

**IMPACT OF MOBILE TOWER RADIATION ON BIRDS IN DISTRICT
RAJNANDGAON AND DONGARGARH AREA OF CHHATTISGARH****Shanti Verma¹, Dr. Shweta Sao² and Dr. R. K. Singh^{3*}**

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ABSTRACT

A field survey was conducted on effect of mobile tower radiation on birds in Rajnandgaon & Dongargarh area from January 2018 to May 2018, in different sites of mobile tower situated in this area. Result indicate that total reduced birds in Rajnandgaon city 54.31% and 45.69% birds live in Rajnandgaon and total reduced birds in Dongargarh city 51.69% and 48.30% birds live in Dongargarh. Study reveal that decrease the number of common house birds in Rajnandgaon and Dongargarh due to increase number of mobile towers day by day. During the study period recorded 11 species viz Coracias benghalensis [Indian Roller/Nilkanth] Grus leucogeranus [Crane], Gyps bengalensis [Vulture/Giddh], Dicrurus macrocercus [Black drongo], Corvus splendens splendens [Crow], Psittacula krameri [Parrot], Coccyzus

americanus [Cuckoo], Passer domestica [House sparrow], Columba livia [Pigeon], Aquila chrysaetos [Golden Eagle] and Acridotheres tristis [Common Myna] at all observation sites. Population density, abundance of birds diversity is significantly high in Dongargarh area due to less number of mobile tower and rich forest area. The number of mobile users in India is increasing day by day. So, that how many radiations are around us and what its impact on birds population and what will happen in future?. Observations also show that number of some local birds near mobile towers has gone down due to radiation impact. After reviewing all the data available on the subject that the EMFs is like a pollutant. According to this survey

report recommended that regular auditing of EMR levels and creating awareness regarding hazardous pollution. Its need to framing new law of strictly follow the regulation to protect urban flora and fauna from threats like EMR.

KEYWORDS: Electromagnetic Radiation, Radioactive waves, Cell Towers.

INTRODUCTION

The Rajnandgaon District is located in the centre of the Chhattisgarh state covering an area of 6396.28 sq. km. It was formed on 26th January in 1973, by separating from the Durg district. It was originally called Nandgram, but was again divided on 1st July 1998 and the new district of Kawardha was formed. The total population of the district is 12, 83, 224, consisting of 6,34,342 males and 6,48,882 female population. The District Rajnandgaon is in the central part of Chhattisgarh. The District headquarter Rajnandgaon is on the Mumbai - Howrah line of south eastern railways. The National Highway 6 (Great Eastern Road) also passes through the town of Rajnandgaon. Rajnandgaon situated only 80 Km from Raipur is one of the important cities in Chhattisgarh and the headquarters of Rajnandangaon district. It is amongst few cities of India which shows ancient heritage and colonial relics at the same time. The Palaces in the town of Rajnandgaon reveals its own tradition of the rulers, their society & culture and the splendred tradition during that time. The contribution of Gajanan Madhav Muktibodh, Padumlal Punnalal Bakshi and Baldeo Prasad Mishra in the field of Hindi literature has a special mention. (Rajnandgaon.gov.in).

MOBILE TOWER STATUS IN RAJNANDGAON

During the survey of Rajnandgaon area have following mobile tower viz, Airtel-120, Idea-30, BSNL-35, Tata Docomo-27, Vodafone-17 and Jio-50.

Table 1- MOBILE TOWER STATUS IN RAJNANDGAON.

Area Name \ Telecom Company	Airtel	Idea	BSNL	Tata docom	Vodafone	Jio
Jay Stambh Chouk	1	-	-	-	-	1
Mamta Nagar	1	-	-	-	1	1
Chikhali	1	1	1	-	-	2
Basantpur	2	-	1	1	1	1
Post Office Chouk	1	-	-	-	-	-

1-Jay Stambh Chouk

- Arora Complex(Airtel +Jio)
- Tirupati Complex (Jio)

2-Mamta Nagar

- Gali no.5 (Airtel+Idea)
- Janki Charan Complex (Jio)
- Gali no.5 (Vodafone)

3-Chikhli

- Near over Brij (BSNL)
- Kheragarh Road (Airtel+Vodafone+Idea)
- Kheragarh Road (Jio)
- Kheragar Road (Idea)
- Behind Home Guard Office (Jio)

4-Basntpur

- Sabras restorent (Airtel)
- Shri Sidhivinayak Agensi Bajar Chouk (Airtel+Idea)
- Basantpur Chouk (BSNL)
- Dongargaon Road (Vodafone)
- Basantpur Chouk,Dongargaon Road (TATA DOCOMO)
- Near Shukla Hospital (Jio)

5-Post office chouk

- Crime Branch Office ((Airtel+Vodafone+Idea)

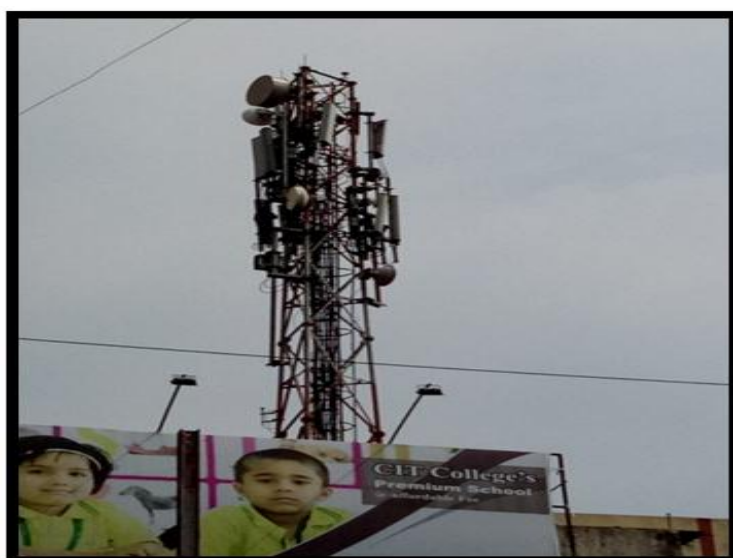


Fig. 1: Arora Complex (Airel).



Fig. 2: Tirupati Complex (Jio).

Table 2 Mobile Tower Status In Dongargarh.

Area Name \ Telecom Company	Airtel	Idea	Bsnl	Tata docom	Vodafone	Jio
Near Choti Bamleshwari Railway Crossing	-	1	-	-	-	-
Behind Bamleshwari Sarkari Hospital Dongargarh	1	-	-	-	-	-
Kedarbadi Dongargarh	1	-	-	-	-	-
Behind Budhwari Charch	-	-	-	-	1	-

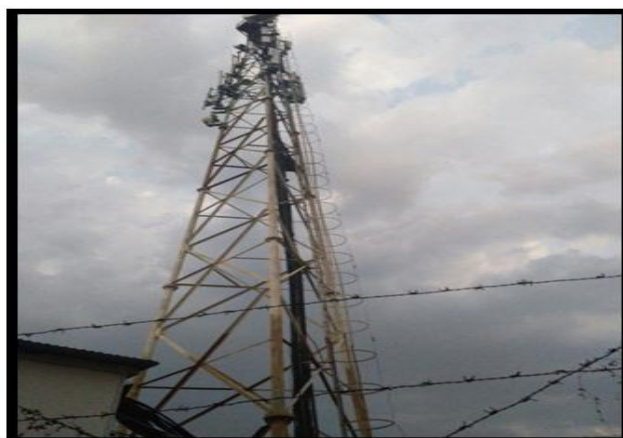


Fig. 3: Near Choti Bamleshwari Railway Crossing.



Fig. 4: Behind Bamleshwari Sarkari Hospital Dongargarh.

MATERIALS AND METHODS

Survey area

Rajnandgaon

Rajnandgaon is the capital city of Rajnandgaon District, in the state of Chhattisgarh, India. As of the 2011 census the population of the city was 163,122. Rajnandgaon district came into existence on 26 January 1973, as a result of the division of Durg district. The District headquarter Rajnandgaon is on the Mumbai - Howrah line of south eastern railways. The National Highway 6 (Great Eastern Road) also passes through the town of Rajnandgaon.

Dongargarh

Dongargarh is a city and municipality in Rajnandgaon District in the state of Chhattisgarh. The city distance about 35 kilometres west from Rajnandgaon and 111 kilometres from Raipur by road, tourist as well as pilgrimage centre for famous Maa Bambleshwari, Davi temple situated on the hill top.

Data collection

In the study we have taken up a brief survey in the areas where the mobile tower situated, to get a clear estimate of how much of radiations are emitted by these mobile towers affecting the bird counting status of residence and environment from January 2018 to May 2018. Study area visited 2 times in a day, the observation were made between 2-3 hrs morning and 2-3 hrs evening and birds were identified.

Equipment

Birds activities are often rewarded using the latest android mobile way to photography, birds in never to touch them.

IBMs SPSS Tool

SPSS is a comprehensive and flexible statistical analysis and data management solution for almost thirty years now. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and conduct complex statistical analysis.

RESULTS

Effect of Mobile Tower Radiation on Birds in Rajnandgaon city. Birds have reduced at city. Research have found that 54.28% totally reduced bird in Rajnandgaon area which factor of

mobile tower radiations and climate. Researcher have found that in the 17 no. of Tower location in Rajnandgaon city. Almost tower of 2 BSNL and 5 Tower jio and 1 Tower Idea and 2 Tower Vodafone 6 tower airtel and 1 tower tata docomo, total number of tower 17. All Tower of power density in Wats/meter^[2] is 0.008 and Total Power density 0.008 maximum number of tower in 100 Meter Distance and three tower has below 50 meter distance then total power density 0.024. He has found Maximum number of 6 Birds watching in post office chowk Rajnandgaon and minimum number of 2 birds watching in Chikhali Rajnandgaon area.

The beautiful Dongargarh city is the most important part of Rajnandgoan district. As well as spiritually famous, it is surrounded by natural mountains and forests. When we researched there, we found that the number of mobile towers is not very high and the percentage of birds decreasing is 51.84%. while the percentage of birds decreasing in Rajnandgaon is 54.78% in this way, the percentage of the reduction of birds in Rajnandgaon is more than of Dongargarh, where there is less mobile tower due to low urbanization and good natural environment.

Ultimately, this research shows that radiation emanating from mobile towers affects birds, which is causing the number of birds to decrease due to increasing mobile towers.

Tabel 3: Radiated Power Density From The Cell Tower In Rajnandgaon City.

S. No.	Tower Location in Rajnandgaon City	Tower type & antinnas	100 meter radiance Distance Total No. of Tower	Power density in wats/meter ²	Total Power density in wats/meter ²	100 meter radiance Distance Total No. of Birds watching in area
1	Jay Stambh Chowk AroraComplex (Airtel+Jio) Tirupati Complex (jio).	Airtel Jio Jio	03	0.008	0.0024	5
2	Mamta Nagar Galino.5(Airtel+Idea) Janki haran Complex (Jio) Gali no. 5 (Vodafone)	Airtel idea jio vodafone	04	0.008	0.0032	4
3	Chikhli Near Over Brij (BSNL) Kheragarh Road (Airtel+Vodafone+Idea)Khera garh Road (Jio) Kheragar Road (Idia) Bhind Home Gaurd Office (Jio)	Bsnl Airtel Vodafone Idea Jio Idea Jio	07	0.008	0.0056	2

4	Basntpur Sabras Restorent (Airtel) Shri Sidhivinayak Agensi Bajar Chowk (Airtel+Idea) Basantpur Chowk (BSNL) Dongargaon Road (Vodafone) Basantpur Chowk,Dongargaon Road (ATC) Near Shukla Hospital (Jio)	Airtel Airtel Idea Bsnl Vodafone Tata docomo Jio	06	0.008	0.0048	3
5	Post office chouk Crime Branch Office (Airtel+ Vodafone+Idea)	Airtel Vodafone Idea	03	0.008	0.024	6

Table 4: Radiated Power Density From The Cell Tower In Dongargarh City.

S. N.	Tower Location in Dongargarh City	Tower type & antennas	100 meter radiance Distance Total No. of Tower	Power density in wats/meter ²	Total Power density in wats/meter ²	100 meter radiance Distance Total No. of Birds watching in area
1	Near Choti Bamleshwari Railway Crossing	IDEA	1	0.008	0.008	10
2	Behind Bamleshwari Sarkari Hospital Dongargarh	AIRTEL	1	0.008	0.008	15
3	Kedarbadi Dongargarh	AIRTEL	1	0.008	0.008	8
4	Behind Budhwari Charch	VODAFONE	1	0.008	0.008	12

Table 5: Compareitive Study Of Birds Between Rajnandgaon And Dongargarh City (2017-2018) & Number Of Birds Reduced Day By Day.

S. N.	SCINTIFIC NAME [COMMON NAME]	2017 NUMBER OF BIRDS		2018 NUMBER OF BIRDS		TOTAL REDUSED BIRDS	
		RAJ.	DON.	RAJ.	DON.	RAJ.	DON
1	<i>Coracias benghalensis</i> [Indian Roller/Nilkanth]	00	30	00	15	00	15
2	<i>Grus leucogeranus</i> [Crane]	40	60	15	15	25	45
3	<i>Gyps bengalensis</i> [Vulture/Giddh]	58	50	30	25	28	25
4	<i>Dicrurus macrocercus</i> [Black drongo]	00	40	00	10	00	30
5	<i>Corvus splendens</i> [Crow]	50	70	20	35	30	35

6	<i>Psittacula krameri</i> [Parrot]	42	55	20	30	22	25
7	<i>Coccyzus americanus</i> [Cuckoo]	30	50	15	25	15	25
8	<i>Passer domestica</i> [House sparrow]	100	300	40	170	60	130
9	<i>Columba livia</i> [Pigeon]	54	70	28	30	26	40
10	<i>Aquila chrysaetos</i> [Golden Eagle]	70	84	35	42	35	42
11	<i>Acridotheres tristis</i> [Common Myna]	66	75	30	30	36	45
	TOTAL	510	884	233	427	277	457

Total reduced Birds Percent in rajnandgaon city =54.31%

$$277/510 \times 100 = 54.31\%$$

And 45.69% Birds live in rajnandgaon city

Power density is increase Birds No. decreases

Total reduced Birds Percent in dongargarh city =51.69%

$$457/884 \times 100 = 51.69\%$$

And 48.30% Birds live in dongargarh city

Power density is increase Birds No. Decreases

According, to, the results are formulated following

Total reduced birds present in rajnandgaon city =54.31% and 45.69% birds live in Rajnandgaon & Total reduced birds present in Dongargarh city =51.69% and 48.30% birds live in Dongargarh.

The power density values given in Table 1-3 are for a single carrier and a single operator. If multiple carriers are being used and multiple operators are present on the same roof top / tower, then the above values will increase manifold. However, radiation density will be much lower in the direction away from the main beam. One should know actual radiation pattern of the antenna (which unfortunately is not made public) to calculate exact radiation density at a point.

CONCLUSION

A field survey was conducted on effect of mobile tower radiation on birds Rajnandgaon and Dongargarh city from January 2018 to May 2018, in different sites at Rajnandgaon and

Dongargah in all mobile tower field. This survey identifies various species of birds in both city location. Effect of mobile tower Radiation on Birds in Rajnandgaon and Dongargarh, maximum birds have decrease at Rajnandgaon and Dongargarh. Electromagnetic radiation from cell phone and cell tower affects the birds and other animals and environment. When birds are exposed to weak electromagnetic fields, they disorient and fly in all directions, which harm their natural navigational abilities. A large number of birds like pigeons, sparrow, eagle are getting lost due to interference from the “unseen enemy” mobile tower radiation. It has also been noted that animals used near mobile towers are prone to various dangers and threats to life including still births, spontaneous abortions, birth deformities behavioural problems and in general decline health status.

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