

## Can we save the sparrow?

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It is an interesting coincidence that 23 years ago Salim Ali chose *Fall of the Sparrow* as the title of his biography<sup>1</sup>, as if he had foreseen the bleak future of the House Sparrow. The fallen sparrow that actually inspired Salim Ali's career in ornithology was the yellow-throated *Petronia xanthocollis*. Nevertheless, it was the commoner House Sparrow (*Passer domesticus*) that prompted him to write his first ornithological notes<sup>1</sup> at the age of 10 in 1906–07.

The House Sparrow was indeed one of the commonest urban birds in India when Salim Ali was a boy. The recent years have witnessed a perplexing decline in the number of the House Sparrow in many parts of the country (and elsewhere abroad). It is indeed a matter of concern that the population of House Sparrow has dwindled. However, the paranoia set-off by the news media has only resulted in an outburst of ill-founded speculations about the possible causes of the decline and that the decline itself is signalling an imminent ecological disaster. Loss of tree cover, changing architecture of human habitation that has deprived the House Sparrows of nesting sites, excessive use of pesticides, lack of traditional granaries, grocery shops and storehouses that permit gleaning of grains by birds, air pollution and electromagnetic radiation<sup>2</sup> have all been identified as the culprits.

The paranoia about vanishing House Sparrows reminds me of the alarm bells that desperately rang nearly 20 years ago of 'declining' amphibian populations<sup>3</sup>. The alarm bells succeeded in establishing the Declining Amphibian Population Task Force (DAPTF) as a specialized and dedicated unit within the IUCN. No sooner, global warming, UV-B radiation, outbreak of a dreaded fungus, pesticide poisoning, over-harvest (including biological collections), etc. were listed as probable causes for the decline of the amphibians<sup>3–5</sup>. Scientific investigations did support the view that one or more of the listed causes adversely impacted amphibians throughout the world, although the intensity of a specific cause varied locally.

Exclusive focus on amphibians did provide a number of new insights about

their biology and ecology. It also led to the discovery of species that had not been described by taxonomists earlier. Unfortunately, however, the quest for finding 'new' species of amphibians soon overshadowed the primary purpose of DAPTF that in some parts of the world, especially in India and Sri Lanka (biodiversity hotspots), biologists have shifted their focus from attempting to understand and mitigate the root causes of amphibian declines to merely collecting, naming and renaming species<sup>6</sup>. The shift in focus has been justified as a 'mission to document the species before they are lost'<sup>7</sup>.

In the absence of sound data on population dynamics and geographical distribution, it has not been possible to assert that there have indeed been declines in amphibian numbers anywhere in India. Lack of scientific information has also stood in the way of attributing apparent declines to any specific environmental cause popularly cited. A study carried out in 2002–03 in the Western Ghats, in one of the most highly pesticide-impacted tea landscapes, identified loss of habitat as the primary local threat to amphibian species<sup>5</sup>. The study brought to light major gaps in our understanding of amphibian ecology. Ecology, especially of anurans, requires field studies of the habitat requirement, availability and use by a species throughout its life history. It is embarrassing to learn that the habitat requirement of even the most common species of amphibian is not fully understood<sup>8</sup>.

Having learnt important lessons from the study of amphibians, I wish to caution that the pursuit to correlate environmental factors such as electromagnetic radiation with declining populations will sooner or later lead to intrusive experiments involving the House Sparrow and other birds. Electromagnetic radiation is naturally emitted by the sun and reaches the earth in millions of measurable units every second. Radio waves and microwaves have been used in telecommunication for a long time. Radio-telemetry has become increasingly popular in wildlife biological research. Telecommunication involves the conversion of audio-visual (and ultrasound) signals into electromag-

netic signals that travel at the speed of light. If these signals are deleterious to birds, they should be so to a number of other animals that share urban landscapes with humans. Why must the House Sparrow be vulnerable when crows, pigeons, owls, mynas, bats and geckoes have not succumbed to electromagnetic radiation that is attributed to telecommunication?

The decline of the House Sparrow can be better explained if some of the more obvious attributes are analysed. For this we may first consider its lineage. A rather diverse group of birds representing at least 8 genera are called sparrows<sup>9–11</sup>. The species of sparrows pertinent to the discussion are those belonging the genus *Passer* and with the exception of the House Sparrow, all are subtropical and temperate in distribution. At least six species of *Passer* have been reported from the Indian subcontinent. Besides the House Sparrow, these include the Spanish Sparrow (*Passer hispaniolensis*), Sind Sparrow (*P. pyrrhonotus*), Eurasian Tree Sparrow (*P. montanus*), Russet or Cinnamon Tree Sparrow (*P. rutilans*) and Dead Sea or Afghan Scrub Sparrow (*P. moabiticus*)<sup>9,10</sup>. The Spanish Sparrow is a winter visitor to northern India. The Eurasian Tree Sparrow that is generally a northern species, has a small resident population in peninsular India<sup>10</sup>. Sind, Russet and Dead Sea sparrows are not known in peninsular India. Evidently, the House Sparrow is an exceptional 'invader' of the tropics that has 'followed humans worldwide'<sup>12</sup> out of northern Africa and West Asia, where it probably originated.

Second, we have to understand the migratory behaviour of the House Sparrow. Four subspecies are recognized by Ali and Ripley<sup>9</sup> of which *indicus* is the one that inhabits peninsular India and Sri Lanka. Although generally treated as a 'resident' bird, *indicus* is prone to migrate locally<sup>9</sup>. Subspecies *biblicus* exists outside Indian limits in the Middle East while *parkini* and *bactrianus* winter in parts of northern India where they mix with *indicus*. House Sparrows (*bactrianus*) ringed in Bharatpur (Rajasthan) were later recovered in Kazakhstan<sup>9</sup>. Obviously, migration keeps local populations

of the House Sparrow in a more dynamic state than presumed.

Third, the House Sparrow is not a species that nests exclusively within crevices. It is known to nest in trees as well<sup>9,11</sup>. Nesting in trees is reportedly common in Quetta Valley, Pakistan<sup>9</sup>. Interestingly, even the introduced and naturalized North American population of the House Sparrow is known to nest in trees<sup>11</sup>. I have seen House Sparrows successfully nest and fledge chicks 8–10 m below ground level inside open wells. Habitat needs of birds do not end with finding suitable nest sites. Birds often find food and mates in totally different habitats than where they nest. For the adult House Sparrow food is available in the form of fallen grains on roadsides, backyards and threshing floors. However, chicks are raised entirely on insects. To find insects in adequate numbers to keep the 3–6 chicks<sup>9</sup> well fed requires the parents (mostly the females) making numerous forays in a day. Frequent trips imply that the sparrow has to find insects close to its nest. Apart from nesting and finding food, the House Sparrow has the habit of ‘dust-bathing’, a behaviour not common in passerine birds. House Sparrows create small saucer shaped dust pits. Several sparrows may bathe communally in these dust pits before they gather to roost<sup>9</sup>. Dust bath apparently keeps the feathers clean and the skin free from external parasites.

Fourth, ecologically, the House Sparrow is an r-selected species. Humans have directly or indirectly aided its opportunistic proliferation. Modern cities and towns are no longer suited to the sparrow. Urban buildings are not attractive to the sparrow as they provide little opportunities to nest within. Finding food in and around nesting sites is a bigger problem in urban spaces where topsoil is covered with debris, roads and pavement. Insects (especially soft-bodied) are scarce not just because they are kept under control using pesticides, but due to absence of grasses and the presence of exotic plants in gardens and avenues. In fact, nightlights are the biggest threat to insects in urban landscapes. There are few opportunities for dust bathing. There are no open wells. Mosquito eradication projects in urban landscapes have made covering wells mandatory.

Population decline is the inevitable consequence of shrinking habitat and range of the House Sparrow. There is lit-

tle doubt that its commonness in most parts of peninsular India was human-aided. Like other r-selected species, the House Sparrow is bound to dwindle in numbers in habitats that it had opportunistically invaded. It is not just the House Sparrow that has become rare in urban landscapes. Redvented Bulbul, Spotted Dove, Brahminy Kite, Golden-backed Woodpecker, Whiteheaded Babbler, Coucal and Magpie Robin (to name a few)<sup>9</sup>, have all become rare. The decline probably began 40–50 years ago when it was not really noticed. The first signs of decline were seen as unsuccessful attempts to raise chicks by common garden birds. During the 1960s, I hand-raised several Redvented Bulbul chicks that had dropped from the nest around my home and elsewhere. Soon, many ‘favourite’ garden birds disappeared from homesteads as they failed to raise and fledge broods.

Domestic cats, rodents and crows destroy eggs and nestlings. These and other nest predators like the Common Mongoose and Bonnet Macaques are quite numerous in our cities. After moving into Chennai in 1992, I took particular interest in the House Sparrow, as it was common in the building where I live. For at least 10 years since 1992, we tried to help the sparrow by providing nest boxes. Although the nesting was successful, crows frequently destroyed the chicks by either pulling them out of the nest or capturing them when they took the first flight out of the box. There are no House Sparrows in the building at present.

Urban habitats are not quite suited to garden birds anymore. Garden birds prefer to nest at low heights in bushes or close to buildings within the canopy of climbers. Such plants are no longer preferred by city-dwellers. Birds driven to nest in marginal sites are vulnerable to predators. Domestic cat, mongoose, macaque, rodents and crows have proliferated in most Indian cities. These animals are taking a toll of our garden birds. Closely planted, dense-canopied trees have driven out birds like doves, shrikes, bush chats and allies that feed on open ground or amongst sparse grass and herbs.

Can we bring back the House Sparrow and the other garden favourites to our cities? Habitat dynamics in urban landscapes is entirely dictated by human beings. Throughout the world birds have adapted to human-impacted habitats; some for a while, others longer. In India,

60–100 species of birds may have historically adapted to urbanized landscapes that prompted Salim Ali to place them amongst the 181 species as ‘common’<sup>1</sup> in his first edition of the ‘*Book of Indian Birds*’ in 1941. While it is still possible to find 100–150 species of birds in urban landscapes<sup>13</sup>, many of the species involved are not what Salim Ali would have considered common. Like all other biological communities, urban birds are bound to go through ecological succession and in the process species that were once common are likely to give way to newcomers. Attempting to bring back the House Sparrow to our cities may prove futile. It is wiser to conserve the sparrow in suburban, agricultural and hill landscapes, where it is still common.

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