



## **Some observations on the behavioural changes in few resident birds during COVID-19 induced lockdown in Bhagalpur, Bihar.**

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### **Abstract**

Birds are very important component of the environment. They play major role to maintain the ecological balance being important member of different food chains. They are among the most vulnerable species to weather and climate change due to their high sensitivity to climate change. The effect of COVID -19 on animals came to fore front when cats, dogs, and even tigers tested positive for COVID -19. The present work includes the study of some aspects of behavioural changes observed in few resident birds during and just after COVID-19 induced lock down between March, 2020 to July, 2021 in Bhagalpur city and its adjoining areas in Bihar. Some uncommon behaviours were observed in some of the resident garden and wetland birds, during and after lock down. Sudden appearance of rare House sparrows and Bank mynas were recorded in large numbers on the market roads, human habitation areas and public gardens in Bhagalpur. Unusual flocking behaviour of House and Jungle crow, Bank myna and Jungle babbler were observed 2-3 times in a day in the residential localities. Oriental magpie robin, and Brown rock chat were found more active and vocal in comparison to other days. The pitch and quality of their call (song) were also recorded higher. Early arrival of Pied crested cuckoo and early breeding of Lesser adjutant stork were noticed during and after lockdown. Restlessness and unusual diurnal activities were also recorded in Red vented bulbul. All these unusual activities and behavioural changes as recorded in the above mentioned resident birds during and just after lockdown may be due to sudden and unexpected change in the climate and weather pattern, less human interferences and low level of noise pollution caused due to complete lockdown in the country and abroad. This study will be informative and useful for the birders, wild lifers and academicians too and will certainly draw the attention towards these type of changes in future for further study.

**Keywords:** Covid-19, behavioural change, flocking, breeding, singing, lockdown

### **Introduction**

Birds are eco-friendly creatures and are very important component of the environment. They play major role to maintain the ecological balance being important members of different food chains. (Ali, 2002; Choudhary and Mishra, 2006 and Choudhary *et al.*, 2009). Birds are among the most vulnerable species to

weather and climate change due to their high sensitivity to weather and climate (Sparks *et al.*, 2002). The outbreak of novel Corona virus or COVID -19, the biggest pandemic in the world is likely to be spread from human sea food market, Wuhan, Hubei province in china (Lu *et al.*, 2020; Shereen *et al.*, 2020 and Kaur, 2020). The COVID -19 has hit the human race hard for over ten months in two successive

2020 & 2021. But humans are not the only species that is suffering. The effect of COVID -19 on animals came to fore front when cats, dogs and even tigers tested positive for COVID-19 (Coste, 2020; Science daily, 2020). Some Corona viruses cause cold like illnesses in people while others cause illness in certain types of animals such as cattle, camels and bats (Bar, 2021; CGTN, 2020). It leads to emergence of the global pandemic. More than 216 countries are struggling against the transmission of this disease, its recovery and mortality (Bar, 2021).

Most of the countries adopted partial or complete lockdown procedure and imposed social distancing and other protocols to control the rapid transmission of COVID -19 and its consequence. The imposition of lockdown due to COVID -19 like pandemic stopped all the commercial activities like social, economic , industrial and urbanization activities and even the public movement were shut off . That greatly affected the various important environmental parameters which are directly correlated to human and animal health (Mahto *et al.*, 2020). Nature takes the advantage from these anthropause and showed improvement in air and water quality, less noise pollution, undisturbed and calm wildlife (Coste, 2020; Arora *et al.*, 2020, science daily, 2020).

Changes were seen not only in atmospheric environment rather less incidental human disturbances (noise, smell, movement etc ) resulted in wild animals increasing their movement and ranging behaviour and entering areas not usually used by them and therefore encountering humans (Rutz *et al.*, 2020) . There has been countless posts on social media over the past few months (during and after lockdown) reporting unusual wildlife encounters. Anecdotal observations, especially from metropolitan areas suggest that nature has reported well to lockdown. Not only birds but there are also some surprising visitors including fishes and mammals in an attempt to build a global picture of lockdown effect (Narayani , 2020 and Rutz *et al.*, 2020 ). Peahens were seen at M.N marg during lockdown in New Delhi, a leopard spotted at Hyderabad road during the lockdown period (Mandal *et al.*, 2021 and The guardian, 2020). Times of India reported on 25<sup>th</sup>, April, 2020 that after nearly three decades a fresh water Ganges river dolphin was back at Kolkata, India. Many evidences found in various parts of globe to indicate the use of man – zone by wildlife (Loring , 2020). There are many evidences that birds have been affected by climate change i.e. alteration in the timing of migration, early nesting and

breeding, uncommon diurnal activities ( Sparks *et al.*, 2002). Birds are also sensitive to landscape modifications as well as to the presence of persistent pollutants (Backhaus *et al.*, 2012).

The present investigation is aimed to study the behavioural changes in few resident garden and wetland birds in Bhagalpur city and its adjoining areas in Bihar during and just after lockdown between March, 2020 –July, 2021.

## Materials and Methods

Ten common resident birds were selected for the study on the basis of their, occurrence and sighting frequencies during and just after lockdown between March, 20 to July, 21 in Bhagalpur, Bihar and its nearby areas. The selected birds were House sparrow, House crow, Oriental magpie robin, Brown rockchat, Jungle babbler, Bank myna, Pied crested cuckoo, Red vented bulbul, Rufoustreepie and Lesser adjutant stork. Birds and their diurnal activities were studied by visual method and sometimes by using binoculars (Nicon 8×42) as per need. Certain study areas like public and school gardens, bushes and certain market places enriched with vegetation were selected for the study. These areas were visited twice in a week by walking or sometimes by using motorcycle. Morning (6 am - 8 am) and evening hours (4 pm - 6 pm) were selected for better observation.

Birds were identified by using standard key books of Salim Ali, (2002); Ali and Ripley, (1989) and Grimmett *et al.*, (2011). Activities were noted down for scientific documentation. Few photographs and videos were also taken by using a digital camera Nikon 820 (30 X) for evidence. Data are collected and summarised accordingly.

## Observations and Results

Some unusual and uncommon behaviours were recorded in following selected birds during and just after lockdown between March, 2020 to July, 2021 which are summarized below.

### 1. House sparrow (*Passer domesticus*):

House sparrow is commonly known as Goraiya and a member of sparrow family Passeridae. Female and young birds are pale brown and grey while male birds have bright black, white and brwn markings. It is a very common bird species of cities, villages and farms and also the most loved one (Ali and Ripley, 1989

and Grimmett *et al.*, 2011). But nowadays their sighting in urban localities has become very rare due to their habitat loss and chemical pollution (Deepalakshmi and Saloni, 2019).

During lockdown period their sighting frequency was significantly higher. Sudden appearance of House sparrows in large numbers were recorded after a long time in the public gardens and residential localities in Bhagalpur city, Bihar. Their flocks were common and were found chirping loudly in small groups. 20-50 birds clustered in city gardens and dense bushes and were chattering to one another. Their mating was also recorded in the last week of April.

## 2. House crow (*Corvus splendens*):

It is commonly known as Kauwa and a common bird of crow family. They are commonly seen in fields, farms, garbage dumps, near human habitations and often over busy streets foraging for scraps. They are highly opportunistic bird and take omnivorous diet (Ali, 2002; Grimmett *et al.*, 2011).

During lockdown period the frequency of flocking and roosting behaviour of House crows were recorded much more in residential localities as well as on the city roads in Bhagalpur. These birds were found restless and more active than other days and their call was heard even in the late night between 12 pm- 1 am. Their sighting even in the late evening was also noticed.

## 3. Oriental magpie robin (*Copsychus saularis*):

The Oriental magpie robin is a small passerine song bird belongs to the family Muscicapidae. It is distinctive black and white bird with a broad white wing bar running from the shoulder to the tip of the wing and long tail held upright during forage on the ground or perch conspicuously Grimmett *et al.*, 2011).

During lockdown period the detectability of these birds were found higher in the early morning between 5 am-6 am in comparison to other days. They were often seen singing with melodious calls from high perch on the building roofs and nearby trees in the city area. Frequent short flight of the birds from roof to roof or tree to tree was also recorded. Frequency, sweetness and pitch of loudness of the calls were also higher. These birds were found active in singing as well as foraging in the late evening too. Early breeding

of these birds were also recorded in the month of March in comparison to the previous years (the previous record is April to May).

## 4. Brown rock chat (*Cercomela fusca*):

The Brown rock chat is a small bird commonly known as Patharchiri belong to the family Muscicapidae. It lives most of its life in older settlements and mainly feeds on small insect capture mainly on the ground. It has a habit of slowly raising its tail slightly fanning it and bobbing its heads (Grimmett *et al.*, 2011).

During lockdown period detectability or sighting frequency of Brown rock chat in and around human habitation was significantly higher. Five to seven birds were often seen foraging on small insects and mosquitoes near road side drainages. Birds were recorded more active in the morning and evening hour. Pitch of their call was also significantly higher.

## 5. Jungle babbler (*Turdoides striatus*):

These birds are the member of the family leiothrichidae commonly known as Satbahna or seven sisters. The jungle babbler is a common resident bird commonly seen in small flock in bushes and gardens of villages, cities and neighbourhoods and forest areas (Ali, 2002).

During lockdown frequency of their sighting was found significantly higher in human habitations and on the city roads too. Flocking tendency was common. Birds were found indulged in foraging in chasing, playing and bathing. Early nesting was also recorded among these birds in the month of March 2021(previous record is April to May).

## 6. Bank Myna (*Acridotheres gingianus*):

It is more or less similar to common myna only differing in having brick red naked skin behind the eyes instead of yellow. Bank myna is a social bird generally found in pairs or in small flocks often in cultivated fields, grassland and near the wetlands (Ali and Repley, 1989).

During lockdown their sighting was very common in the urban area and human localities than other days. They were usually seen foraging in small and larger flocks on the market roads. They were recorded more active and vocal in the morning hours between 6- 8 am.

**7. Rufous tree pie (*Dendrocita vagabounda*):**

It is a member of the crow family corvidae. It is a long and stiff tailed bird's primarily rusty brown upper part and dull orange underpart and has loud musical calls making it very conspicuous, commonly found in open scurbs, agriculture areas forest as well as urban gardens (Ali, 2002).

This bird was found more active and vocal during lockdown period than otherdays. Their sighting was very common in the city gardens, and shrubs foraging on insects with other birds. Their call was loud and very consoicuous. Restlessness and uncommon hunting behaviour was also noticed in these birds sometimes found attacking smaller birds.

**8. Pied Crested Cuckoo (*Clamator jacobinus*):**

It is member of the cuckoo family cucuridae. Partially migratory and has been considered a harbinger of the monsoon rains due to the timing of its arrival (Ali, 2002).

This bird has been considered as summer migrant and used to visit Bhagalpur city every year in the 2<sup>nd</sup> week of May between May 13 to 18<sup>th</sup> (as per our previous observation) but during lockdown period this bird was recorded earlier in the last week of April( 27<sup>th</sup> April) in Bhagalpur urban area in both the years 2020 & 2021. These birds were found more restless than other days and their calls were heard in the late night too. Sighting frequencies in human localities and public gardens was also higher.

**9. Red vented bulbul (*pycnonotus cafer*):**

The Red vented bulbul is a small, resident and common garden bird of bulbul family - pycnonotidae. It feeds upon fruits, seeds, nectar and small insects. It is a slim, dark, medium sized song bird with a black crest, white rump and deep red vent (Grimmett *et al.*, 2011).

**Table A : Showing some behavioural Changes in following resident birds recorded during and just after COVID-19 induced lockdown period ( between March, 2020 to July, 2021 ) in Bhagalpur, Bihar.**

S. No.	Hindi name	English name	Scientific name	Family	Sighting frequency	Behaviours recorded
01	Goraiya	House sparrow	<i>Passer domesticus</i>	Passaridae	Very common	More focking tendency
02	Kauwa	House crow	<i>Corvus splendens</i>	Corvidae	„	„
03	Dahiyar	Oriental magpie robin	<i>Copsychus saularis</i>	Muscicapidae	„	Conspicuous call with higher pitch
04	Patharchiri Or Sama	Brown rockchat	<i>Cercomela fusca</i>	Muscicapidae	common	„
05	Satbahna	Jungle babbler	<i>Turdoides striatus</i>	Leiotherichidae	Very common	More flocking tendency
06	Gang myna	Bank myna	<i>Acridotheres gingianus</i>	Sturnidae	common	More active and vocal
07	Mahalat	Rufous tree pie	<i>Dendrocita vagabounda</i>	Corvidae	Very common	Uncommon hunting behaviour
08	Chatak	Pied crested cuckoo or Jacobin's cuckoo	<i>Clamator jacobinus</i>	Cucuridae	common	Early arrival and conspicuous call
09	Bulbul	Red vented bulbul	<i>Pycnonotus cafer</i>	Pycnonotidae	Very common	More flocking tendency
10	Chotagarur or Chandiyari	Lesser adjutant stork	<i>Leptoptilos javanicus</i>	Ciconidae	common	Early nesting



During lockdown period their sighting frequencies was very high in the gardens and human habitations. More flocking tendencies were noticed among these birds during this period. Fifteen to twenty birds clustered in the gardens and were chattering to one another. Their calls were more conspicuous than other days.

#### 10. Lesser Adjutant stork (*Leptotilos javanicus*):

This is a large wetland bird of stork family Ciconidae, commonly known as Chotagarur or chandiyari in Bihar. It generally breeds between September to February in different part of Bihar. The kosi-kadwa flood plain in district Bhagalpur in Bihar is a potential breeding ground for lesser and Greater Adjutant storks and these storks usually arrive to this particular breeding site every year in the last week of August for nesting (Choudhary *et al.*, 2012).

But in 2020 and 2021 just after lockdown, early nesting tendency was recorded among these storks. They started to arrive to this breeding site of Kadwa village in between last week of June to first week of July showing the early nesting tendency as recorded by us in both the years of 2020 and 2021.

#### Discussion

Birds are among the most vulnerable species to weather and climate changes due to their high sensitivity to climate and weather (Sparks *et al.*, 2002). The sudden appearance of rare House sparrows, sighting of Oriental magpie robins and Brown rockchats in the early mornings well as in late evenings as noticed during and just after lockdown in the urban areas, gardens and human habitations in Bhagalpur may be due to less or restricted human interferences with nature during this crisis time (Lokhandwala and Pratibha, 2020) or may be due to less noise pollution (Arora *et al.*, 2020).

Unusual hunting behaviour of Rufoustreepies as recorded during that period may be due to restricted or undisturbed human life pattern (Sparks *et al.*, 2002) or may be due to reduction in noise causing birds and other animals to behave differently (Bar, 2021). Loud and melodious call of Oriental magpie robin and Pied crested cuckoo with higher pitch heard from long distance during lockdown may be due to less noise pollution (Arora *et al.*, 2002) or may be due to increase communication among the song birds (Derybery and Luther, 2021). Complete lockdown

affected the various important environmental parameters which are directly or indirectly correlated with human as well as animal health (Mahto *et al.*, 2020).

Much flocking tendency as recorded in House and Jungle crows, Jungle babblers, Red vented bulbuls, Common and Bank mynas may be due to human confinement and less human disturbances during lockdown which gave space to birds and other animals which was usually occupied by a human and their activities (Narayani, 2020).

Birds particularly are diverse and are high in the food chain which makes them sensitive to changes in the environment as well as at lower food change levels (Thomas *et al.*, 2004). There are already evidences that changes to weather pattern and climate change have impacted bird's behavior (Parmesan, 2006 and Both *et al.*, 2006). Early arrival of Lesser adjutant stork for breeding in Kosi-Kadwa flood plain in the month 1<sup>st</sup> week of July and early arrival of Pied crested cuckoo ( a summer migrant ) in Bhagalpur and its adjoining areas in the last week of April in 2020 and 2021 were due to lengthening or variation in their periods of reproduction and migration (Bar, 2021) or may be due to sudden change in weather pattern and climate which have impacted bird's behaviour including alteration in the timing of migration, and change in breeding performance and breeding success (Crick, 2004), or may be due to variation in their population and their distribution (Rushing *et al.*, 2008 and Jonzen *et al.*, 2006).

#### Conclusion

On the basis of above observations we can say that nature has pressed the reset button and rejuvenate its wildlife during the lockdown. Though it is a short term improvement in the nature and environmental conditions yet it has given a lesson that one can manage or control over the unwanted or adverse changes in weather and climate by applying proper skill and management.

The COVID-19 lockdown offered a scope for experiment in animal behaviour. Unexpected reduction in human activities, low level of pollution and sudden silence of locality surprised the birds and other animals and pushed them to show some uncommon behaviours, certainly a matter of scientific study and research.

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