House Sparrows was 340, the 2015-16 mean total was only 69, showing a decline in the population level of 79.7% over the 20 year period.

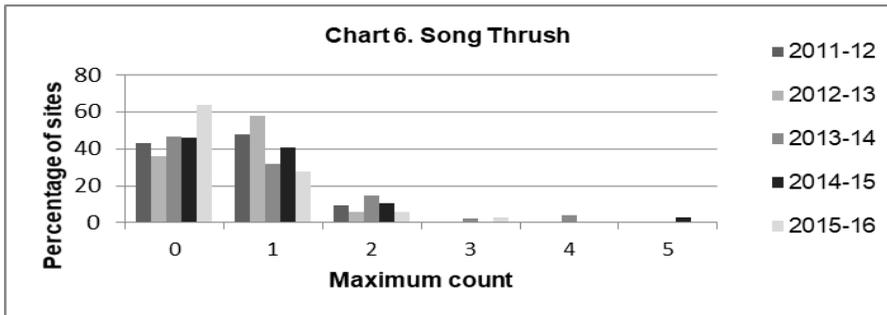


Song Thrush

Distribution of maximum counts 2011-12 to 2015-16

This analysis made use of all suitable records. Records were received from 44 sites in 2011-12, 50 in 2012-13, 47 in 2013-14, 37 in 2014-15 and 36 in 2015-16. The results are summarised below in Table 9 and illustrated in Chart 6.

Maximum Count	Table 9. Percentage sites				
	2011-12	2012-13	2013-14	2014-15	2015-16
0	43.2	36	46.8	45.9	63.9
1	47.7	58	31.9	40.5	27.8
2	9.1	6	14.9	10.8	5.6
3	0	0	2.1	0	2.8
4	0	0	4.3	0	0
5	0	0	0	2.7	0

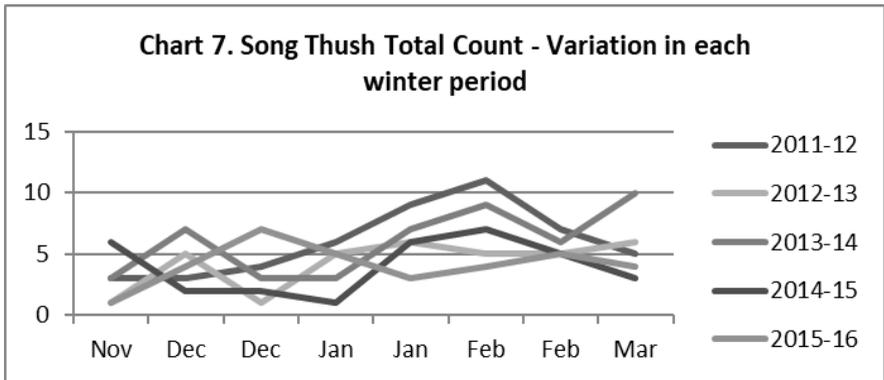


The percentage of sites having no Song Thrushes fluctuated between winters and varied from a minimum of 36% in 2012-13 to a maximum of 63.9% in 2015-16. Those sites having a single bird showed a maximum of 58% in the winter of 2012-13 and a minimum of 27.8% in 2015-16. In three of the five winters, less than 10% of sites had two or more birds.

Variation during each winter period 2011-12 to 2015-16

For this analysis, only those sites covered each winter were used. For Song Thrush, 24 sites were covered in all five winters. The number of Song Thrushes seen at all 24 sites in each of the eight half-monthly periods was totalled based on maximum counts recorded for each site. The results are summarised below in Table 10 and illustrated in Chart 7.

Period	Table 10. Total Song Thrushes				
	2011-12	2012-13	2013-14	2014-15	2015-16
Nov 16-30	3	1	3	6	1
Dec 01-15	3	5	7	2	4
Dec 16-31	4	1	3	2	7
Jan 01-15	6	5	3	1	5
Jan 16-31	9	6	7	6	3
Feb 01-15	11	5	9	7	4
Feb 16-28	7	5	6	5	5
Mar 01-15	5	6	10	3	4



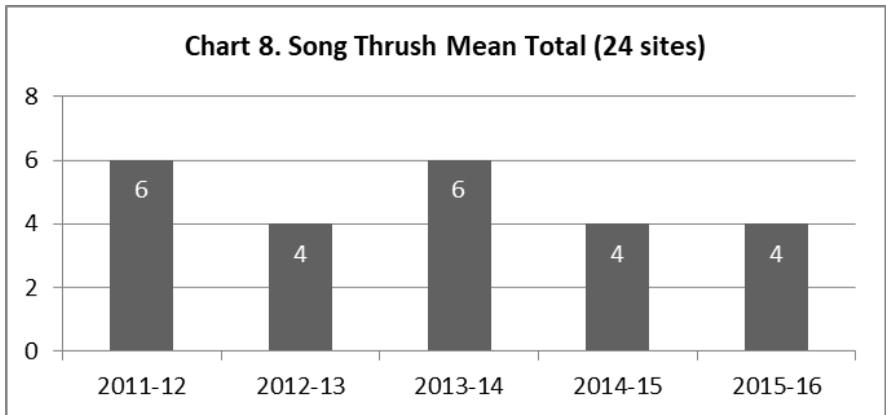
From these results it can be seen that the minimum number of Song Thrushes recorded in any half-month period was one in the period 16th-30th November in the winters of 2012-13 and 2015-16, also in the period 16th-31st December in 2012-13 and 1st-15th January in 2014-15. In these periods, 23 of the 24 sites (95.8%) had no Song Thrushes. In general, numbers fluctuated during the winter with more seen during the second period of January and first period of February in most years. Maxima were 11 in the period 1st-15th February in 2011-12 and 10 in the period 1st-15th March in 2013-14.

Song Thrush mean total numbers and year on year change 2011-12 to 2015-16

Based on gardens covered in all five winters, an average of the eight half-monthly totals for each site was used to calculate the mean total number of Song Thrushes each winter and the year on year changes. The results are summarised below in Tables 11 and 12.

Table 11. Song Thrush Mean Totals				
Based on 24 sites covered in all winters				
2011-12	2012-13	2013-14	2014-15	2015-16
6	4	6	4	4

Table 12. Year on year change			
2011-12 to 2012-13	2012-13 to 2013-14	2013-14 to 2014-15	2014-15 to 2015-16
33.3% decrease	33.3% increase	33.3% decrease	0% change



Fluctuations in mean totals were evident between winters. There was no clear pattern of increase or decline but numbers were very low. Over the entire five-winter period, the overall mean winter total was less than 5 birds among the 24 sites.

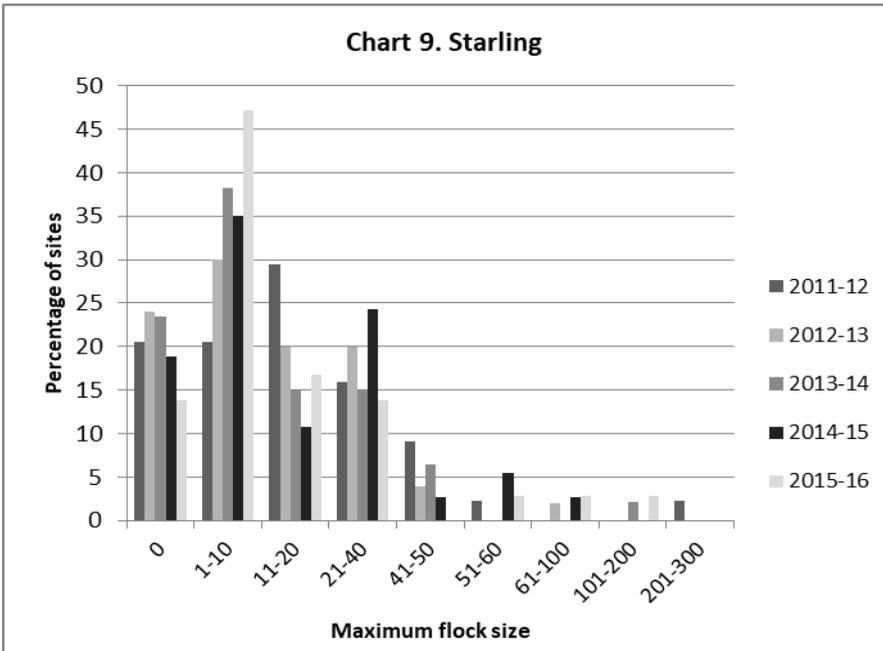
Starling

Distribution of maximum counts 2011-12 to 2015-16

This analysis made use of all suitable records. Records were received from 44 sites in 2011-12, 50 in 2012-13, 47 in 2013-14, 37 in 2014-15 and 36 in 2015-16. The results are summarised below in Table 13 and illustrated in Chart 9.

Maximum Flock Size	Table 13. Percentage sites				
	2011-12	2012-13	2013-14	2014-15	2015-16
0	20.5	24	23.4	18.9	13.9
1-10	20.5	30	38.3	35.1	47.2
11-20	29.5	20	14.9	10.8	16.6
21-40	15.9	20	14.9	24.3	13.9
41-50	9.1	4	6.4	2.7	0
51-60	2.3	0	0	5.4	2.8
61-100	0	2	0	2.7	2.8
101-200	0	0	2.1	0	2.8
201-300	2.3	0	0	0	0

The percentage of sites reporting no Starlings at all increased from 20.5% to 24% of sites in the first two winters but then fell over three successive winters with only 13.9% of sites reporting no Starlings in 2015-16. Sites recording 1-10 birds ranged from 20.5% in 2011-12 to a maximum of 47.2% of sites in 2015-16. Larger flock sizes of 11-20 and 21-40 showed fluctuations between winters. Relatively few flock sizes of >40 were reported in any winter, the maximum being 13.6% of sites in 2011-12 and the minimum 6% of sites in 2013-14.

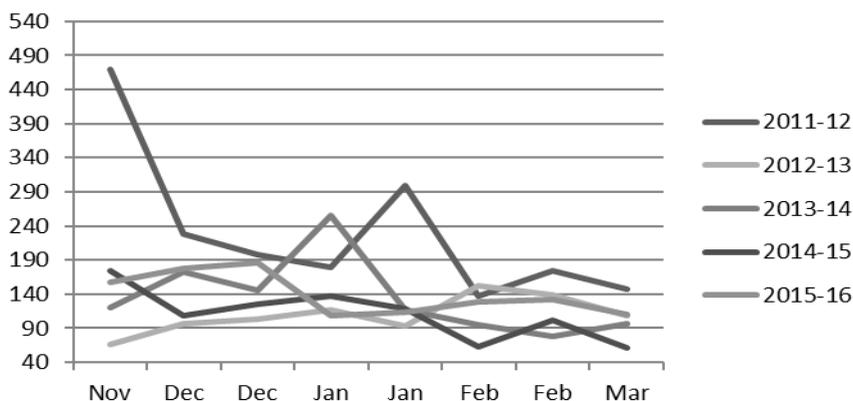


Variation during each winter period 2011-12 to 2015-16

For this analysis, only the 24 sites covered each winter were used. The number of Starlings seen at all 24 sites in each of the eight half-monthly periods was totalled based on maximum counts recorded for each site. The results are summarised below in Table 14 and illustrated in Chart 10.

Period	Table 14. Total Starlings				
	2011-12	2012-13	2013-14	2014-15	2015-16
Nov 16-30	469	66	121	174	158
Dec 01-15	228	97	173	108	177
Dec 16-31	198	104	146	126	186
Jan 01-15	180	117	255	137	108
Jan 16-31	299	94	117	118	114
Feb 01-15	137	152	95	63	128
Feb 16-28	174	139	78	102	132
Mar 01-15	148	109	97	61	110

Chart 10. Starling Total Count - Variation in each winter period



During the five-winter period, the peak count was in the period 16th-30th November in 2011-12, with a total of 469 birds recorded. This included a single flock of 300 birds, seen in flight which may have been migratory. Figures were considerably higher for all periods in 2011-12 than in any other year. In 2012-13 the total number of Starlings was relatively low from November to the end of January before reaching a peak that winter of 152 during 1st-15th February. In the following three winters, peak counts were 255 during 1st-15th January in 2013-14, 174 in the period 16th-30th November 2014-15 and 186 in the period 16th-31st December in 2015-16. Minima recorded were 66 during 16th-30th November in 2012-13, 78 in the period 16th-28th February in 2013-14, and counts of 63 and 61 respectively in the period 1st-15th February and 1st-15th March in 2014-15.

Starling mean totals 2011-12 to 2015-16

Based on gardens covered in all five winters, an average of the eight half-monthly totals for each site was used to calculate the mean total number of Starlings each winter and the year on year changes. The results are summarised below in Table 15 and illustrated in Chart 11.

Table 15. Starling Mean Totals				
Based on 24 sites covered in all winters				
2011-12	2012-13	2013-14	2014-15	2015-16
229	110	135	123	139

Chart 11. Starling Mean Total (24 sites)

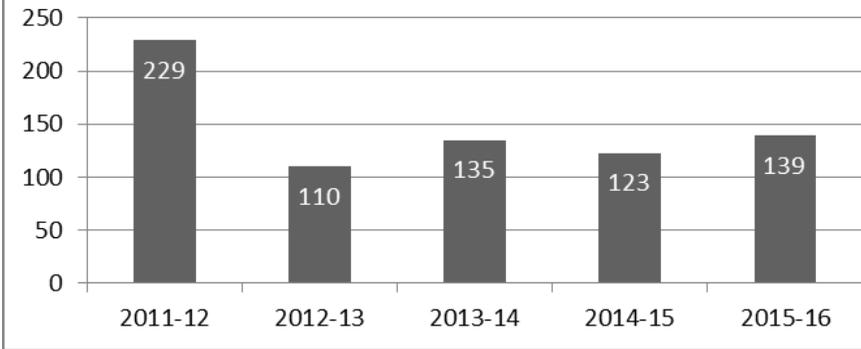


Table 16. Year on year change

2011-12 to 2012-13	2012-13 to 2013-14	2013-14 to 2014-15	2014-15 to 2015-16
51.9% decrease	18.5% increase	8.89% decrease	11.5% increase

The mean total of Starlings was relatively high in 2011-12 due to a large flock of 300 birds reported at one site which resulted in a high mean figure. The following year produced the lowest total of the five winters with a mean total of 110, a drop of 51.9%. However, for the next three winters from 2012-13 to 2015-16, there were slight fluctuations but no evidence of any significant decline.

DISCUSSION

The 1995-96 to 1999-2000 survey of House Sparrow had shown the population to be in marked decline in the SDBWS area, with year on year reductions. Results of the 2011-12 to 2015-16 study showed that the population of House Sparrows in the area had fallen by 79.7% over the 20 year period since 1995-96 but had stabilized with annual declines no longer evident.

These findings are in keeping with national trends published by the British Trust for Ornithology (BTO) <https://app.bto.org/birdtrends>. Results from the BTO Common Bird Census (CBC), Breeding Birds Survey (BBS) and Garden Bird Feeding Survey all indicate a rapid decline in abundance of House Sparrows over the last 25 years (up to and including 2016), with reductions averaging around 60% in urban and suburban areas, the extent of decline in UK being greatest in the south and east. However, results from the BTO Garden BirdWatch study indicate that the House Sparrow population in gardens has stabilized since 2009.

Increased pesticide use and consequent lack of invertebrates affecting chick survival, loss of nesting sites, higher levels of pollution, predation (e.g. by cats, corvids and Sparrowhawks) and prevalence of disease have all been cited as potential factors in the decline of House Sparrows in urban and suburban areas.

In the case of Song Thrush, the population in the SDBWS area was found to be at low levels during the five year study. Fluctuations in numbers were evident between winters with no clear pattern of increase or decrease.

Data from CBC & BBS surveys published by the BTO, show the Song Thrush population in the UK fell between 1970 and 2010 by 54% but since then, there have been periods of increase (1995-2007) and decrease (2008-2012).

Song Thrushes are migratory, with continental birds arriving in winter mainly from Belgium & Holland (BTO Atlas 2007-2011). Influxes can also occur due to cold weather movements. The increase in Song Thrush numbers in late January and early February seen in most years during the SDBWS five year study could be due to these factors.

With regard to Starlings, the BTO Atlas 2007-2011 reported a 50% decline in the UK breeding population during the period 1995-2010. However the most recent bird trends published by the BTO (up to and including 2016), show the population level remained more or less stable during the five year period from 2011-2016. Results from the study of Starlings conducted by SDBWS during the same period showed fluctuations in population levels but no evidence of significant decline, in keeping with national trends.

ACKNOWLEDGEMENTS

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