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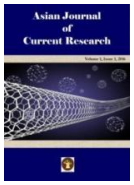

COVID 19 LOCKDOWN AND THE DIVERSITY OF REPTILES, BIRDS AND MAMMALS: A HOME POINT STUDY FROM BANKURA MUNICIPALITY, WEST BENGAL

ANINDITA BAR[1*]
[1]Ramananda College, Bishnupur, Bankura, West Bengal, India.

AUTHOR'S CONTRIBUTION
The sole author designed, analysed, interpreted and prepared the manuscript.

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Original Research Article

ABSTRACT

Reptiles, birds and mammals are the natural gene pool which contributes to the biodiversity of an area. The current study is aimed to prepare a baseline checklist of reptiles, birds, and mammal's species from the home point. The COVID 19 lockdown situation provides a great opportunity to design such study. The lower level of water and air pollution, decrease in human interference gives a breathing space for wild life. The study was conducted for a period of six months (from May to October, 2020), which includes pre monsoon, monsoon and post monsoon periods. From this study 71 species of birds from 35 families was documented. Among them insectivorous is the largest group (36.6%). According to the residential status of the birds 83% are residential birds, 8.5% are local migrants and rest 8.5 % are winter migrants. This study has also identifies 9 wild mammals species of 7 families. 10 reptile species of 6 families were observed and among them two are deadly poisonous (Common krait, Indian cobra). A rapid urbanization and construction is now become a threat for these birds and animals. More environmental awareness, plantation of more fruiting plants is needed to maintain the biodiversity of this area.

Keywords: Pandemic; SARS-COV 2; biodiversity; environmental pollution; snakes.

1. INTRODUCTION

Almost the entire world is being challenged by the pandemic zoonosis identified as Corona virus disease (COVID- 19). It is a novel zoonotic corona virus, SARS-CoV-2, that causes severe respiratory symptoms. SARS-CoV-2 was first isolated in China, during December 2019, and its rapid subsequent spread has enormously affected people's daily lives and public health systems [1]. The majority of countries around the world have decided to take it as National emergency and impose lockdown to maintain social distancing [1]. Until and unless an effective vaccine is there lockdown is the only possible way to maintain social distancing and to reduce the spread of the virus [2]. This lockdown has a great positive impact on certain environmental parameters [3]. Air, water and noise pollution decreases to a considerable level during this lockdown period [4,5]. Few describe it as "anthropause" and few told that "nature just regains its space" [1]. This restriction of human activities and confinement of human gives a space to animal and birds [3]. The increased activity and spotting of birds and animals world wide, support the information [6].

**Corresponding author: Email: baranindita@gmail.com;*

This lockdown situation provide a great opportunity to conduct a home point study of birds, reptiles, mammal's diversity, and their habit, habitat, mating, nesting and parenting behavior [7]. The diversity and availability of reptiles, birds and mammals differ greatly with variation in topography, and the environmental factors like altitudes, landscapes, climates, vegetation, availability of food and water, etc [7,8]. As the state West Bengal has a great altitudinal geographical and climatic variation it houses a large number and variety of flora and fauna [9]. The study site is a semi urban area of Bankura municipality under Bankura district, West Bengal. Bankura district also has rich biodiversity as the district has dense forest range, rivers, and rocky hills like diverse landscape. The western part of the district is the lower edge of Chota Nagpur plateau [10]. The highest point of the district is Biharinath hill (451 m) [10]. The study point named Panchbaga is about 48 kilometre away from Jaypur forest, 60 kilometre away from Sutan forest and 19 kilometre away from Susunia hill of the district.

1.1 Aims and Objectives

The study has two main objectives. The first and foremost important objective is to prepare a baseline document of wild reptilians, birds and mammals of a municipality area. Bankura has three forest divisions, Bankura north, Bankura south and Panchet divison. Flora and fauna checklist of these forest divisions are but a very few documents are there about the urban wildlife diversity. So this study aims to prepare a list of birds, mammals and reptiles of this area. The second objective is to study the effect of lockdown period, on birds and animal population, when pollution is reportedly low, human intervention is limited.

2. MATERIALS AND METHODS

2.1 Materials

A. Olympus 10X50 DPS I binocular.
B. Olympus SP-565UZ camera.
C. Observation data sheet.
D. Birds of the Indian Subcontinent –Richard Grimmett, Carol Inskipp, Tim Inskipp.
E. The book of Indian Birds-Salim Ali.
F. Indian Mammals, a field guide-Vivek Menon.

2.2 Methods

2.2.1 Study area

The study area is located in Bankura municipality town at ward number-24, West Bengal, India. Name of the area, where the home point is located, is Panchbaga. The geographical location of the study point is in the coordinates of 23˚14'57"N and 87˚02'47"E and 94 m above sea level (a.s.l.). The rooftop and balcony of the house was used as observation point.

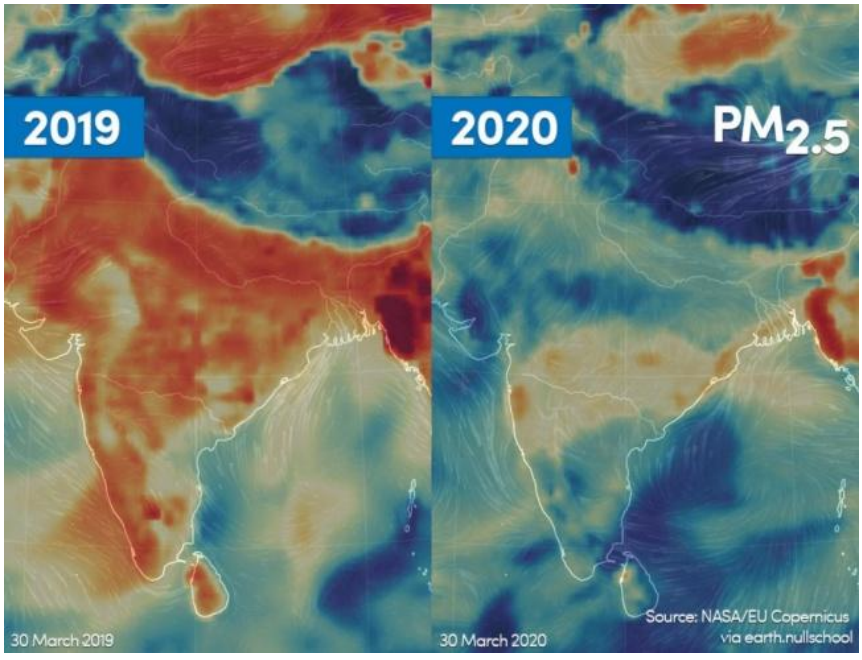

Fig. 1. Air pollution scenario of India in 2019 and 2020, before and after lockdown

Bankura Municipality town consists of 24 wards and it is the district head quartet. The temperature rises up to 38 degree Celsius in the summer (May-June) and decreases to 12.1 degree Celsius in the winter (December-January) with 1,236 mm average annual rain fall [10,11]. The study area has an extreme dry and hot summer and in rainy seasons there is a moderate rainfall. Therefore, the fluctuations in temperature and rain fall affect the vegetations, fruiting plants as well as the population of the birds, reptiles and mammals species. The study point is surrounded with two large open grasslands with few big trees, fruiting plants and bushes. One small pond is there on one side of the house. Thus the place became an ideal foraging, resting and nesting site for various kinds of vertebrates and invertebrates. The electric pools and wires provide resting and nesting place for some kind of birds.

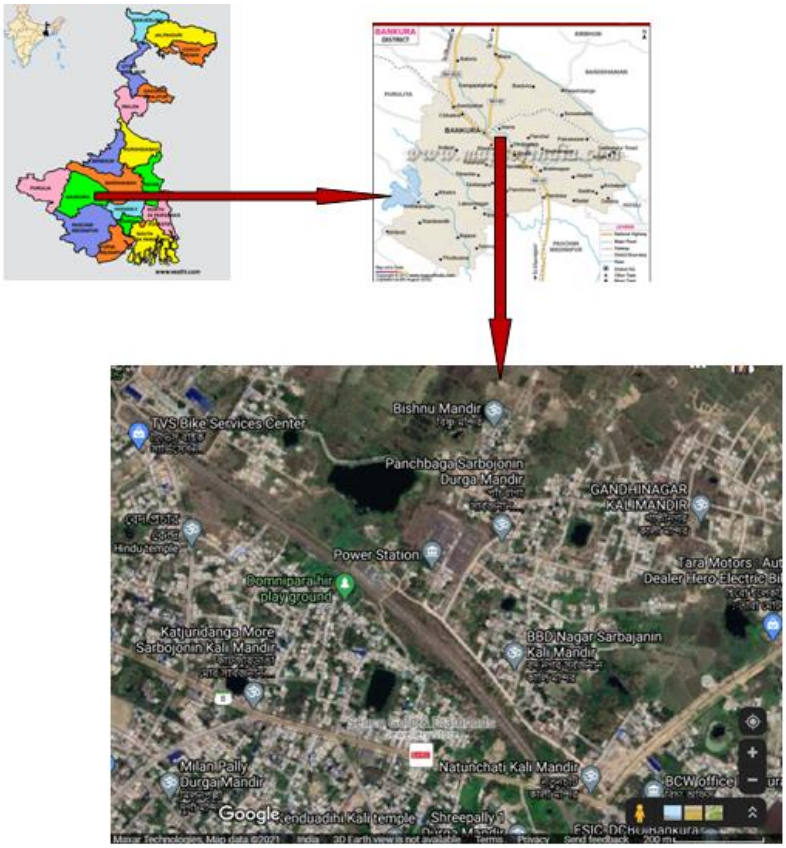

Fig. 2. Geographical location of Panchbaga (Bankura)

Table 1. Table showing temperature and precipitation of the district Bankura [10]

Parameters	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Average Temperature (°C)	19.3	22.1	27.3	31.4	32.2	31.2	28.9	28.8	28.7	27	22.7	19.7
Minimum Temperature (°C)	12.5	15.2	20	24.3	26.4	26.4	25.7	25.7	25.3	22.7	16.7	13.1
Maximum Temperature (°C)	26.2	29	34.6	38.6	38	36	32.1	31.9	32.1	31.4	28.8	26.3
Precipitation/ Rainfall (mm)	12	15	22	30	58	201	293	277	222	93	12	1

Source: https://en.climate-data.org/asia/india/west-bengal/bankura-5553

2.2.2 Study period

May to October 2020 for a period of 6 months. It includes pre monsoon, monsoon and post monsoon periods. The total study period shows a large variation of temperature and rainfall.

2.2.3 Data collection

The observation and identification of all the birds, mammals and reptile species was recorded from a home point. The animal species were observed and listed in "Observation Data Sheet" twice daily (in a continuous sitting of 1 hour at 6 to 7 AM and 5 to 6 PM). The observation was made and recorded throughout the day, when possible beyond the two hours seating time. The number of individual observed that is the range was also recorded every time. The photographs and/or videos were taken by using Olumpus SP-565UZ camera. The species of these reptiles, birds and mammals were identified with the help of field guide books and with a free search from Wikipedia and Animal Diversity Web (ADW). The impact of daily and seasonal weather condition such as temperature, rain and daylight was also considered to influence the regular activities and sighting of animals and birds. The foraging activity of animals was infrequently in raining days, in summer days they prefer dawn and dusk time for maximum activities.

3. RESULTS AND DISCUSSION

3.1 Results

From this home point study a total number of 71 species under 35 families of birds were observed and identified. In case of mammals total 9 wild species of 7 families was observed and identified. 10 reptilian species under 6 families were also documented.

Table 2. Check list of birds' species recorded in the home point

order	family	Scientific name	Common name	Residential status (*)	Feeding habit (**)
Passeriformes	Dicruridae	*Dicrurus macrocercus*	Black Drongo	R	I
	Corvidae	*Corvus splendens*	House crow	R	F
		Corvus macrorhynchos	Black crow	R	F
		Dendrocitta vagabunda	Rufous Tree pie	R	F
	Muscicapidae	*Copsychus saularis*	Oriental magpie robin	R	I
		Saxicoloides fulicatus	Indian robin	R	I
		Saxicola caprata	Pied bushchat	R	I
	Pycnonotidae	*Picnonotus cafer*	Red vented bulbul	R	F
		Picnonotus jocosus	Red whiskered bulbul	R	F
	Nectariniidae	*Cinnyris asiaticus*	Purple sunbird	R	N
		Leptocoma zeylonica	Purple rumped sunbird	R	N
	Sturnidae	*Acridotheres tristis*	Common maina	R	F
		Acridotheres fuscus	Jungle maina	R	F
		Gracupica contra	Asian Pied starling	R	F
		Sturnia pagodarum	Brahmini starling	LM	F
		Sturnia malabarica	Chestnut tailed starling	WM	F
	Passeridae	*Passer domesticus*	House sparrow	R	G
	Motacillidae	*Motacilla alba*	White wagtail	WM	I
		Motacilla flava	Yellow wagtail	WM	I
		Motacilla cinerea	Grey wagtail	WM	I
	Cisticolidae	*Orthotomus sutorius*	Tailor bird	R	I
		Prinia socialis	Ashy prinia	R	I
		Prinia inornata	Plain prinia	R	I
	Leiothrichidae	*Turdoidis straita*	Jungle babbler	R	I
	Laniidae	*Lanius cristatus*	Brown shrike	R	I
		Lanius schach	Long tailed shrike	R	I
	Oriolidae	*Oriolus xanthornus*	Black hooded oriol	R	F

order	family	Scientific name	Common name	Residential status (*)	Feeding habit (**)
		Oriolus oriolus	Eurasian Golden oriol	R	F
	Ploceidae	*Ploceus benghalensis*	Black breasted weaver	R	I
	Estrildidae	*Lonchura punctulata*	Scaly breasted munia	R	G
	Aegithinidae	*Aegithina tiphia*	Common iora	R	F
	Campephagidae	*Pericrocotus cinnamomeus*	Small minivet	R	I
Cuculiformes	Cuculidae	*Centropus sinensis*	Greater coucal	R	F
		Hierococcyx varius	Common hawk cuckoo	R	F
		Eudynamys scolopaceus	Common koel	R	F
Ciconiiformes	Ardeidae	*Ixobrychus sinensis*	Yellow bittern	R	P
		Bubulcus ibis	Cattle egret	R	I
		Egretta garzetta	Little egret	R	P
		Ardeola grayii	Pond heron	R	P
	Phalacrocoracidae	*Phalacrocorax fuscicollis*	Indian cormorant	R	P
		Phalacrocorax niger	Little cormorant	R	P
	Ciconiidae	*Anastomus oscitans*	Asian openbill stork	LM	MOLL
	Charadriidae	*Vanellus indicus*	Red wattled lapwing	LM	I
Coraciiformes	Alcedinidae	*Halcyon smyrnensis*	White throated kingfisher	R	P
		Alcedo atthis	Common kingfisher	R	P
		Halcyon capensis	Stork billed kingfisher	R	P
	Meropidae	*Merops orientalis*	Green bee eater	R	I
	Coraciidae	*Coracias bengalensis*	Indian roller	R	I
Columbiformes	Columbidae	*Columba livia*	Rock pegion	R	G
		Streptopelai decaaocto	Eurasian Collared dove	R	G
		Spilopelia chinensis	Spotted dove	R	G
		Treron phoenicoptera	Yellow footed green pegion	WM	F
Charadriiformes	Jacanidae	*Metopidius indicus*	Bronze winged jacana	R	AI
Psittaciformes	Psittacidae	*Psittacula krameri*	Rose ringrd parakeet	R	F
		Psittacula cyanocephala	Plum headed parakeet	R	F
Strigiformes	Tytonidae	*Tyto alba*	Barn owl	R	C
	Strigidae	*Athene brama*	Spotted owlet	R	C
Apodiformes	Apodidae	*Cypsiurus balasiensis*	Asian palm swift	R	I
		Apus pacificus	Fork tailed swift	R	I
		Apus affinis	House swift	R	I
Accipitriformes	Accipitridae	*Milvus migranus*	Black kite	LM	C
		Accipiter badius	Shikra	LM	C
		Elanus caeruleus	Black shouldered kite	LM	C
Piciformes	Megalaimidae	*Megalaima haemacephala*	Coppersmith barbet	R	F
		Megalaima asiatica	Blue throated barbet	R	F
		Megalaima lineata	Lineated barbet	R	F

order	family	Scientific name	Common name	Residential status (*)	Feeding habit (**)
	Picidae	*Chrysocolaptes lucidus*	Flameback woodpecker	R	I
		Dinopium bengalense	Black rumped woodpecker	R	I
		Micropternus brachyurus	Rufous woodpecker	R	I
Upupiformes	Upupidae	*Upupa epops*	Common Hoopoe	WM	I
Suliformes	Anhingidae	*Anhinga melanogaster*	Darter	R	P

(*) R-Residential (59-83%), LM- Local Migrants (6-8.5), WM- Winter Migrants (6-8.5).
(**) C= Carnivorous, F= Frugivorous, I= Insectivorous, P= Piscivorous, G= Granivorous, N= Nectivorous, AI= Aquatic insectivorous, Moll= Molluscivorous

Table 3. Checklist of mammals' species recorded in the home point

Sl no.	Common name	Scientific name	Family	Habitat type
1.	Indian grey mongoose	*Herpestes edwarsi*	Herpestidae	Terrestrial
2.	Fruit bat	*Pteropus sp.*	Pteropodidae	Aerial
3.	Microbat	*Microchiroptera sp.*	Chiroptera	Aerial
4.	Asian house shrew	*Suncus murinus*	Soricidae	Terrestrial
5.	Little Indian field mouse	*Mus booduga*	Muridae	Terrestrial
6.	Greater bandicoot rat	*Bandicota indica*	Muridae	Terrestrial
7.	House mouse	*Mus musculus*	Muridae	Terrestrial
8.	Gray Langur	*Semnopithecus sp.*	Cercopithecidae	Arboreal
9.	Indian palm squirrel	*Funambulus palmarus*	Sciuridae	Arboreal

Table 4. Checklist of reptiles' species recorded in the home point study

Sl no.	Common name	Scientific name	Family
1.	Indian house lizard	*Hemidactylus frenatus*	Gekkonidae
2.	Garden lizard	*Calotes versicolor*	Agamidae
3.	Skink	*Mabuya sp.*	Scincidae
4.	Common krait	*Bungarus caeruleus*	Elapidae
5.	Indian rat snake	*Ptyas mucosa*	Colubridae
6.	Indian cobra	*Naja naja*	Elapidae
7.	Checkered keelback	*Fowlea piscator*	Colubridae
8.	Buff striped keelback	*Amphiesma stolatum*	Colubridae
9.	Split keelback	*Atretium schistosum*	Colubridae
10.	Brahminiy blind snake	*Indotyphlops braminus*	Typhlopidae

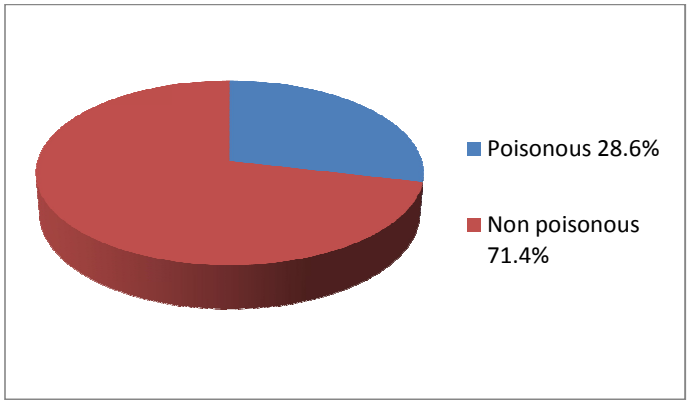

Fig. 3. Percentage of poisonous and non-poisonous snakes in study area

3.2 Discussion

From the above results it is observed that the place Panchbaga has a rich diversity of reptiles, birds and mammals. 71 bird species under 35 families were observed. Among them Common Maina (*Acridotheres tristis*) and Jungle Babbler (*Turdoidis straita*) are dominant in number and frequency of sighting. A primary diet based classification of the birds shows that there are 22 species of frugivorous birds (31%), 26 species are insectivorous (36.6%), 9 are piscivorous (12.6%), 5 are carnivorous (7%), 5 are granivorous (7%), 2 are nectivorous (3%), 1 species is aquatic insectivorous (1.4%) and 1 is molluscivorous (1.4%) [12,13]. This wide range of variation in diet indicates that the area is biodiversity rich and the lockdown situation may have a positive effect in the species richness. Birds are good indicator of environmental conditions, so the current study shows a good environmental health of this area [14]. Most of them are residential birds (83%) [15,16]. Some of them are local migrants (8.5%) and some are winter migrants (8.5%) in West Bengal.

In case of reptiles there are 10 species under 6 families. Among these 11 species there are non-poisonous as well as poisonous snakes. The summer and monsoon period are the most sighting time of snakes. Matting takes place during this time and their overall activities like prey capturing, nest building (if any), increases greatly. The bushy grassland and presence of some termite mounds make the area ideal for snakes.

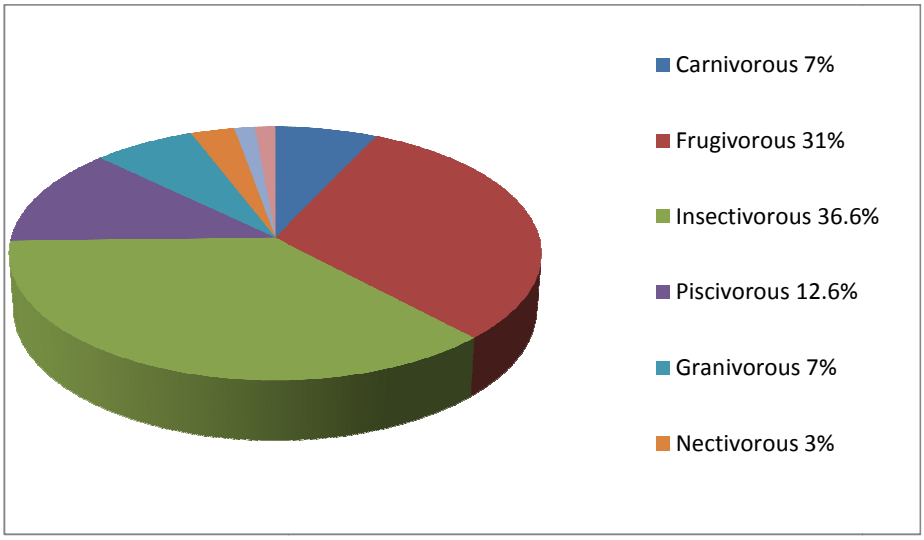

Fig. 4. Percentage of bird species according to their diet

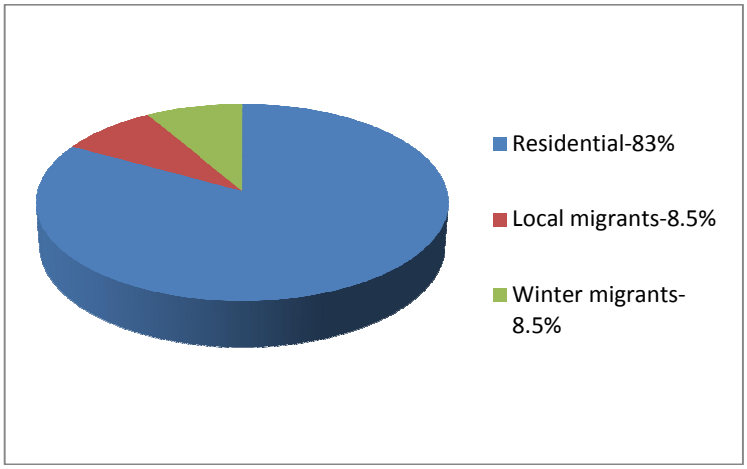

Fig. 5. Percentage of birds according to their migratory status

234 wild mammalian species were listed from West Bengal [17]. 9 species of wild mammalian species under 7 families are identified from this study. They have various kinds of habit and habitat. Most of them are terrestrial, 2 species are aerial in nature and 2 species are arboreal. Among them 5 species are nocturnal.

3.2.1 Effect of temperature and rainfall

Temperature and rainfall varies considerably during the study period. Sighting of the birds and animals also changes with the changing degree of temperature and rainfall. During hot summer months (May, June), with minimum rainfall, most of the sighting occurs during early morning and afternoon. Most of the birds try to avoid the scorching heat of the summer noon by taking shelter under shades and leafs. Reptiles prefer the summer and rainy evenings for prey capturing. Heavy raining days are also not suitable for sighting birds and mammals. Winter migrant birds visit the study site during September to February, but most reptiles hibernate during these winter days. Mammals sighting is almost consistent during all the study period.

4. CONCLUSION

During the Covid-19 lockdown an overall increase of environmental condition has recorded and reported by various satellite imageries. These improved environmental parameters and the decreased human interventions may have a great positive impact on animal population. In the current home point study a large diversity of birds also indicate the point. Reptiles and mammals also have a considerable number of species. As ecological dynamics and prey-predator relationship suggests, there must be a large number of other vertebrate and invertebrates in the study area. In recent time this municipality area is going through a rapid urbanization and constructions. Current urbanization trends show a huge and rapid urbanization of small and interior towns compare to large cities [18]. These anthropogenic activities can lead to decrease the biodiversity of this area. Plantation of large fruiting trees, conservation of wetlands can help to sustain and to increase the biodiversity.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Manenti R, Mori E, Di Canio V, Mercurio S, Picone M, Caffi M, et al. The good, the bad and the ugly of COVID-19 lockdown effects on wildlife conservation: Insights from the first European locked down country. Biological Conservation. 2020;249: 108728.
2. Bar H. COVID-19 lockdown: Animal life, ecosystem and atmospheric environment. Environment, Development and Sustainability. 2020;1-18.
3. Arora S, Bhaukhandi KD, Mishra PK. Coronavirus lockdown helped the environment to bounce back. Science of the Total Environment. 2020;140573.
4. Helm D. The environmental impacts of the coronavirus. Environmental and Resource Economics. 2020;76:21-38.
5. Rupani PF, Nilashi M, Abumalloh RA, Asadi S, Samad S, Wang S. Coronavirus pandemic (COVID-19) and its natural environmental impacts. International Journal of Environmental Science and Technology. 2020;1-12.
6. Abd Rabou AFN. How Is the COVID-19 Outbreak Affecting Wildlife around the World?. Open Journal of Ecology. 2020;10(8).
7. Chaudhary B. Home Point Study of birds and mammals diversity allied to humans in lockdown of COVID-19 at Bharatpur, Chitwan, Nepal. Open Journal of Ecology. 2020;10(09):612.
8. Pramanik AK, Santra KB, Manna CK. Abundance and diversity of plants and animals in the Kulik bird sanctuary, Raiganj, West Bengal, India. Journal of Biodiversity. 2010;1(1):13-17.
9. Hossain A, Aditya G. Avian diversity in agricultural landscape: records from Burdwan, West Bengal, India. In Proceedings of the Zoological Society. Springer India. 2016;69(1):38-51.
10. District survey report of Bankura district. As per notification no. S.O. 3611 (E) New Delhi. Ministry of Environment, Forest and Climate change (MoEFCC); 2018.
11. Raha S, Gayen SK. Simulation of meteorological drought using exponential smoothing models: A study on Bankura District, West Bengal, India. SN Applied Sciences. 2020;2(5):1-24.
12. Lopes LE, Fernandes AM, Medeiros MC, Marini MÂ. A classification scheme for avian diet types. Journal of Field Ornithology. 2016;87(3):309-322.
13. Dubey SK, Chakraborty DC, Sandipan G, Mahashweta M, Ranita B, Neogy AB. Avian diversity in the Jaldapara National Park, West Bengal, India with a notes on their habitat

association and feeding guild. Indian Forester. 2015;141(10):1092-1101.
14. Roy MB, Chatterjee B, Mukherjee TRISHA, Roy PK. Environmental threat to wetland bio-diversity of migratory bird: a case study of peri-urban area of West Bengal. Asian Journal of Current Research. 2016;1(1):30-38.
15. Mistry J. Avifaunal diversity in and around Berhampore, Murshidabad district, West Bengal, India. International Journal of Fauna and Biological Studies. 2015;2(4):06-10.
16. Padmavathy A, Alexandar R, Anbarashan M. Diversity of birds in ousteri wetland, Puducherry, India. Our Nature. 2010;8(1):247-253.
17. Mallick JK. An updated checklist of the mammals of West Bengal. Journal on New Biological Report. 2019;8(2):37-123.
18. Chakraborty S, Chatterjee S, Das K, Roy U. Changing pattern of urbanization in West Bengal: An analysis of 2011 census of India data. Asian Journal of Research in Social Sciences and Humanities. 2015;5(5):169-181.