

Swansong: a lifetime with sparrows

I began my study of House Sparrows *Passer domesticus* in 1947. I have now watched them in more than 70 countries, from sea level in Tierra del Fuego to over 2,000 m in the Himalayas; from a dentist's chair in Newbury to 340 m below ground in Frickley Colliery in Yorkshire, where a pair successfully reared three young. They still surprise and fascinate me. In 1950, a group of sparrows hitched a lift on a ship from Bremerhaven, Germany, and disembarked on reaching Melbourne, in Australia. A young bird boarded Pan Am Flight 811 from Los Angeles to Sydney on 4th July (Independence Day!) in 1981, but was unlucky in that it was promptly despatched by the Australian Quarantine and Inspection Authorities. Another was killed at Lord's, the home of cricket, by a fast delivery from Jahangir Khan in a match between the MCC and Cambridge University on 3rd July 1939. It can be seen, mounted on the match ball, in the Memorial Gallery. But probably the most memorable is the one that interfered with an attempt by the Dutch TV Company Endemol to break the world record of collapsing more than four million dominoes in a row. The event was being set up in an exhibition hall by a group of volunteers. They were in their fourth week when a sparrow got into the hall and managed to topple some of the dominoes. It was shot. Endemol was fined €200 for killing a protected bird. The stuffed bird can now be seen, mounted on a box of dominoes, in the Rotterdam Natural History Museum. In 1980, they even learnt to open electronic doors by flying through the light beam.

In the early 1920s, I paid a visit to the Ayrshire coast. With my mother's opera glasses, I saw some birds entering nesting holes in a cliff. Initially, I thought they were buntings. Closer observation revealed that they were in fact male House Sparrows. Up to that point I was familiar only with the sparrows in the suburb of Glasgow where I lived. This was in the days of coal fires and pea-souper fogs, so these birds were dull and dingy. An adult male House Sparrow living in open country is, in contrast, a magnificently colourful bird.

I joined the Territorial Army in 1937 and was called up in 1939. In 1944, I was admitted to Ronkswood Hospital in Worcester, having been wounded in France some six weeks after landing on D-Day. Ronkswood had been a TB hospital, but was converted to a holding unit where wounded soldiers were retained until it seemed likely that you were going to live. I was there for five weeks. Until then the House Sparrow had been just another bird, but my view of the species quickly changed. The ward was at ground level, it was high summer and the doors were kept open. Despite the constant activity, sparrows came in regularly to look for food. I was fascinated by the way they behaved in the busy ward. They were not shy, although always alert to their surroundings. Three years later, having completed my university course that was interrupted by the war, I moved to the small village of Highclere, in Hampshire, and wanted to concentrate my ornithological interest on one species. Petrol rationing limited the distance I could travel. Sparrows were nesting on my house and, recalling the way they had fascinated me when I was in hospital, I thought that they were the obvious choice.

House Sparrows are extremely wary and alter their behaviour if closely watched. I decided to limit my interference with them to colour-ringing, so that I could recognise the individuals. A letter to Elsie Leach at the Natural History Museum resulted in a ringing permit by return of post! My findings on the colonial behaviour of House Sparrows, and the interactions between colonies in two six-year studies I carried out (first in Highclere and later in a suburban area of Stockton-on-Tees, where I moved to in 1954), were published and marked the start of more than 60 years of formal study. Here, I want to concentrate on some more-recent findings and ideas that have not previously been reported.

House Sparrows are primarily vegetarian, but the nestlings require invertebrates, particularly in the first few days of life, if they are to fledge successfully. The adults seem able to

Table 1. Breeding-season density of House Sparrows *Passer domesticus* (no. of individuals per hectare) in two privately built housing estates in Guisborough, Cleveland.

	Pine Hills (30.0 ha, built 1968–69)	Rivers Estate (35.6 ha, built 1950s)
1998	4.6	4.0
2008	1.7	1.6

anticipate this. At the beginning of the breeding season, they search the shrubs in my suburban garden in Guisborough, in Cleveland. They appear not to collect or eat invertebrates such as aphids, which makes me wonder if they are just checking their availability.

Urban House Sparrows suffered a significant decline in the 1990s. This was first reported in London, but it was not until the late 1990s that I became aware of it. A subsequent trawl through newspaper articles and local bird reports suggested that the decline had actually started about 1990. In 1998 I carried out breeding-season censuses in two privately built housing estates in suburban Guisborough and repeated these in 2008. Table 1 summarises my results.

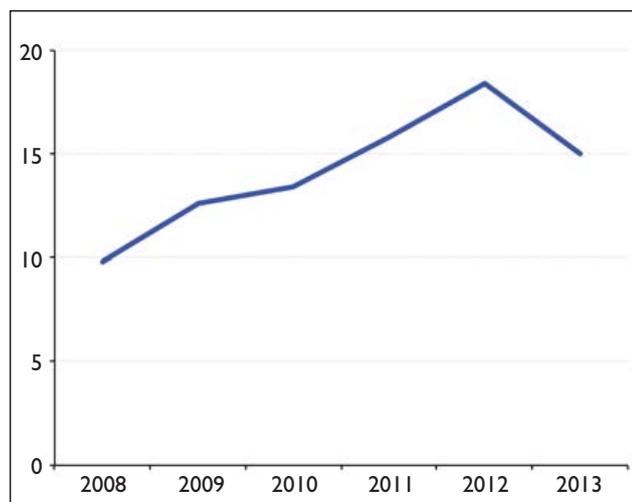
In 2008, I also began a study of the sparrows in a nearby social housing estate, Dorset Road Estate. Built in the 1950s, this 10-ha estate had the same density of houses as pre-war social housing estates in the town centre (48 dwellings/ha), but was very different in that the houses are in long terraces separated by large areas of grass. The grassed areas are mown by the council at about five-week intervals during the growing season, allowing the grass to set seed. There is no chemical treatment so they provide plenty of the invertebrates essential for rearing sparrow chicks. The houses have pantile roofs giving ample nesting opportunities. I carried out breeding-season population counts in this estate during 2008–13 (fig. 1).

The density of 9.8 individuals/ha in 2008 far exceeded the 4–5 individuals/ha I had previously found in some 30 urban/suburban colonies, mostly in the UK but including one each in Ireland and Belgium. Even more surprisingly, there was a remarkable increase over the six years, which requires some explanation, since I cannot believe that this colony is unique in the east of England, where according to the BTO's Breeding Bird Survey urban House Sparrow pop-

ulations are at best stable.

In previous studies with colour-ringed sparrows, I found that adults searched for food for the nestlings within 50 m of the nest. However, the birds from the Dorset Road Estate that collected food from my garden were travelling at least 200 m. And, earlier in the season, they also collected feathers from this distance. According to a study at the University of Granada, the females invest more energy in laying eggs when the male brings more feathers to the nest. Perhaps they identify such a male as likely to be of more help in rearing the young than a philandering one more interested in seeking another female partner.

The fact that the Dorset Road Estate is characterised by limited road traffic (access is restricted to a single spine road, limited to one direction of flow) piqued my interest, and prompted the hypothesis that one factor in the urban sparrow decline is atmospheric pollution by particulates (nanoparticles) from the exhausts of diesel engines. The respiratory system in vertebrates has evolved to filter out dust not nano-sized particles. This could be an important factor affecting the development of

**Fig. 1.** Breeding-season censuses of House Sparrows *Passer domesticus* on the Dorset Road Estate in Guisborough, Cleveland, showing density (no. of individuals per hectare) during 2008–13.

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287. The study area in Guisborough, Cleveland, May 2008.

juvenile sparrows. There is circumstantial evidence to support this hypothesis. A study by the WHO in Europe published in 2005 found that children living in town centres suffered from respiratory disease and interference with their neurological development. Urban House Sparrows occupy the same environment and could be even more susceptible than humans because of the unique avian respiratory system that gives birds the highest gas exchange rate capacity in vertebrates. The decline of House Sparrows in the UK is greatest in London and the southeast, the area that suffers some of the worst atmospheric pollution in the UK (for example, Marylebone Road, in London, regularly has a value of 70–80 $\mu\text{g}/\text{m}^3$ – the EU Air Quality Standard is 25 $\mu\text{g}/\text{m}^3$). Pollution in the southeast of England stems not only from the number of diesel-engine vehicles, but also from the drift of polluted air from the Continent. In the west, where the air is less polluted – owing to a lower density of diesel vehicles, the dilution effect of clean air brought in by the prevailing westerly winds, and possibly also the ‘scrubbing’ effect of higher rainfall – urban sparrow populations are increasing. There is circumstantial evidence to suggest that road traffic is a factor in urban sparrow decline. For example, Helen Baker, currently President of the London Natural History Society, found that, in a survey of seven tetrads north of Heathrow, House Sparrows were present only in quiet residential streets

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Denis Summers-Smith’s first paper on House Sparrows in *BB* was published in 1956 (*Brit. Birds* 49: 465–488), and he has observed with some satisfaction that this editorial extends his contributions to the journal, the majority of them on House Sparrows, to more than 60 years.

with light traffic.

The obvious way to test my hypothesis would be to compare the particulate concentration in areas where the populations are stable or still in decline with that where populations are increasing, preferably using adjacent colonies, such as mine in Guisborough. Determining the particulate level is neither easy nor cheap, although work at the University of Lancaster has shown that leaves collect particulates when drawing in air through their stomata, offering one potential avenue for further investigation. My problem is that I no longer have the energy nor the facilities to carry out this work but it is, in my view, a potentially hugely important research area, not only for the sparrows – much as I love them – but for a range of other urban wildlife as well as for the children of our own species.

Finally, a word of warning. Carrying out breeding censuses in urban areas is extremely hazardous. I have been interviewed by the police on four separate occasions following complaints about a suspicious character looking at houses through binoculars in the early hours, just when people are getting dressed. Fortunately, the police believed my explanation and on one occasion even suggested that in future I should park my car well away so that I did not provide the means of identification.

