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M Keerthana\* and G Maheswari\*\*

### ABSTRACT

*Birds are warm-blooded animals that belong to the class Aves. They have a strong yet lightweight structure with feathers, toothless beaked jaws, hard-shelled eggs, a rapid metabolic rate, and a four-chambered heart. South India is home to a diverse range of bird species, including both resident and migratory birds. The region's unique geography, climate, and habitats support a variety of bird species, ranging from forest-dwelling birds to water birds, birds of prey, and songbirds. The birds play an important ecological role in maintaining healthy ecosystems. Protecting their habitats and preventing their populations from declining due to human activities such as hunting, habitat destruction, and pollution is imperative. Conservation efforts must be continued to ensure the survival of these important bird species. Thus, this chapter aims to review on five common south Indian birds with their habits, lifestyle, population numbers, ecological roles, and conservation status.*

**Keywords:** South Indian birds, Habitat, Behaviour, Nests, Pest control, Pollination, Seed dispersal, Conservation of birds, House Crow, Indian Peafowl, House Sparrow, Common Cuckoo, Indian Robin.

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\* Department of Zoology, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore

\*\* Department of Zoology, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore

## INTRODUCTION

For more than a century, it has been widely believed that birds descended from reptiles. Naturalists were aware of the physical similarities between birds and live reptiles before Darwin, which were not shared by either amphibians or mammals (Ostrom, 1975). Archaeopteryx, a Late Jurassic dinosaur represented by seven skeletons and a feather, is considered to be the earliest known member of the theropod dinosaur family and is considered to be a member of that group phylogenetically. The dromaeosaurid theropods, including *Deinonychus*, are the closest known non-avian relatives (Padian, et al., 1998).

The primary trait that sets apart birds from all other creatures is their feathers, which are unique among the more than 10,400 species. A more thorough definition would point out that they are warm-blooded vertebrates more closely related to reptiles than to mammals, have a four-chambered heart (like mammals), forelimbs modified into wings (a trait shared with bats), a hard-shelled egg, and keen vision, their primary sense that they rely on to gather information about their surroundings. In addition to having a narrow hearing spectrum, they have a weak sense of smell. The majority of birds spend the daytime.

Birds have had a huge impact on human culture in a variety of ways and their significance in literature and folklore. Throughout the beginning of time, humans have used birds and their eggs as at least accidental food sources. Man and birds have a more nuanced interaction as agriculture has developed. To use as fertiliser for farms, enormous amounts of guano (bird faeces) were extracted from island breeding colonies. In both natural and human-managed ecosystems, birds play a crucial role. They help us with insect management, habitat upkeep, and plant pollination. Fossil remains have allowed for the identification of more than 1,000 extinct species. A scientific marvel, birds' richness and variety may be found in nearly every ecosystem on earth.

The birds paves the way for the pest control, pollination of plants, nature cleans up crew, seed dispersal, transform entire landscape, keeping coral reefs alive and inspiring science. With their many flying and feeding adaptations, birds are one of the most specious living vertebrate taxa, fulfilling special ecological tasks (Prum *et al.*, 2015). Fossil data has not supported early bird fruit intake, which limits our knowledge of the evolutionary origins of an essential part of plant-animal interactions (Pejchar *et al.*, 2008; Sekercioglu, 2006; Tiffney, 2004).

The consequences of human activity have greatly influenced bird populations. Almost 80 species of birds have gone extinct since 1680, and many more are under grave danger. While pesticides and pollution are significant contributors to the decrease of several major species, such as the California condor, osprey, and peregrine falcon, the destruction of natural habitats and the introduction of alien animals and illnesses have likely had the most catastrophic effects. The survival of uncommon species depends on concerted study and conservation efforts.

South India's different weather and terrain have led to a large diversity of flora and fauna. The Western Ghats are home to deciduous woods, whilst the inner Deccan plateau is home to tropical dry forests and scrub areas. The Malabar Coast wet forests are located on the coastal plains of the southern Western Ghats, and they are moist forests that are located at high altitudes in the South Western Ghats. As a UNESCO World Heritage Site, the Western Ghats are one of the eight most important regions for biodiversity in the world. In this review five predominant South Indian birds are selected which have a great influence in maintaining ecosystem. The current chapter reviews on their habitat, diet pattern, mating habits, major threats to its population, and its conservation.

## **DESCRIPTIONS**

### ***Corvus splendens* (House Crow)**

A long-billed, medium-sized, slender blackish crow. The sides and grey nape combine to produce a lighter collar that stands out against the glossy black body. A scavenger who mostly consumes human leftover trash. Found in a variety of settings, primarily those close to human civilization. They make a harsh "kaakaakaa" call.

### **Distribution**

From southern Iran to Pakistan, India, and Bangladesh and into south-western China, southern Tibet, central Thailand, and the Maldives, the house crow is extensively scattered throughout southern Asia. The population of house crow also found in Africa, Europe, the Middle East, and a number of islands, including Mauritius. Around St. Petersburg, Florida, a little community has grown. It may be found in both tropical and subtropical regions and is often a lowland species. However, several have been spotted at military facilities in the Himalayas. This bird is closely related to humans since it frequents urban areas and rural communities.

It's interesting to note that no populations are known to exist in empty spaces.

### Habits and lifestyle

The very clever house crow moves cautiously while strolling or hopping and flicking its wings. It is a sociable, diurnal bird that creates large roosts and congregates in raucous groups. The flocks can number hundreds or thousands of birds, and this species can frequently congregate in plantations and mangroves with parakeets and mynahs. Just before dawn, house crows make their way back to the areas where they hunt. It is a very loud species, and its cry, which has been characterised as a "kaaan-kaaan" or "kaa-kaao," is relatively flat, toneless, and dry. A variety of gentler, nasal sounds are also made by them during social encounters.

### Diet and Nutrition

The omnivorous house crow consumes garbage, leftovers, detritus, and sewage. They also consume small animals, lizards, fish, frogs, crabs, insects, nectar, fruits, cereal seeds, eggs, and nectar.

### Mating habits

House crows often develop lifelong pair connections and are thought to be monogamous. However, when both males and females have several partners, many people appear to be somewhat polygynandrous (promiscuous). Depending on the region, the breeding season varies. While it occurs in East Africa between September and June, it occurs in India from April to June, at the beginning of the wet season. They often build solitary nests and do so close to populated areas. Although nests are frequently seen in trees, they can also be found in disorderly fashion on building ledges, street lights, and power pylons. An average of 4 eggs are deposited every clutch, ranging in number from 3 to 5. Two clutches from a female are possible throughout a mating season. Both parents participate in the approximately 15–17 day process of incubation, although mostly the female does it at night. Chicks are cared for by both parents while they are in the nest for around 21 to 28 days, after which they remain dependent on them for a further few weeks.

### Population threats

In spite of having a very wide range, house crows are not thought to be in danger worldwide. However, colonies of this species in many locations have grown to pest levels, have dispersed quickly, and are now thought to be invasive. By consuming domestic

poultry's eggs and chicks and ruining crops and fruit, they cause economic harm. House crow populations have been aggressively managed in Singapore, Yemen, and several islands, with varying degrees of effectiveness. During a control effort in Yemen between 1984 and 1986, some 240,000 of these birds were destroyed.

### **Population number**

The IUCN reports that the house crow is widespread and fairly common across its range, although there is no estimate of its total population. According to the Bird of India database, there are around 34 million house crows in India, with 19 100,000 or 19 million of them living in urban areas and 150,000 or 15 million of them living in rural regions. The number of the species is specifically estimated to be between 500,000 and 600,000 in the Mumbai metropolitan region, 133,000 on the island of Singapore, and 5,500 on Kharg Island in Iran. House crows are now categorised as Least Concern (LC) species, and their population is steady.

### **Ecological role**

The world's most invasive bird species, according to GSID (2010), is the house crow. Australia has created a risk prediction algorithm to determine *C. splendens'* ideal environments (*Csurhes, 2010*). Beyond its natural range, the house crow has successfully colonised tropical and subtropical locations, where it has become a major problem (*Brook et al. 2003*). Given that many people view crows as a nuisance, the general specific word "splendens," which means bright in Latin, is challenging to employ when describing them. They annoy visitors and residents alike with their loud cries, laborious faeces, and steel meals (ISSG.Org).

### ***Pavo cristatus* (Indian Peafowl)**

Indian peafowl was designated as the India's official bird in 1963. The spectacular blue bird, on the other hand, was well known and revered both within and outside of the Indian subcontinent because of its stunning plumage. The Indian peafowl is a symbol of luxury, majesty, grace, intelligence, and also self-indulgence. For everyone who sees them, these birds represent happiness. The Indian peafowl is important to many communities throughout India, and it frequently appears in folklore, mythology, and visual arts. It was first found in India and Sri Lanka, but is now found in parks and gardens all over the world. In India, it may be found all throughout the country, although it is more prevalent to the south and east of the Indus River.

## **Distribution**

The Indian peafowl, which is native to India and Sri Lanka, may be found in the wild across much of southern Asia at elevations lower than 1800 metres. Nearly everywhere in the world, the species has been bred for decorative purposes due to the exceptional livery of the male. Its ideal habitat is open forests with lots of clearings and bushes close to water sources with surplus food.

## **Diet and Nutrition**

It has a very diverse diet. It frequently consumes tiny invertebrates, although its preferred foods include fruits, seeds, and insects. Few people are aware of the fact that it is an unafraid hunter of small to medium-sized snakes. In fact, this bird's name on Sanskrit means "snake killer," which explains why it is frequently prized and adored in the Indian subcontinent.

## **Breeding**

A female is solely responsible for providing parental care from egg production to child rearing and on an average a single brood of 3-5 eggs are laid, which are incubated for around 4 weeks every year. By the time they are approximately 3 years old, juvenile males have finished developing their tails, however they can still grow them for a further 3 years. An Indian peafowl lives in the wild for around 25 years on average, largely by itself. During mating season, they form pairs. Males and females are both alone throughout the remainder of the year, or at most, are seen in groups of two or three people.

## **Conservation**

The Indian peafowl is designated as "Less Concern" on the 2018 Red List of the IUCN (International Union for the Conservation of Nature). The threat of extinction for this species is essentially nonexistent because it has been introduced pretty much everywhere in the world. Indian peafowls in the wild must contend with a declining natural environment, including less access to water supplies, as a result of the world's population's fast growth.

The national parks of India and its surrounding nations are working to preserve this lovely bird's habitat. The Indian peafowl has been imported into many nations across the world in order to increase its population since it is a species that adapts quite well.

## Ecological role

The peafowl are very important for our ecology by regulating the insect population and also support farmers by eating insects that destroy agricultural crops. Poachers target these birds for their feathers and meat pose a threat to their population.

## *Passer domesticus* (House Sparrow)

The house sparrow, or *Passer domesticus*, is a sparrow of the Passeridae family that is widespread around the world. It is a little bird, averaging 16 cm (6.3 in) in length and 24–39.5 g in weight (0.85–1.39 oz). Male birds have more vivid black, white, and brown patterns whereas females and young birds are coloured a light brown and grey. The house sparrow, one of around 25 species in the genus *Passer*, is a native of Europe, the Mediterranean region, and a significant portion of Asia. It is the most extensively dispersed wild bird due to its deliberate or unintentional imports to several areas, including sections of Australasia, Africa, and the America.

## Distribution

Most of Europe, the Mediterranean Basin, much of Asia, and parts of North Africa are home to the house sparrow. These birds may dwell in urban or rural areas and are closely related to human habitation. They may be found in a broad variety of habitats and temperatures, although they usually stay away from vast forests, grasslands, and deserts that are not near any human habitation. Dense woodland and tundra are the only terrestrial areas that House sparrows avoid.

## Habits and lifestyle

Birds like house sparrows are incredibly sociable. When eating, they are social in all seasons and frequently form flocks with different bird species. They share roosting space, and during mating season, nests are frequently clustered together. Additionally, house sparrows partake in “social singing,” which involves birds humming together in bushes, and dust or water bathing. In the mating season, females also make use of this sound to establish dominance over males and remove them so they can tend to the young or incubate eggs.

## Diet and Nutrition

As omnivores, house sparrows consume any food that is offered to them. They mostly eat fruit like grapes and cherries, as well as

berries, buds, and the seeds of weeds and cereals. Additionally, they frequently consume earthworms, insects, molluscs, and crustaceans when accessible, as well as vertebrates like lizards and frogs.

### **Mating habits**

House sparrows mate for life and are monogamous. Many birds may not locate a nest and a partner; instead, they may assist married couples around the nest, which improves the likelihood that they will be chosen to replace a lost mate. Before the mating season, males occupy nesting locations by repeatedly calling next to them. The female produces 4 to 5 brown or grey speckled white, bluish-white, or greenish-white eggs. Immediately after hatching, the young can breed; but, in tropical regions, some birds begin reproducing when they are only a few months old and still retain juvenile plumage.

### **Population threats**

Predation, particularly by Eurasian sparrowhawks, electromagnetic radiation from cell phones, and ailments such as avian malaria are the greatest risks to house sparrows. The lack of insects available to feed young sparrows appears to be a major factor in the reduction. Monoculture farming is on the rise, pesticide usage is rampant, native flora in cities are being replaced by foreign ones and parking lots are being added, along with the potential introduction of unleaded gasoline, which creates hazardous substances, and pesticide use is increasing. In Europe, house sparrows are frequently found as victims to roadkill.

### **Population number**

The IUCN Red List estimates that there are between 896,000,000 and 1,310,000,000 adult House sparrows in the world. 269,000,000–392,000,000 adult people, or 134,000,000–196,000,000 couples, make up the European population. Around 100–100,000 breeding couples comprise the national populations of China and Russia, respectively. The IUCN Red List now rates this species as Least Concern (LC), however its population is currently under decline.

### **Ecological role**

The influence of house sparrows on many plant groups is due to their extensive seed consumption. Additionally, they provide a significant supply of food for raptors like hawks, domestic cats and dogs, and other predators that live close to human settlements.



## Conservation

The house sparrow has developed alongside people and is only known to coexist closely with us rather than living in forests. It has lived with us in our gardens and buildings for many years, but during the past 20 years, their number has been declining practically in all major cities. The house sparrow loses its foraging grounds (natural grasslands) when the green areas in our cities give way to more concrete buildings. These factors are related to fast changing cities that are no longer a viable home for the house sparrow. WWF-India has been working to increase public awareness of the falling number of home sparrow.

## *Cuculus canorus* (Common Cuckoo)

The common cuckoo (*Cuculus canorus*) belongs to the Cuculiformes family of birds, which also includes roadrunners, anis, and coucals. The common cuckoo is a medium-sized, thin bird that may be found in both Asia and Europe. Its long tail and greyish body make it look like a sparrowhawk while it's in flight.

## Distribution

The common cuckoo migrates widely in the summer to Europe and Asia and spends the winter in Africa. These birds live in open moorlands, woods, woodlands, grasslands, meadows, shrublands, heathlands, reedbeds, and cultivated habitats.

## Habits and lifestyle

Common cuckoos are typically quiet, lonely birds. However, during the mating season, they become loud and may frequently be heard screaming their loud, far-reaching song while staking out their territory and luring partners. The male's song is typically delivered from an open perch and has the sound of "goo-ko." The female calls loudly and bubblingly. Common cuckoos spend a lot of time searching for food during the day. They particularly enjoy the poisonous, hairy caterpillar varieties that other birds seem to avoid. The way cuckoos prepare their meal for ingestion is peculiar among birds; they rub it against hard surfaces like twigs before crushing it with unique bony plates in the rear of the mouth.

## Diet and Nutrition

Common cuckoos prefer to eat hairy caterpillars over other insects because they are carnivores (insectivores), unlike many other birds. They occasionally also consume tiny birds' eggs and chicks.

## Mating habits

April marks the beginning of the common cuckoo's singing season. The male usually sings in groups of 10–20 notes with a little pause between each group, at intervals of 1–1.5 seconds. When calling loudly, the wings drop, and when the male is close to a possible female, he frequently wags his tail or may even swivel his body. As brood parasites, common cuckoos lay their eggs in other birds' nests rather than building their own. Depending on the colour of the host egg, Common cuckoo eggs can be either speckled or solid in colour. The common cuckoo chick typically departs the nest two to three weeks after hatching and begins breeding at age two.

## Population threats

Currently, there are no significant risks to common cuckoos.

## Population number

The Common Cuckoo has a total population of 40,000,000–74,999,999 adult individuals, according to the IUCN Red List. 5,960,000–10,800,000 breeding males, or 11,900,000–21,500,000 mature individuals, make up the species' population in Europe. The IUCN Red List now rates the Common Cuckoo as Least Concern (LC), however its population is really declining.

## Ecological role

The majority of cuckoos are insectivorous, and they are particularly adept at eating larger insects and caterpillars, particularly the disagreeable hairy species that other birds steer clear of. Unlike other birds, they digest their food before eating it by rubbing it against rough objects like twigs and then crushing it with specialised bony plates at the back of the mouth. They also consume a wide range of other animals and insects. The lizard cuckoos of the Caribbean have become experts at catching lizards since there aren't any birds of prey there.

## *Copsychus fulicatus* (Indian Robin)

A species of bird in the Muscicapidae family is the Indian robin (*Copsychus fulicatus*). Across Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka, it is pervasive across the Indian subcontinent. The brown coloration on the backs of the northern subspecies' males progressively fades as they move south, whereas the all-black backs of the southern subspecies' males are more conspicuous. They are frequently observed sprinting over the ground or perched on low, prickly bushes and rocks in open scrub habitats, where they are frequently found. They may be

clearly distinguished from pied bushchats and Oriental magpie-robins because to their long tails, which are often held high, and black bodies with chestnut undertail coverts.

### **Distribution**

This bird inhabits areas that are open, rocky, grassy, and scrubby. They are typically missing from locations with denser forests and high rainfall, and they are more common in environments that are dry. All populations are non-migratory residents. The species typically perches on roofs and is commonly seen near to areas where people live.

### **Habits and Lifestyle**

According to estimates, the campus of Pondicherry University has a population density of 193-240 people per square kilometer. About 1.5:1 men to women made up the population. Around 6650 m<sup>2</sup> is thought to be the average size of a male's territory. In the course of breeding season, males might become hostile towards other people and will even attack mirrors. They seem to profit from human activity in forests, such as cutting down trees and removing fuel.

### **Diet and Nutrition**

Although frogs and lizards are sometimes taken, they typically eat insects, especially when taking care of their young at the nest. People could go out hunting late at night to catch insects drawn to lights.

### **Mating habits**

Breeding season typically starts with the first rains but can vary by area from December to September. In southern India, breeding peaks sooner than in northern India in June. Breeding takes place in Sri Lanka between August and September and from March to June. During this time, males sing and perform displays that include spreading and lowering their tail feathers, strutting in front of the female, flashing their flanks, and fluffing their undertail coverts. Guys sing in different ways to attract mates and discourage rival males. By flying slowly between perches, males can chase other males away and monitor their area. Sometimes they may eat their reflections.

### **Conservation**

The common cuckoo (*Cuculus canorus*) is thought to have a worldwide population of between 40,000,000 and 75,000,000 birds. These species' total population size is thought to be diminishing.

It is said to occur often over its whole range. A generation lasts seven years. They cover an area of around 61,200,000 square kilometres. The cuckoo species has been classified and assessed by the IUCN (International Union for Conservation of Nature), and it is rated as being of "Least Concern." The common cuckoo's status under CITES (The Convention on International Trade in Endangered Species of Wild Fauna and Flora) is "Not Evaluated" (*Cuculus canorus*).

### **Ecological role**

Robins are omnivores. Predators include tiny snakes, other small reptiles, including amphibians and reptiles, although they mostly target insects and worms. They also consume fruit and berries. They will occasionally consume a fruit in one location before flying elsewhere. These berries' seeds are frequently present in the robins' excretions, allowing them to "plant" them in new areas. Foxes, bobcats, hawks, shrikes, owls, and other animals eat robins, and crows and blue jays frequently steal their eggs and young. All of them are predators in the wild.

### **CONCLUSION**

Birds play an important role in an ecosystem as they perform various ecological functions that contribute to the health and balance of ecosystems. Some key roles include pollination, seed dispersal, pest control, nutrient cycling, species indicator and ecotourism. Birds also occupy various trophic levels in food chains serving as prey and predators for other organisms and supporting ecosystems' health and diversity. They are an integral part of the natural world providing economic, aesthetic, and ecological benefits to the well-being of people. Overall, birds are important contributors to ecosystem health and play a critical role in maintaining biodiversity and ecological balance. Without birds, ecosystems would be less diverse, less healthy, and less resilient to environmental stressors.

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### **Conflict of Interest**

The author declares no conflicts of interest.

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