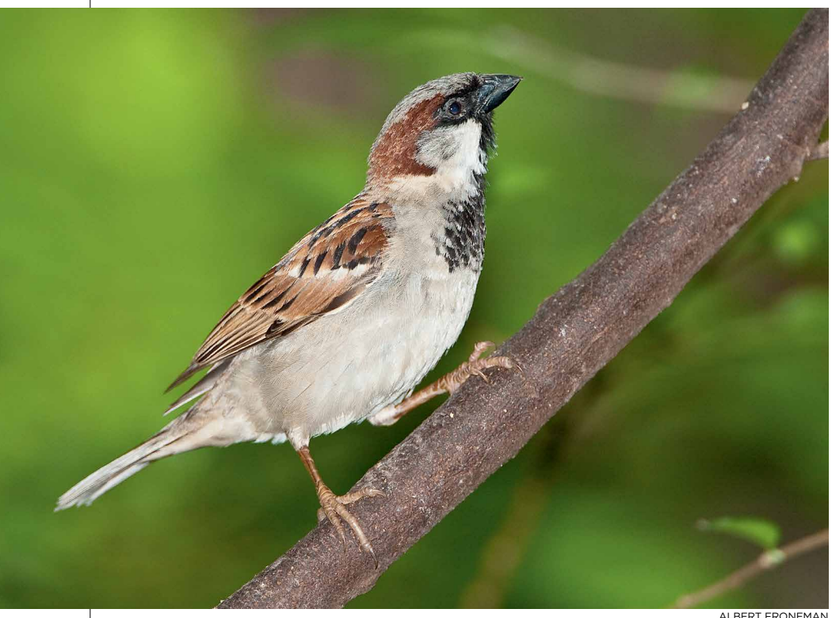
BIRDS IN A changing world

URBAN PERILS House Sparrows on the decline



ALBERT FRONEMAN

Supertramps are species that have spread around the world in association with humans and they include rats, house mice and a host of weedy plant species. Among birds, arguably the greatest supertramp is the House Sparrow. From its origins in the Middle East, the House Sparrow followed the spread of agriculture throughout Europe and southern Asia and its expansion was only halted in eastern Asia by competition with the closely related Eurasian Tree Sparrow.

above *Electro-magnetic radiation from cell-phone towers might be a factor causing declines in urban House Sparrow populations.*

During the second half of the 19th century, House Sparrows were introduced to New York, Buenos Aires, Melbourne, Durban and Zanzibar and, aided by further introductions, spread rapidly throughout much of the New World, Australasia and Africa. They are now found in man-modified habitats throughout much of the world and are considered to be one of the most abundant birds on earth.

Much of their success stems from their ability to live in modified habitats. House Sparrows are at home foraging for scraps indoors and are often found inside shopping centres and airport terminals. Most breed in cavities in buildings; indeed, in southern Africa, Dassen Island is the only place they regularly breed in trees, because there are only a few buildings with suitable nesting sites. Famously, a pair even bred 640 metres underground in a Yorkshire coalmine!

However, for the past few decades there have been concerns about decreases in urban House Sparrow populations. This was first highlighted in the United Kingdom, where there is the longest record of sparrow numbers. Populations initially fell in the 1920s, when the shift to motor vehicles reduced the amount of spilled horse food.

More recently, agricultural intensification caused sparrow numbers in farmland areas to decrease by up to 60 per cent during the 1980s and early 1990s. The main driver appears to have been reduced food availability, which particularly impacted first-year survival, although the increased use of pesticides and herbicides probably also contributed to the decrease. Fortunately, farmland populations stabilised in the mid-1990s.

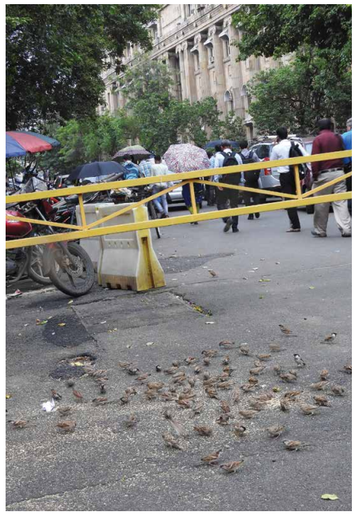
Urban sparrow populations initially decreased more gradually, but since 1990 there has been a rapid decline in many UK towns, with sparrows disappearing entirely from some cities. In 2002, the House Sparrow was even added to the UK Red List of threatened species. Interestingly, the decrease has been most marked in large cities, but is by no means uniform. These seemingly capricious trends have led to much speculation about the factors that might be responsible for the sparrow's decline in urban areas.

As in rural areas, reduced availability of food is a concern, particularly of insects that are important food for nestlings. Long-term studies show dramatic reductions in several common insect groups in the UK. House Sparrows might also have suffered from gentrification reducing the availability of suitable nesting sites in buildings; they tend to have fared better in poorer, more run-down areas. Interestingly, declines during the late 1980s were more marked in West Berlin than East Berlin, when the city was divided by the Iron Curtain.

In some areas, the House Sparrow's decrease has coincided with an increase in urban Eurasian Sparrowhawk populations, suggesting that predation might be driving the decrease. Growing numbers of domestic cats and the spread of avian malaria might also have reduced survival rates. Another possible culprit is air pollution, including the introduction of lead-free petrol, which releases methyl nitrate and other environmentally damaging compounds. Also, House Sparrows are social breeders and it has been suggested that falling numbers have led to reduced breeding effort due to the lack of social stimulation (an example of the Allee effect).

Urban House Sparrow declines are not confined to the UK. They have occurred in cities across Europe and India and even among introduced populations in North America and Australia, suggesting that whatever is responsible is occurring throughout the sparrow's range. In South Africa, the reporting rate of House Sparrows in SABAP2 from 2016 to 2021 is 25 per cent lower than from 2007 to 2011. Compared to SABAP1 data from the 1980s and early 1990s, the reporting rates of House Sparrows have decreased in all countries in southern Africa except Eswatini, and the only South African province where the species is holding its own is the Western Cape. Yet even there, the reporting rate has fallen in many parts of Cape Town.

ZAMORA/WIKIMEDIA COMMONS



RAJU KASAMBE/WIKIMEDIA COMMONS

above *Large flocks of House Sparrows are now a distant memory in many large cities around the world.*

above, left *White Storks breeding close to cell-phone towers in Spain have been shown to have reduced breeding success.*

The ongoing collapse of the species' populations in cities throughout its range is a potential concern for human city dwellers. By 2010, half the world's population lived in cities and the proportion continues to climb. Urban areas offer better amenities and job opportunities, but they tend to be associated with increased crime and grime: crowding, noise and other pollutants. We need to better understand the factors driving the decrease in urban House Sparrow populations, because they might have ramifications for human health.

One of the more controversial suggestions is that electro-magnetic radiation has contributed to the demise of urban House Sparrows. A recent review by Alfonso Balmori (2021, *Birds* 2: 329–337) summarises the evidence for this hypothesis. The sparrows' initial decrease coincided with the introduction of cell phones and fine-scale studies in Spain, Belgium and India have found that sparrows are particularly scarce close to cell-phone towers.

Most of the evidence is correlative. However, at one site, sparrow numbers fell when a small cell station was installed and then recovered when it was removed two months later. And House Sparrows are not the only bird seemingly susceptible to cell-phone tower radiation. White Stork breeding success in nests within 200 metres of a cell-phone tower was barely half that in nests more than 300 metres from towers. Lab experiments have shown abnormalities in chicken embryos exposed to cell-phone radiation. Cell-phone towers also have been reported to affect the behaviour of bats and rodents and perhaps even tree health.

Multiple factors almost certainly account for the varied trends in House Sparrow populations globally, but Balmori argues that cell-phone radiation best explains the widespread decrease in urban sparrows. It would be interesting to track urban populations in South African cities and monitor population trends when a new tower is installed. Perhaps the humble House Sparrow is a modern-day canary, providing advance warning of threats to our increasingly urban lifestyles.

PETER RYAN