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Avifauna Profiling Of North Campus, University Of Delhi, India

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ABSTRACT

The goal of this review is to identify and categorize the different birds observed in the north campus, of Delhi University. We went on numerous field trips in order to record and observe the avian diversity- we took photos, recorded various bird calls, and observed various animal behaviours. We noticed that there is a high diversity of birds in North Campus. The Ridge acts as the 'green lungs' for the city and protects Delhi from the loo from the West enabling Delhi to be the world's second most avifauna diversity-rich capital city. The study was conducted with Hansraj College as the starting point, after which we moved outwards radially. Birds are considered indicator organisms and act as important markers of the state of the ecosystem.

Keywords- Avian biodiversity, green lungs, avifauna, markers, ecosystem

THE PLUM-HEADED PARAKEET IDENTIFICATION

The Plum-headed Parakeet also known as *Psittacula cyanocephala* is seen in India, West Pakistan, Nepal, and Sri Lanka. The mating season starts in December and ends in April. These lovely parakeets are dimorphic- the adult females have bluish-gray heads while the males have red heads. They exist in open woodlands and even city gardens. They prefer a dry climate. The pattern and colour of the plumage are complex and jewel-like and include colours like yellow, green, gray, and red. Surprisingly this bird is a pest and tends to destroy orchards and grain crops.

PECULIAR FEATURES

The immature birds resemble female adults and molting occurs at 27 months of age. To achieve success in breeding these parakeets and to maximize their reproduction we need to ensure that the birds are provided with adequate nutrition, healthcare, and setup, and are allowed to pair up properly. Males and females are to be kept separate before mating. Breeders should work with at least 3 to 5 pairs. The Bonding process is when these birds communicate with each other and pair off. Their courtship rituals include feeding and rubbing their bills. As they find their partners, breeders must allow couples spaces of their own. Finally, the pairs begin nesting. Birds prefer small places to nest. Plum-headed parakeets have superbly flexible tail feathers. A distinctly curved tail on the hen is an indication that she likes her box and nesting has begun.

One of the major problems the plum-headed parakeets deal with is called egg binding. Egg binding is the result of a deficiency in diets such as a lack of Calcium. This phenomenon is more common in winter. It can be prevented with the addition of calcium, phosphorous, minerals, and vitamins to their diet. Plum-headed Parakeets respond well to seasonal feeding rather than year-round availability of all foodstuffs. Soft food is good for parakeets. Feeding soft food to them in December stimulates them to start breeding. The soft food mix is prepared fresh each day and fed only during the breeding season. A soft food mixture consists of cooked grains, and legumes- celery and carrots are also recommended. Color mutations of the Plum-headed Parakeet include lutino, pied, par-blue or turquoise, gray-green, and a mutation with a gray body and plum-colored head.

But we are now seeing a decline in the availability of these parakeets. The reason for this shortage can be attributed to the end of quarantine. Poor feeding practices and negligence have caused a decrease in the reproductive abilities of pairs. [1].

ROSY STARLING

IDENTIFICATION

The Rosy Starling is a winter bird in Peninsular India and Sri Lanka. In Northern and Western India it is seen in the early summers, especially for its breeding pattern. This bird is very uncommon and rare in sub-Himalayan areas. This bird is mostly admired due to its pink body [2]. At the time of its breeding season, this bird can be found on agricultural plains, semi-desert areas, and open steppes where all the necessities are available for its survival. During the winter season, they live in lightly wooded areas and roost in trees with common Myna or other starling species.

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These birds are strongly attracted to grain, fruits, and flowers so they are considered pests by farmers. On the other hand, they are beneficial for some farmers as well as they prey on pest insect species such as locusts and beetles. Rosy Starling is commonly known as 'Jowari' in India because they are well known for feeding on Sorghum, a grass species, cultivated for its grain, also known as Jowar.

ASIAN- PIED STARLING (*Sturnus contra*)

IDENTIFICATION

Black and white Asian Pied Starling have white cheek patches and scapular lines. Its orbital skin is orange in colour and has a pointed yellowish bill. During the flight, the tail gives a contrasting effect of black and white. No sexual dimorphism occurs and juveniles have black plumage which is replaced by brown. Less distinct white cheeks are brown in colour [3].

Asian pied Starling is observed in the plains of the Indian sub-continent, Southeast Asia, and in the foothills up to 700m above sea level. In India, Rajasthan is the major hub for this species. It plays a major role in managing pests in agricultural fields by acting as a bio-control agent among insectivorous birds [4].

PECULIAR FEATURES

The *S.contra* is a seasonal breeder. It has a single breeding season of about six months which starts in the last week of February and ends in the second week of August. The breeding period is identified from the period of pair formation to the fledging of young ones. The pair formation is followed by site selection for nest construction. The elements required for achieving successful breeding like site selection, nest construction, and feeding to the young ones were performed by both the parents [5].

HOUSE CROW (*Corvus splendens*)

IDENTIFICATION

Crows can be identified by their glossy black coat and their greyish breast and neck. The wings, tail, and legs are black. Crows are an urban invasive species but more importantly, they are scavengers. House crows feed largely on refuse around human habitations. However, they also prey on small reptiles and mammals and may steal a bit of grain and fruits. Their voice is a harsh kaaw-kaaw. One can observe these birds in crowded human habitats and appear in large numbers. They are slightly aggressive birds. The size of a house crow is 40 cm in length.

These omnivorous birds are masters at food treasure hunts. They survive by scavenging on human waste, raiding food crops, and damaging livestock. They are prone to attacking and mobbing smaller birds and cause competitive displacement of native bird species. They also destroy the eggs and nests of small birds. They act as carriers of diseases and therefore are serious burdens on cities. Their feces contaminate human environments and water bodies. Crows are carriers of human enteric diseases caused by *Salmonella* sp., *Shigella* serotypes., *Pseudomonas* sp., etc. It is an important pest species with significant potential for further global invasion. [6]

INDIAN PEAFOWL (*Pavocristus*)

INTRODUCTION

Peafowl is one of the most enormous birds in the world and this is the result of their large and expansive wing spans. The male Indian peafowl, with its distinctive blue-green plumage that has a glossy sheen, is one of the most gorgeous birds on Earth. They have long ornamental trains and peculiar crests. The females are duller in comparison and lack the traits, have greenish lower necks, and brown plumage. Peafowls can be observed all over the Indian subcontinent. It resides in semi-arid and deciduous areas. It is easy to recognize peacocks and locate them because their calls are loud and unique. If the call is heard in a forest, it may signal the approach of predators. Peacocks are one of the oldest known decorative birds. A group of peafowl is referred to as a muster. They act as indicator species.

PECULIAR FEATURES

One of the species-specific behaviour that peafowl demonstrates is dust bathing. Dust bathing is used by the bird to condition its feathers, and remove parasites and bacteria, and other harmful organisms. This need to bathe in dust partly explains its attraction to semi-arid habitats and flood plains.

Peafowls are omnivorous and feed on a vast variety of foodstuffs that include grain, crops, insects, small reptiles like lizards, and even small mammals. They search for food in small groups and may sweep parks and outskirts of cities as well as farmland. Indian peafowls are double-edged swords for crops. They may act as bio controls by feeding on harmful pests or they may act as pests by eating the crops themselves.

Peacocks are polygamous and often keep small harems in the wild. Their peculiar mating system involves males defending claimed areas- especially when it is time for them to breed. Courting behaviour involves the display of trains by the peacocks and loud calls to attract harems of 3 to 5 peahens. Females do not appear to favour specific males. Females are attracted to males with extravagant displays and numerous eyespots on their tail feathers. It is interesting to note that we can learn a lot about how to protect trees in forests by observing peafowl behaviour. Indian peafowl has an affinity for high places- whether it be tall trees or building roofs for roosting.

Interestingly, the peafowl has been given the title of National Bird of India. However, the bird is not well documented and there is a lack of representations of peacocks in surveys carried out in their habitats. Peacocks were considered the least endangered species but are being ignored and neglected which has caused a decline in their population. The decrease in the number of wild peafowls may be due to urbanization and other city dangers.[7].

BLACK DRONGO (*Drongo macrocerus*)**INTRODUCTION**

Black Drongo is glossy black in colour and has a wide fork to the tail. Adults are easily recognised by a white spot that is present at the base of their gape. Iris is seen as dark brown in colour and the sexes are not well differentiated. Juveniles of black Drongo look similar to white-bellied Drongo as they contain some white barring or speckling towards the belly and vent.

PECULIAR FEATURES

Black Drongos usually feed on insects and beetles and try to climb over trees in order to disturb any insect present over the branch. They congregate in fields that are being ploughed, picking up exposed caterpillars and beetle grubs. They also associate with many other birds that share a similar diet and habitat. This association helps them in foraging. It is studied that they imitate the call of the Shikara so as to put mynas to flight and catch them as prey. This bird mainly breeds in February and March in southern India and until August in other parts of the country. Their breeding season can be identified by listening to the morning song sung by Males and Females [26].

INDIAN GRAY HORNBILL (*Ocyerosirostris*)**IDENTIFICATION**

The Indian gray hornbill is an arboreal creature. It is observed in pairs. It is covered with gray feathers and has a light gray or off-white underbelly area. Its horn is dark in color and is covered by a helmet-like layer that extends to the tip of its horn. It is a medium-sized hornbill that stands around 61 cm tall. Males have eyes that are surrounded by black ringed skin whereas females have a reddish ring around their eyes. Its call is similar to that of a black kite and sounds like a scream. They are heavy flyers that alternate between flapping and gliding. Indian gray hornbills often build their nests in tree hollows on lofty trees. (International 2020b).

PECULIAR FEATURES

It is a hygienic bird by nature. The Indian Grey Hornbill is very particular when it comes to nest sanitation. It regularly removes leftover food, faeces, and other rubbish to keep the nest free of harmful microorganisms. Nest cleanliness ensures the absence of unwanted odours and keeps predators away. To protect the newborn chicks with delicate skin, their parents also remove broken eggshells from the nest. Captive females are known to eject their faeces up to a distance of 3 m from the hollow of their nest using a weird projectile method. [10].

BLACK KITE (*Milvus migrans*)**INTRODUCTION**

Black kites are birds of prey that act as scavengers. They are medium-sized birds and one can tell the difference between them and red kites because firstly, black kites have black feathers and secondly, they are smaller than red kites. Like most birds of prey, female black kites tend to be a bit bigger and more aggressive than males of the same species- however, they do not show any major sexual dimorphism. They glide and soar to search for food. The neck and head are lighter in colour as compared to the upper body feathers which are brown. Their wingspan is around 150 cm.

PECULIAR FEATURES

In France, a study was carried out that featured a colony of about 80 black kites kept in captivity. They noted that there was an increase in deaths caused by atherosclerosis. This disease affects about 4 percent of the kites annually. Symptoms included atherosclerotic lesions, and many birds even suffered aortic ruptures and abdominal haemorrhage. In response, researchers introduced fish into the nutrition provided to the birds. The experiments involved the monitoring of various stats of the birds like their lipid profile, their body weight, the food they consume, and the amount of time the birds invest in flying. The researchers saw that the cholesterol of the birds increased at the start but eventually there was a general decrease compared to the beginning of the experiment. So the birds did undergo an improvement in their overall health. Unfortunately, there was no reduction in bird deaths caused by atherosclerosis even though their plasma lipid quality had improved greatly. Regardless, long-term health benefits are expected.

It seems that living in captivity increases incidences of kites being affected by aortic dissection or atherosclerosis. Birds of prey that are forced to live in captivity are often affected by diseases that cause degeneration of their body systems therefore breeders must pay attention to their dietary needs and the species-specific behaviour that those birds display in the wild [12].

Black Kites are widely distributed throughout Asia and Africa. It is an efficient raptor and is synurbic- this means that it is co-dependent on humans and lives in association with human settlements such as cities. In Delhi, these birds tend to breed both on trees and on man-made structures such as buildings and towers. In fact, Delhi may be home to the largest raptor concentration in the world- possibly because the birds make use of the large amounts of leftover food in garbage patches caused by fault garbage dumping. (Kumar et al. 2014; see details below)(Galushin 1971; Kumar et al. 2014).

Interestingly, the sites that kites choose to call home are usually connected to human settlements.

Kites prefer constant and convenient access to sites where there is high human activity and rubbish and leftover food lying around. While traditionally humans have been a threat or an obstacle to most animal species, with the rise of urbanization many species have adapted to a new way of life wherein they exploit and make use of human provision rather than just tolerating them. (e.g. McPherson et al. 2016). When it comes to the case of Delhi. It is difficult to separate kite lifestyles from human activities as they rely on human resources, whether intentional or unintentional. This qualifies Black kites as an anthro-dependent bird. (Hulme-Beaman et al [29].

ROSE-RINGED PARAKEET (*Parakeet krameria*)**INTRODUCTION**

Rose Ringed parakeets have a distinctive green colour in the wild whereas captive-bred ring necks have several colour mutations that include colours like cinnamon and turquoise. Wingspan is about 30-35 cm long. The females and the immature bird resemble each other in that either they lack neck rings or their neck rings are gray tinted. The males have red and black neck rings. This shows that they are a dimorphic species. On average they grow up to 40 cm in length.

PECULIAR FEATURES

Rose-ringed parakeets have high juvenile and adult survival and lean toward being invasive species in several parts of the world. Invasive species are a major threat to global biodiversity. Since rose-ringed parakeets are able to thrive and proliferate in a wide

range of climates we need to understand and document their bodies' responses to different conditions of temperature, pressure, flora, fauna, etc.

In a certain study, researchers studied a few rose-ringed parakeets bred in captivity to probe the effects of changes in environmental temperature on the parakeets' body temperature and their metabolic rates caused by changes in seasons.

The resting and basal metabolic rates of the parakeets studied were lower in winter but higher in summer and the neutral thermal zone was also wider in winter. However, there was no major change in the body mass of the birds studied across the two seasons. This suggests that the parakeet's evolutionary coping mechanism was to conserve energy rather than tolerate the drop in temperature. They showed resistance to hypothermia even at five-degree Celsius. From what we can discern from the experiment, rose-ringed parakeets have adapted to a wide range of weather conditions and terrains which is probably why they have been so successful as an invader species all over the world [28].

These lovely parakeets tend to coexist peacefully with other birds their size. However, we once observed a squirrel and a parakeet show signs of aggression towards each other for food. For the record, the squirrel won.

The RED-WATTLED LAPWING (*Vanellus indicus*)

IDENTIFICATION

They are one of the large waders. They are 35 cm long. Their wings are light brown having a purple to a green sheen. White patches run through these two colours. It has a tipped black short tail. Each eye has a red fleshy wattle in front, and the legs are long and yellow. Females and males are quite similar in plumage but the males have 5% longer wings [14].

PECULIAR FEATURE

As we all know in this era of urbanisation, there are birds that are showing the adaptive ability to the changes occurring in the environment caused by anthropogenic activities. One of the examples is the Red-wattled lapwing, which is a ground-nesting species, which is now known to breed near human habitation and on the roofs of buildings as well. It is quite obvious these birds which have ground nesting are more vulnerable to the increasing rate of deprivation of their egged and young ones, the reason is predators. It is now seen that this bird species has started to settle in the urban areas having less human interference. More often on the roof of buildings which are vacant. One of the interesting things is how chicks reach the ground from that height. [11].

The LITTLE SWIFT (*Apus affinis*)

IDENTIFICATION

The small size of these birds is the main reason for their identification. They have a 33 cm long wingspan as compared with the 42cm shown by the Common swift. They show black plumage the exception is white throat and rump. The tail is Short Square-like, having round-tipped rectrices. Their flight resembles that of a house Martin and has a high twittering call. [14].

PECULIAR FEATURES

Little swift is mostly abundant in Asia and Africa. It extends into Europe in the regions of Turkey and Spain. The population of European breeding is very small and the between the decades 1970-1990 is unknown. The Turkish population showed a decline and May be overall in the world. Due to Habitat loss caused by Dams construction, they are now facing a tag of endangered species[23].

THE SPOTTED OWLET (*Athene brama*)

IDENTIFICATION

The spotted owlet is a little and stocky bird that is just 21 centimetres (8.3 in) in length. Gray-brown upper parts with numerous white spots. The under parts are brown-stretched white. The iris is golden, and the face disc is pallid. White super cilium and neckband are present. Sexes are comparable. The flight has significant undulations. Compared to lighter varieties like India from dry locations, the nominate form is darker.[15].

PECULIAR FEATURES

Research schemes of birds have shown that the declining species in Asia and Europe are mostly those which are connected to farmland. The use of insectivorous birds like the Spotted Owlet (*Athene brama*) as bio-control agents is beneficial, both economically as well as ecologically, in controlling rodent and insect pests. The Spotted Owlet is widely distributed and the most common of all the owls in India. The Spotted Owlet consumes mainly insects and small mammals. They are inactive during the day and become active at the time of dusk. Our knowledge of the ecology of the Spotted Owlet with reference to our agro ecosystem is highly fragmentary and incomplete. Knowledge of species feeding, ecology, and reproductive biology is required to understand its population dynamics and to resolve the issues related to conservation[8].

THE PURPLE SUNBIRD (*Cinnyris asiaticus*)

IDENTIFICATION

This diminutive sunbird has a tiny bill, a black, square-shaped tail, and a pronounced sexual dimorphism. They are less than 10 cm long, have a down-curved bill, and tubular tongues with brush tips to help them feed on nectar. The male's wings appear dark brown, while the upper body is shiny metallic bluish to purple-black.[18].

PECULIAR FEATURES

Sunbirds are small Passerine birds referable to Family Nectariniidae that primarily feed on nectar and insects. The Purple Sunbird (hereafter referred to as PSB), *Cinnyris asiaticus* is a small common resident bird in North Campus, New Delhi. In its breeding plumage, male PSB is bright bluish-black above and the non-breeding eclipse plumage resembles female but with a broad purple-black stripe extending down the centre of the throat to the belly. The female PSB is olive-brown above, pale-yellow below with a faint super cilium and darker mask. The PSB is an effective pollinator of freshly opened bright coloured flowers of *Butea monosperma*) and is also involved as a spreader of parasitic mistletoes on the economically important timber tree *Shorea robusta* and a pest of vineyards in India [9].

Sunbirds are active during the day. Sunbirds are having small wings by which they can fly faster. They occasionally consume nectar, fruit, and spider. Sunbirds can hover in front of the flowers like hummingbirds but both are not closely related. They have similar morphology because of convergent evolution.

THE COMMON MYNA/ INDIAN MYNA (*Acridotheres tristis*)

IDENTIFICATION

The body is brown with a hooded black head and there is a yellowish patch just behind the eyes. They have bright yellow bills and legs. They are about 26 Cm long. Its voice is a cacophony of growls and other obnoxious tones [22].

PECULIAR FEATURES

The anthropogenic environmental factor may provide rich sources of nutrients and energy to urban wildlife; however, it is not much known about how it affects the nutritional balance and food selection. One of the models for testing nutritional constraints and priorities shown by invasive species which has effectively adapted to the urban environment is common myna. Their diet consists of insects at large then worms, human discard, and plants. They show a clear preference for high-protein food dishes [24].

THE JUNGLE BABBLER (*Argya striata*)**IDENTIFICATION**

Jungle babblers are loud, noisy, plump, and grayish brown birds that are indigenous to India. They have weak flight- they have short rounded wings. This species is non-migratory but very social. In the adults, the sexes are identical and both feature drab grayish brown coats. They have recognizable yellow beaks. They have some mottling on their throat. [13].

PECULIAR FEATURE

Jungle Babblers belong to the family Leiotrichidae and are found in India, Pakistan, Sri Lanka, and surrounding countries. These loud-voiced birds tend to forage for food in groups of 6-10 birds which is why they are commonly known as ‘seven sisters’ in North India. As groups, these birds participate in allopreening and sentinel behavior. The bird is a common resident breeding bird in Delhi. It is observed in city gardens and forested sites. Previously, the orange-billed babbler was thought a jungle babbler subspecies but is now accepted to be a species in its own right [21].

In a study that was carried out in Mohali, Punjab a researcher set out to find out whether jungle babblers’ babble had any decipherable meanings. The scientists took note of the behavior of several flocks of birds in various parts of the environment. Bird calls of wild birds- including both baby chicks and adults were recorded as well as calls of birds trapped in nets or fleeing away from predators. Many of the birds were tagged for easy identification.

Their primary aim was to figure out the meanings of the noisy calls as understood by the birds themselves. The first task they did was to name the various calls, so the calls could be referred to by specific names amongst humans. They named the calls to sound exactly like the calls of the birds themselves.

The researcher's list of calls includes words like chack, kya-kya-kya, khack, cuk, ca-ca-ca in addition to babbler calls already discerned by previous researchers like Anthony Gaston. The researchers took care to note the reason behind each call and the response of the listener bird to the call. Finally, the scientists could distinguish between fifteen behavioral responses depending on the call. They classified the calls as seven friendly call types and eight unfriendly call types, where all calls had specific meanings[30].

RED-VENTED BULBUL (*Pycnonotus cafer*)**IDENTIFICATION**

The squarish appearance of the head is provided by the short crest. Scaly pattern with a dark brown body. While having a darker or blackhead. They are about 20 cm long having a long black tail tipped white. They eat consumer’s fruits (eg. Banana, lychee and papaya. They are very friendly to humans [27].

PECULIAR FEATURES

Test conducted to check the common mynas responses and red vented bulbuls against the reciprocal alarms and social calls by observing the changes from the baseline. This results in Asymmetric communication between mynas and bulbuls. The bulbul shows response only to con specific alarm however mynas responded to not the nonspecific alarm as well as the bulbul call. In this case, the alarm calls of mynas are not much reliable to bulbuls as compared to the reliability of alarm calls of bulbuls to mynas [5].

CONCLUSION

The present study provides a starting point to understand the avifauna of North Delhi. It can be seen that even a mega city like Delhi still supports huge populations of birds that have acclimatized to humans and live beside us. We believe that regular monitoring of these sites should be carried out to carry out a population census and to further understand the habitat niches that different species occupy with the support of universities and their students.

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