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REVIEW

The status of the urban house sparrow *Passer domesticus* in north-western Europe: a review

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Abstract The house sparrow *Passer domesticus* is unique among wild birds in its close association with, indeed virtual dependence on, man. Not only in the agricultural environment, where presumably this association first evolved, but also in built-up areas. It would be expected that, with man's dominance of the world, the future would be bright for the bird, but it is now becoming evident that this is not the case, particularly in the highly developed region of western Europe. In Britain, the Common Bird Census launched by the British Trust for Ornithology in 1962 provided such a basis. This enquiry showed a major decline in the house sparrow population in farmland beginning in the latter half of the twentieth century, though this now appears to have stabilised, albeit at a lower level. This decline, which also affected a number of other farmland species, has been well studied and is now accepted to be the result of the intensification of agricultural practices that have led to a reduction in the availability of food. The spillage of oats from the nosebags of horses and the presence of undigested seeds in the droppings must have provided a major source of food for urban house sparrows. Although not well recorded, there is little doubt that the replacement of the horse by the internal combustion engine must have resulted in a significant decrease in urban house sparrows in the 1920s, though not withstanding it still remained a common bird of built-up areas. This habitat has been largely neglected by ornithologists and it was the general public that first drew attention to a major decline in town centres, so that by the end of the twentieth century it had become virtually extinct in the centres of a number of major European cities, though apparently still common in others. Unlike the farmland decline, the urban decline appears to be proceeding at an increasing rate and is showing no sign of stabilising. The urban decline has been the subject of much speculation, but the reason(s) is/are not properly understood. This is clearly an interesting ornithological question. The aim of this paper is to provide a summary of the present status of the house sparrow in urban areas in north-western Europe and to identify those areas of research that will provide the necessary evidence to understand what is going on.

Keywords Decline · House sparrow · Status · Urban environment

Introduction

Of all wild birds none is more closely associated with man than the house sparrow *Passer domesticus*. Twenty, even 10 years ago, it was unimaginable that the house sparrow would be the focus for discussion at an international ornithological or environmental conference.

Today, the status of the house sparrow, and more specifically the urban house sparrow, is the subject of study by several national and regional ornithological organisations in several European countries. Even outside the European Union, the house sparrow now receives more attention than in earlier days.

Although this paper is primarily concerned with the decline of the house sparrow in the urban environment, we

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would like to set the scene in this introductory presentation by discussing the overall status of the bird. There are two reasons for this:

- Much more and better quantitative data are available for the farmland habitat
- House sparrows are extremely sedentary birds, the majority living out their lives within an ambit of 1–2 km (Summers-Smith 1963). Moreover, evidence from ringing, both recoveries of birds with numbered rings and also sightings of colour-ringed ones, suggest that there is little interchange between the farmland birds and those living in built-up areas (Summers-Smith and Thomas 2002).

Although the species has declined significantly in both the rural and the built-up environments, we believe that there is little exchange of birds between these environments and feel it is prudent at this stage to treat these declines as separate phenomena. Our discussion is primarily related to the situation in north-western Europe and more particularly to Belgium and Britain.

Results and discussion

It is difficult to put numbers on the house sparrow populations in different European regions prior to the development of modern scientific field ornithology in the twentieth century; though there is little doubt that it became a common bird following the advent of "high farming" with its intensive mixed farming methods in the eighteenth century. Perceived as pests that devoured grain and worried livestock, house sparrows became the declared enemies of farmers.

Throughout the eighteenth and nineteenth centuries, parishes had "sparrow clubs", which paid out money for dead birds and eggs (Clark 2002). Until the 1870s, monies from church tithes, set aside for "pious and charitable uses", were dispensed in exchange for sparrow heads. Although "sparrow money" had largely disappeared from parish accounts by 1870, sparrow clubs, as private initiatives, continued to offer prizes well into the twentieth century.

Changes in farmland were not the only spurs to growth in sparrow populations. Unlike other birds, sparrows positively prospered from the growth of towns. Between 1830 and 1900, the area of agricultural acreage fell in the UK by more than 0.5 million ha (O'Connor and Shrubb 1986). House sparrows have always lived in close contact with man in built-up habitats. Increasing urbanisation with a horse-drawn transport provided a major source of food for the house sparrows in the spillage of oats from the nose-bags and undigested seed in the droppings. This, together with generally poor street hygiene, provided a habitat of growing importance for the house sparrow. Nevertheless, there is a problem in interpreting what is going on in the urban environment because of the inadequacy and lack of historical data.

It is assumed that the first urban decline of the house sparrow was the result of the replacement of the horse by the automobile as a means of transport (Summers-Smith 2005). Not only did this remove a great source of food from the sparrow, but the faster moving traffic made the streets less safe to feed in (Bergtold 1921) and were presumably responsible for a disproportional mortality of naïve young birds.

This was especially remarked in the United States (e.g. Bergtold 1921) and the Maritime Provinces of Canada (A.J. Erskine, unpublished manuscript), but is also suggested by the change in the Kensington Garden population counts between 1925 and 1948 (Fig. 1).

In 1963, one of the authors (J.D.S.S.) predicted that the future looked bright for the house sparrow with man's dominance of the globe and the increasing amount of built-up land, the preferred habitat for the bird. He is now the first to admit how wrong he was.

Figure 2 shows the Population Index for the bird in Great Britain from 1970 to the present day. This is based on the Common Bird Census (CBC) run by the British Trust for Ornithology (BTO) and gives an indication of the abundance of the bird. Admittedly, the numbers did increase until the late 1970s, as Summers-Smith had predicted, but then, without warning, numbers began to decrease and, by 1997, had fallen by about 60%. Since then numbers appear to have stabilised (Sanderson 2001).

The CBC results come predominantly from farmland and the decline has been attributed to changes in farming practice that have made this habitat less attractive for the bird. A study by the BTO suggests that the main reason for the decline has been a decrease in survival (Crick et al. 2002).

This does not, however, tell us the whole story. The CBC has its limitations and does not really provide us with

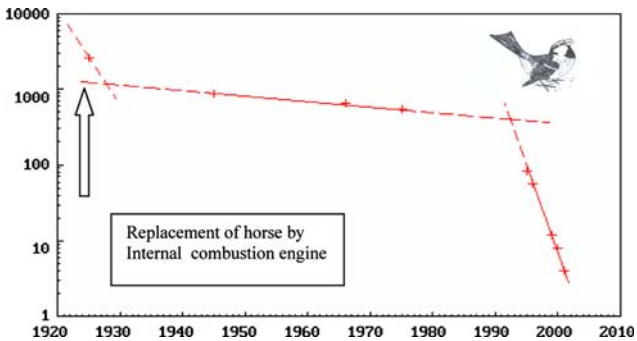

Fig. 1 Autumn counts of house sparrows *Passer domesticus* in Kensington Gardens, London between 1925 and 2002

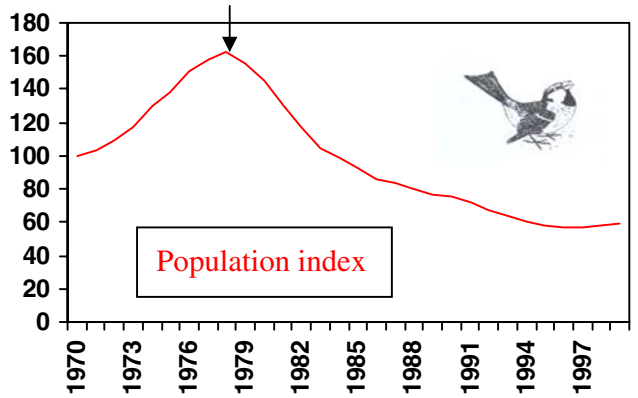

Fig. 2 Population index based on the Common Bird Census counts run by the BTO since 1970

information on what is happening in the built-up environment, the most important habitat as far as the house sparrow is concerned. The urban situation, however, is much less clear than that for the farmland. The only long term trend analysis comes from the autumn counts in Kensington Gardens shown in Fig. 1. These were started in 1925 by Max Nicholson, who died at the age of 98 years in 2003, and have been repeated at very irregular intervals up to the present. After the dramatic fall in the 1920s, when the horse was replaced by the internal combustion engine, there was a period of gradual decline up to the 1980s, when the bird went into freefall. It has now virtually disappeared. Other irregular counts in different parts of London are consistent with the Kensington Garden counts (R.L. Bland, personal commmunication).

In Belgium, a bird watcher counted, over a period of more than 50 years, the breeding birds in his surroundings in Kortrijk (100 ha) (De Bethune 2004). He estimated 100–150 breeding house sparrow pairs in 1950, but only 10–20 pairs in 2000.

In the absence of repeat counts giving trend data, the densities of house sparrows from a number of urban censuses carried out in London, Glasgow, Edinburgh and two from outside the UK, Dublin and Hamburg, are plotted in Fig. 3. This shows that the decline has not been confined to Britain (Summers-Smith 2005). These results suggest a decline of over 90% in the last 25 years, much more severe than that in farmland.

The urban decline is not only more severe, but appears to have started later and, unlike the countryside one, is still going on, perhaps even at an accelerating rate. This suggests that we are dealing with two separate subpopulations: one associated with farmland (Fig. 2), the other with built-up areas (Fig. 3). Though it is not as simple as that. Studies from small rural towns suggest that the decline, if any, has been much less severe than in both the urban centres and in farmland (Fig. 4). This implies we have to deal with three different environments.

Nevertheless, the situation is even more complicated than is suggested by the above generalisations. The situation in large towns is by no means simple. While there have been dramatic declines, almost to the point of extinction, in the centre of London, Glasgow (Summers-Smith 1999), Edinburgh (Dott and Brown 2000), Dublin (Summers-Smith, personal observation), Hamburg (Mitschke et al. 1999), Ghent, Antwerp and Brussels (De Laet 2004), there appears to have been no comparable decline in Manchester (J. Smith, quoted by Prowse 2002), Berlin (Böhner et al. 2003), and Paris (McCarthy 2000). It is even remarkable that beautiful pictures of the close association between house sparrows and man still come from central parts of Paris, such as the Notre-Dame and the Sacre Coeur. It is no longer possible to take such photographs in other city centres, like London, Rotterdam, Ghent, Brussels and Antwerp (personal observations). Moreover, data from the BTO's Breeding Bird Survey, covering the period 1994–2000, suggest that, while there has been an overall decline of house sparrows in England, the species has actually increased in Scotland and Wales (Crick et al. 2002).

While the separation of the built-up habitat into large town centres and small rural towns/outer suburbs is a convenient generalisation, the urban habitat is by no means

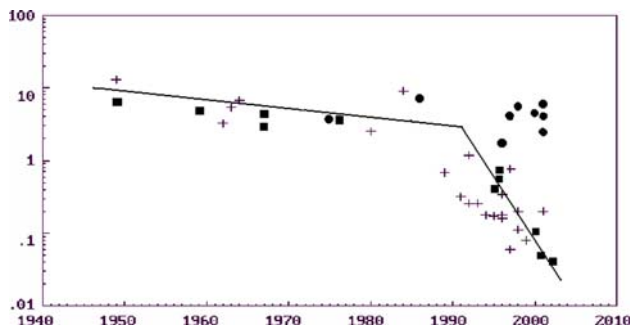

Fig. 3 House sparrow densities in urban areas. Kensington Gardens (blocks), large town centers (crosses) and small rural towns (dots)

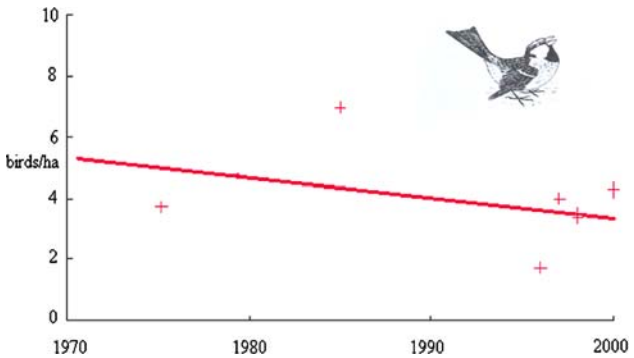

Fig. 4 House sparrow densities in small rural towns

uniform and detailed studies have shown that the decline in built-up habitats has been patchy. The patchiness of the decline in London is well demonstrated by the Summer 2002 Survey in Britain organised by the Royal Society for the Protection of Birds study (RSPB 2003).

Many countries produce, with the help of bird-watchers, national counts of their breeding birds in atlases. In most of these, urban centres are neglected and shown as blank spots Most atlases work with European UTM plots For example, in Belgium 5 × 5 km plots are used. For each plot, eight 1-km squares are randomly chosen.

These methods have serious limitations for the investigation of the status of the house sparrow.

- No distinction between urban, suburban and rural habitats.
- The working scale is to big.

So finally we shall end with some recommendations:

- The recent evidence for a selective decline of the house sparrow in our urban centres is very compelling, but the data are by no means statistically robust. There is an urgent need for more and better data and close cooperation between the different investigating countries.
- There is a need for properly funded research into urban house sparrow decline.
- Birds are recognised as indicators of the "quality of life". What does a 95% decline of house sparrows tells us about the quality of life in our urban centres? We need to know.
- Is the house sparrow the present day equivalent of the 'miner's canary'? Is it telling us that something nasty is going on in our towns that might even affect us? This requires investigation.

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