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BEHAVIOURAL STUDY OF CROW, CORVUS SPLENDENS and CORVUS CULMINATES INHABITING JAMMU REGION

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ABSTRACT

This study focuses on the behavioral patterns of two crow species, *Corvus splendens* (house crow) and *Corvus culminates* (Indian jungle crow), inhabiting Jammu area. Crows are known for their intelligence, adaptability, and complex social behaviors. By understanding their interactions, feeding habits, nesting patterns, and vocalizations, we can gain insights into their ecological roles and adaptability to urban environments. The research was conducted over a period of six months, from September 2023 to April 2024. Observations were carried out in various urban and peri-urban areas of Jammu. Data collection methods included direct observation, video recording and audio recording of vocalizations. Specific behaviors such as foraging, nesting, and social interactions were documented and analyzed.

Keywords: Crow, Social Behavior, Feeding Adaptations

1. INTRODUCTION

We share the world with an immense diversity of wildlife, the breadth, and the depth of which is, frankly extraordinary. As our ancestors travels through the continent of planet Earth, they encountered amazing animals in each new area or vicinity they explored. Most people are familiar with the animals, large and small, that share the region in which we live. The current age of easy worldwide travel has allowed some of us to experience more exotic part of the globe, where the animals are unfamiliar, different, and sometimes very strange indeed. Yet this diversity of habitats and organisms sadly, diminishing as the world, becomes ever more populated with humans, and the impact of those increasing populations takes a heavy toll on natural areas worldwide. This, in turn, maintains and enhances human life further. These ecological processes are vital for agriculture, forestry, fisheries, and other endeavors that support humans.

Crows belong to the Corvid family (which includes jays and magpies) and are among the most adaptable and intelligent birds. Its coal black colouring, highly social behaviors, and distinct call make them one of the most frequently seen and heard birds.

In recent years, crow populations have expanded into urban and suburban areas. Their tameness becomes notable as they seek the plentiful food sources found on roadsides, parking lots, ferry landings, marinas and other places where humans influence the landscape. Both house crow and jungle crow exhibit highly adaptable and opportunistic feeding behavior, allowing them to thrive diverse environments, particularly urban settings (Alam and Alam, 2018). House crow (*C. splendens*), are common, highly adapted bird found in urban and village setting and jungle crow (*C. culminates*) is larger, all black and shy than house crow typically found in forests, hills and wilder area (Ali and Ripley, 1976).

In India, the house crow is also associated with religious rituals. Feeding ecology of a bird is important aspect of the basic ecology of species concerned. Feeding behavior is the way, in which a bird exploits resources for feeding purpose. This explains how a bird species utilizes their environment and helps to identify the factors which are crucial for their survival and propagation. The present study aims to describe some sort of comparative aspects of feeding ecology and behavior of house crow.

2. MATERIAL AND METHODS

Study Area

Jammu, located in the northern state of Jammu and Kashmir, is known for its rich history vibrant culture, and stunning natural beauty. It serves as the winter capital of the state and is surrounded by the Himalayas. The region is famous for its ancient temples, including the revered Vaishno Devi Temple, which attracts millions of pilgrim each year. Jammu also offers opportunities for trekking, sightseeing, and experiencing the local cuisine and handicrafts.

Jammu is the winter capital of Jammu and Kashmir, which is a union territory headquarters and the largest city in Jammu district. Lying on the banks of the river Tawi, the city of Jammu, with an area of 240 km² (93 sq mi), is surrounded by the Himalayas in the north and the northern plains in the south. Jammu is the second-most populous city of the union territory. Jammu is known as city of temple "for its ancient temples and Hindu shrines.

During the period of study of crow in Jammu area was divided into two stations.

Study Station 1: Sidra Area

The present study conducted a basic study on jungle crow (*Corvus culminates*) (Fig.1) and found that the species are highly omnivores, feeding on grain, fruit, insects, small animals, and human food waste (Table1).

They are ubiquitous in the Sidra area of Jammu, and their feeding habits play an important role in the local ecosystem. A highly adapted omnivore, crows in Sidra have a diverse diet that allow them to thrive in the urban and semi rural environment.

Study station 2: Gujjar Nagar

An interesting aspect of House crow (*Corvus splendens*) (Fig.2) feeding in Gujjar Nagar is their tendency to form foraging groups. Crows will often congregate in large numbers, cooperating to search for and retrieve food sources. This collaborative behavior allows them to more efficiently exploit the available resources in the area.

Overall, the crow feeding habits in Jammu Gujjar Nagar area reflection of their adaptability and resourcefulness in an urban environment. Their scavenging and predatory behaviors have allowed them to thrive in this dynamic and ever-changing ecosystem.

Identification: The crow species were observed with a naked eye. In order to avoid any disturbance to birds, they are watched from behind a hide as far as possible. A minimum code of conduct was maintained like making less noise, a casual and indirect approach while observing or taking photograph of the species, so that the bird was not disturbed and their natural behavior could be observed. Photographs and video clips and recordings were made with the help of I Phone 14 pro max. Observed species were identified.

Point count : Point count" is a method used in wildlife surveys, particularly in avian studies, to estimate the abundance and distribution of bird species, such as crows. Here's a brief overview of how a point count survey might be conducted for crows:

Site Selection: Choose multiple fixed locations (points) within the study area. These points should be representative of different habitats where crows might be found.

Timing: Conduct the counts during the early morning hours when birds are most active. Repeat counts at different times of the day and throughout different seasons for comprehensive data.

Observation Period: At each point, remain stationary and record all crows seen or heard within affixed radius (e.g., 50 meters) for a set period (e.g., 5-10 minutes).

Data Recording: Note the number of individual crows, their behaviors, and any other relevant observations (e.g., presence of nests, interactions with other species).

Analysis: Use the collected data to estimate crow population density, distribution patterns, and potential habitat preferences. Point counts are effective for monitoring changes in bird populations over time and assessing the impact of environment changes or conservation measures.

Data Analysis: The data collected was processed tabulated and analyzed keeping into consideration the objective of the study.



Fig. 1 Corvus culminatus (jungle crow)



Fig. 2 Corvus splendens (House crow)

3. OBSERVATIONS AND DISCUSSION

While crows in both the Sidra and Gujjar Nagar areas of Jammu exhibit similar omnivorous feeding habits, there are some notable differences between the two populations. In urban Sidra area tend to rely more heavily on anthropogenic food sources, such as garbage and leftovers from residential and commercial areas. In contrast, crows in the semi- rural

Gujjar Nagar region have access to a wider variety of natural food sources, including insects, small animals, and agricultural produce.

Additionally, the crows in Gujjar Nagar may exhibit more cooperative behavior, with groups of birds working together to find and access food resources. This is in contrast to the more solitary and opportunistic foraging strategies observed in the Sidra crows, which must compete for the limited urban food waste. Finally, the Gujjar Nagar crows may have a more diverse diet, taking advantage of the greater variety of natural habitats and food sources available in the less developed area, compared to their Sidra counterparts. The incredible feeding flexibility of crows, coupled with their high intelligence and ability to exploit human resources, has allowed them to thrive in human-altered landscapes. Their success is a testament to the behavioral adaptations and complex cognitive abilities of these remarkable birds. As urbanization increases, understanding the feeding ecology of crows will be crucial for managing human-wildlife conflicts and facilitating coexistence. The house crow (*Corvus splendens*) and Indian jungle crow (*Corvus culminates*) are two closely related but distinct species found in South Asia. While they share some similarities in their omnivorous and opportunistic feeding strategies, there are notable differences in their dietary preferences and foraging behaviors. The house crow is a human commensal species that has become well-adapted to urban and suburban environments. Its diet consists largely of human food waste, including scraps, bread, fruit, and garbage. House crows are also known to prey on nestlings and eggs of other bird species. Their feeding habits are shaped by their constant interaction with humans and exploitation of anthropogenic food sources. In contrast, the Indian jungle crow inhabits more natural forest and rural habitats. While it will opportunistically feed on human food waste when available, its diet is predominantly composed of invertebrates, small vertebrates, fruits, seeds, and carrion. Jungle crows are more reliant on foraging for wild food sources compared to their urban house crow cousins. Both species exhibit intelligent tool use and social learning behaviors related to finding and accessing food. However, jungle crows may employ even more sophisticated object manipulation and tool manufacturing skills to extract prey from trees, crevices, and other natural substrates in their forest environments.

Both species are members of the Corvidae family and are known for their intelligence, adaptability, and omnivorous feeding habits. They are commonly seen scavenging for food in urban areas and are considered important in certain cultural and religious contexts in the region. They feed on a diverse array of foods including insects, seeds, grains, fruits, small vertebrates, carrion, and human refuse, crows use tools like sticks to extract prey and have been observed using innovative techniques like dropping nuts onto roads to crack them open. Their adaptability and ability to exploit human resources allows crows to thrive in urban areas. Crows exhibit remarkable intelligence and behavioral flexibility. Beyond their ingenious feeding strategies, crows demonstrate impressive cognitive abilities in areas like tool use, social learning, and problem-solving. They form close family bonds, cooperate with mates and offspring, and pass knowledge across generations. Crows also recognize individual human faces and can hold grievances against those who threaten them. In summary, crows adaptable and intelligent feeding strategies, coupled with their omnivorous diets and behaviors, allow them to thrive in diverse habitats by taking full advantage of the available food sources in their environment.

Chahal, Samat, and Brar (1986) discuss various birds' species that damage Agricultural crops in India. Crow, belonging to the highly intelligent corvid family, exhibit remarkable versatility in their feeding habits, adapting remarkably to various environments (Goodwin, 1976). These resourceful birds are known for their omnivorous dietary preferences, consuming a wide range of food sources. One of the most prominent feeding behaviors of crow is their scavenging nature. They are adept at foraging for scraps and discarded food items, often seen rummaging through trash cans and dumpsters in urban areas. Their sharp eyesight and keen sense of smell aid them in locating these potential food sources. In natural environments, crows are skilled hunters and foragers. They prey on a variety of small animals, including insects, worms, rodents, and even the eggs and nestlings of other birds. Interestingly, crows exhibit remarkable problem-solving abilities when it comes to obtaining food. They have been observed using tools, such as sticks or wires, to extract insects or other food items from hard-to-reach places. Additionally, they are known to engage in cooperative feeding, where multiple crows work together to access food sources that would be challenging for a single individual.

Furthermore, crows have adapted to urban environments, where they take advantage of human- provided food sources. They frequent fast-food restaurants, scavenging for dropped French fries or other discarded items. Some people even intentionally feed crows, recognizing their intelligence, and appreciating their presence in urban landscapes.

4. OPPORTUNISTIC SCAVENGERS

They are true opportunistic omnivores, willing to eat just about anything they can find. In addition to hunting and foraging, they will scavenge on carrion and road kill. Their diverse diet allows them to take advantage of whatever food sources are available in their environment.

Social Foraging: They often forage in family groups or flocks. This social foraging behavior increases their ability to find and access food sources. They use calls and visual cues to recruit others to promising food locations. The flock provides many eyes for detecting potential food.

Food Caching: Crows feed on food items like nuts, seeds, and bits of food for later eating. They have excellent spatial memory that allows them to relocate these scattered caches when needed. This behavior is especially useful for getting through periods of food scarcity.

Pilfering and Stealing Food: They are known to steal food from other animals and birds. They will raid nests for eggs or nestlings. They'll pilfer food from outdoor pet bowls. Some crows have even been observed pulling loose threads from the grill cover to get at trapped food inside.

Urban Scavengers: With their intelligence and adaptability, crows thrive in urban areas as supreme scavengers. They hunt in parking lots for dropped food morsels, raid dumpsters, and beg for handouts from people. Their fondness for French fries has earned them the nickname "feathered rats" in some cities.

Tool Use for Foraging: They are among the most adept non-human tool users. They have been observed using stick tools to probe for insects and grubs, and bend wires into hooks to fish for food scraps. Some crows even take advantage of traffic, dropping nuts onto roads so vehicles can crack them open.

Food Preference Changes: While generally opportunistic, crows do show seasonal preferences for certain foods when available. During spring, they may favor protein-rich nestlings and eggs. In fall, they gorge on grains, fruits, and nuts to fatten up for winter. Their diet is finely tuned to optimally exploit seasonal abundance.

Food Storage Strategies: In addition to caching, crows use clever food storage methods like bread into tree bark crevices larger items like bread into tree bark crevices. They also hide foods like eggs and meat scraps inside hard-to-reach nooks and holes to keep them from scavengers.

Hunting in Packs: When cooperative opportunities arise, crows will band together to hunt larger prey. Flocks have been seen working together to overwhelm and capture squirrels, rats, and even small birds unable to easily escape the mobbing behaviors.

The incredible evolutionary success of crows can be largely attributed to their diverse, resourceful, and intelligent approach to finding and exploiting a wide variety of food sources across all kinds of environments and conditions. Their feeding flexibility is a big reason why they thrive.

They are highly intelligent birds known for their adaptability and omnivorous feeding habits. Here are some key points about the feeding habits of crows:

Table1 1: Showing numerical count of different species of Crow

Crow Species	Total No. Sighting	SiteA (Sidra)	Site B (Gujjar Nagar)
Corvus Splendens	19	5	14
Corvus Culminates	30	24	6

5. CONCLUSION

They are highly intelligent birds with diverse and adaptable feeding behaviors. As omnivores, they take advantage of a wide variety of food sources through their opportunistic foraging strategies. Some key points about crow feeding habits.

- a) Highly opportunistic and flexible eaters that consume both plant and animal matter depending on availability
- b) Skilled at finding food sources through their observational learning abilities and by following other animals.
- c) Use their dexterity and intelligence to access food sources like unscrewing lid, pulling up fishing lines, etc.
- d) Scavenge readily on carrion, garbage, insects, eggs, nestlings of other birds.
- e) Also eat grains, fruits, nuts, and other plants/seeds when available. May cache surplus food items for later consumption.

One of the most remarkable aspects of crow feeding behavior is their ability to use tools. Crows have been observed using twigs or wires to probe for food in hard-to-reach places. Some crows have even learned to make hooks out of plant materials to retrieve food from containers. In addition to their tool use, crows exhibit impressive social learning when it comes to finding food. They watch each other closely and learn new feeding techniques from observing their family and peers.

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