ISSN (O): 2581-8740 | ISSN (P): 2581-8732
Gehlot and Adhikari, 2021
DOI: 10.21276/SSR-IIJLS.2021.7.6S.18

Research Article

open access

Wildlife Conservation Issues and Challenges due to Covid-19 with Special Reference to Western Rajasthan

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Received: 26 Jun 2021/ Revised: 23 Aug 2021/ Accepted: 03 Oct 2021

ABSTRACT

Background: This study shows the impact of lockdown on all aspects of forest and wildlife conservation in Western Rajasthan. Alongside, this study has also emphasizes on restrict use of wild meat in any form and urges to put a closure of wet markets across the globe.

Methods: This study uses evidence from newspaper social media, scientific journals, reports, and organizational datasets, and remote sensing to assess and review the impact of lockdown on wildlife conservation including the residents from Western Rajasthan.

Results: India had implemented the first lockdown on 25th March 2020 lasted till 31st May 2020 in four different phases and has seen significantly less mortality of animals in Jodhpur, especially in ungulates due to a reduction in traffic movement. Reduction of tourists, although a blessing to the wildlife, by allowing to roam freely but banned the tourism activities thus bringing significant reduction in income and employment, thus collapsing the tourism industry and revenue received to uphold the sanctity of forest. The revenue of the forest department reduced significantly during the lockdown period than that of the pre-pandemic period.

Conclusion: This paper summarises the issues and challenges of lockdown on wildlife conservation and urges the need for a newer approach and planning in the case pandemic rises again.

Key-words: Covid-19, Emerging Infectious Diseases, Lockdown, Pandemic, Wildlife conservation

INTRODUCTION

Emerging Infectious Diseases (EID) like COVID -19 are 'zoonotic diseases' that can transmit to both animals and humans. The EID's can significantly affect the social, economic, and health structure of a country. Pandemic has created the rise of bushmeat poaching and consumption alongside trafficking in African countries resulting due to accelerated shortcomings of tourism activities [1-3]. The residents of Asian countries are forced to rely on natural resources for livelihoods due to COVID-19 [1,4].

How to cite this article
Gehlot HS, Adhikari T. Wildlife Conservation Issues and Challenges due to Covid-19 with Special Reference to Western Rajasthan. SSR Inst. Int. J. Life Sci., 2021; 7(6S): 105S-111S.

Access this article online
https://iijls.com/

To contain the spread of the virus Government of India has made obligatory lockdown from 25th March to 14th April 2020.The WCS has exposed 249 wildlife were identified as victims of poaching and illegal trade from 2012 to 2016 [5]. The scientists had already started focusing on these EID's and the diversity of a nation. According to the United Nations, 193 countries are there in the world along with their two non-member states [6]. Biodiversity is all life forms of the world. Health and biodiversity are interconnected. The Mega-diverse countries are diversity-rich countries of the world. The World Conservation and Monitoring Centre (WCMC) of UN Nation's environment program and Conservation International had identified 17 countries to be mega-diverse of the world possessing at least three-quarters of higher floral species and two-third of vertebrate species except for fish. To qualify as a mega-diverse country a country must possess 5000 of the world's plants as

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endemic and should have marine and shoreline diversity [7]. Convention on Biological Diversity (CBD) has acknowledged India as a mega-diverse country possessing 7-8% of the world's floral species alongside 6.5% of the fauna of the world [7-9]. India also constitutes 4 hotspots out of a total of 34 global hotspots. A total of ten bio-geographic provinces constitute 91,200 species of animals and 45,500 species of plants. India also has an extensive network of 679 protected areas with over 4.9% of geographical area constituting 1,62,365.49 km^2. Despite the extensive protected area network of India, diversity of flora and fauna were spreading along every corner of the country alongside outside protected areas too. Several schedule one species like 29% of Tiger from Lansdowne Forest division, 67% of elephants from West Bengal and Jharkhand, 100% Wolf from all PA's, 58% Blackbuck from the Valavedar Blackbuck National Park, Gujrat, and 100% of Gangetic Dolphins are found out outside the protected areas [10,11]. More than 60% of EID's are subject to zoonoses [12], so it is high time to appeal for the faunal-based wet and black market to give closure and put on ground stricter law than ever for conservation of wildlife even on the outside of the protected area. This chapter aims to review the introduction of the COVID-19 virus, its effect on wildlife, futuristic scenarios to preventive measures, and combat pandemics. Alongside, it also aims at urging people to conserve biodiversity along with the restricted usage of wild meat in traditional medicines and other necessities with particular emphasis on Western Rajasthan. COVID-19 outbreak affects wildlife in Rajasthan numerously. As a result, the current study aims to look at the various effects that the current COVID-19 outbreak has on animals.

MATERIALS AND METHODS

Study Area- Rajasthan is the largest state of India and has 4 national parks and 27 wildlife sanctuaries (Fig. 1). Bisecting the Rajasthan there are distinct ecosystems prevalent, first is Aravalli and the other one is the Desert. Moreover, the Luni River, which serves as an ecotone between both Aravalli hills and the Desert region starts from Puskar of Ajmer district and finally submerges in marshy lands of Runn of Kutch in Gujrat. The Aravalli region harbors leopard (*Panthera pardus*) and Indian Grey wolf (*Canis lupus pallipes*) as key species. The Desert region is characterized by two protected areas Tal chhapar Sanctuary with the blackbuck (*Antilope cervicapra*) and Desert National Park (DNP) with the Great Indian Bustard (GIB) (*Ardeotis nigriceps*) as a key wild fauna. The desert region of Western Rajasthan welcomes a diverse array of migratory avian fauna with open arms every winter. The Thar Desert of Rajasthan has a total of 2043 species including single-celled organisms [13]. Out of 2043 species, 68 mammalian, 350 avian, 51 reptilian, 8 amphibians, and 142 species of Pisces were recorded from this region [13]. The Western Rajasthan, which falls under the arid and semi-arid region [14] have a huge area, and most of the wildlife of the region stays outside the protected areas devoid of any boundary region.

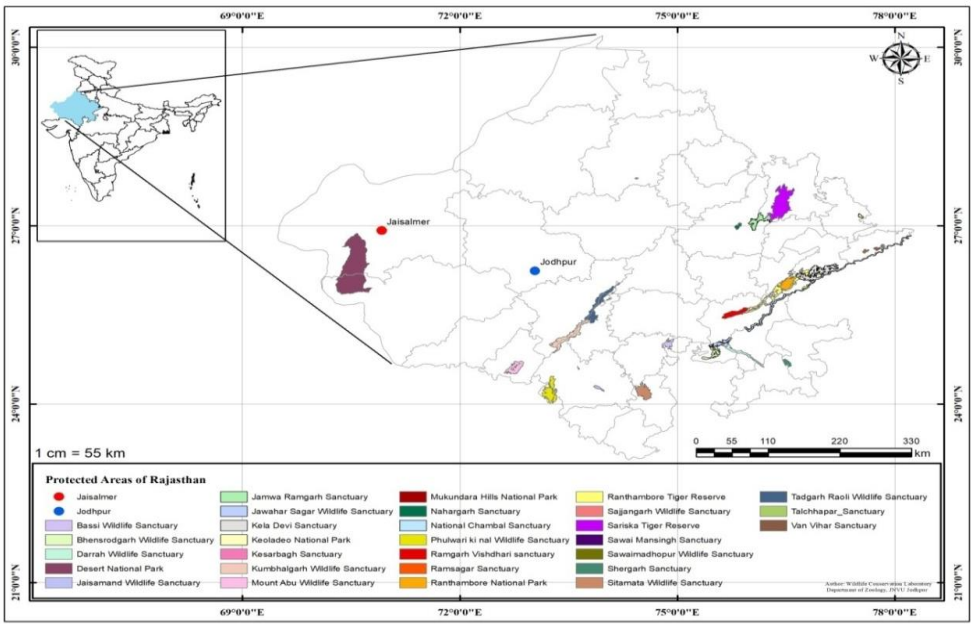

Fig. 1: Protected areas of Rajasthan

ISSN (O): 2581-8740 | ISSN (P): 2581-8732
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DOI: 10.21276/SSR-IIJLS.2021.7.6S.18

Methods- Information was collected from scientific literature alongside the reports of TRAFFIC India, local media reports including digital media news information were taken into consideration. Media reports often affect policy and facilitate discussion with commoners at the ground level [15].

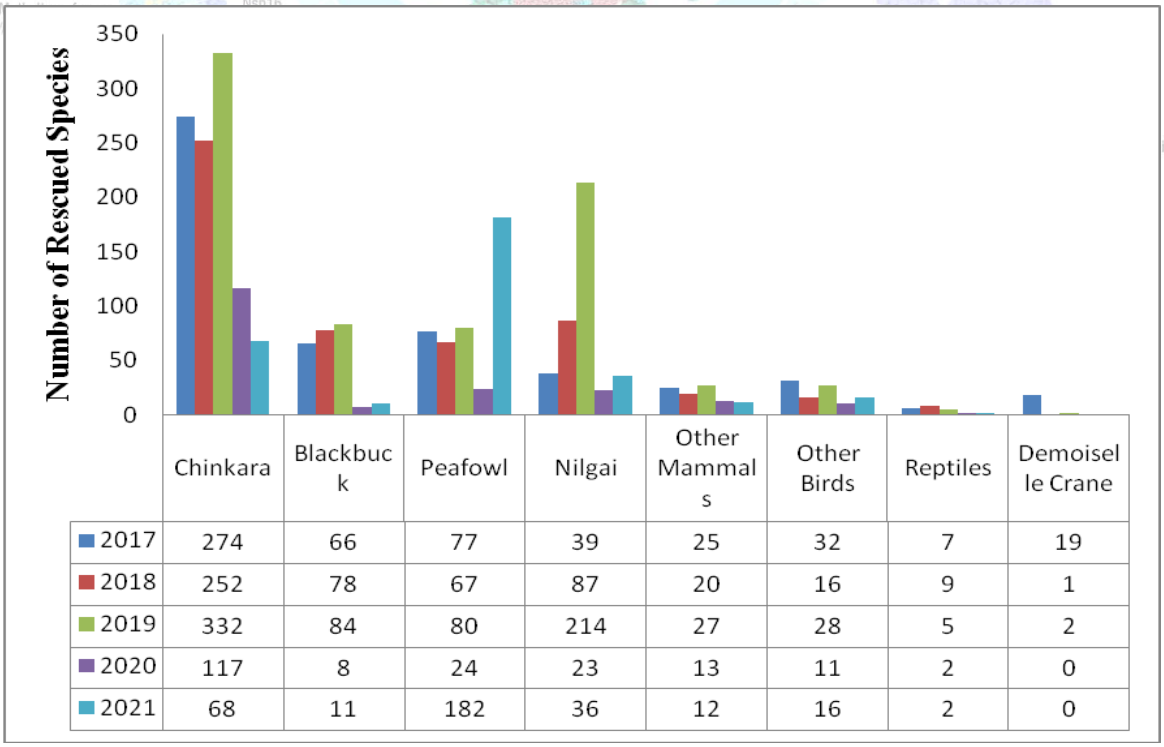
RESULTS

Due to increasing cases of COVID-19 patients during 2020 and 2021, the government of India has divided districts of Indian territories into three different zones based on COVID-19 infection rates likewise red zone, orange zone, and green zone. Red zones are the most infected regions of the country and green regions are the least infected ones. Jodhpur, the major city of Western Rajasthan remains a red zone for a major period during the pandemic.

Impacts of COVID-19 on wildlife conservation

Human-Wildlife Interaction- Human-wildlife interaction is a crucial aspect of conservation. Lockdown has also increased local exploitation of forest resources from fodder grass to firewood, those who do not have access to clean energy technology. Tourism always possesses a lot of pressure on the habitat and the natural resources but eases the economic burden of the region.

If we monitor the records of wildlife rescue data of the Jodhpur division during the lockdown period of 16th April to 07th June a total of 327 animals including chinkara, blackbuck, peafowl, turtle, monkeys, several avian species, waterfowls, and vultures along with bats were brought into a rescue centre. Out of which, despite the treatment 219 died and 108 were successfully released back into the wild. Similarly, during the two months of lockdown, 25th march to 17th may, 2020 a total of 198 animals were brought into the rescue centre. Again only 68 were successfully released back into the wild and 130 of them were died despite the treatment. If compared to the data from March till June, from 2017 to 2019, we see a declining trend. During 2017, 378 animals were dead, 375 during 2018, and 580 during 2019 despite being treated at the rescue centre (Fig. 2). Most of the rescue earlier attributed to the collision with vehicles, which have declined during the lockdown. Many times animals were also seen in the suburban regions in the vicinity of humans during the lockdown. During the first half of 2021 in Jodhpur, cases of Chinkara, Nilgai, and Spiny-tailed lizard poaching have come into the limelight. Similarly, in 2020, two cases each of blackbuck and chinkara hunting, in 2019, one case of blackbuck and four cases of Chinkara hunting came into the highlight.



	Chinkara	Blackbuck	Peafowl	Nilgai	Other Mammals	Other Birds	Reptiles	Demoiselle Crane
2017	274	66	77	39	25	32	7	19
2018	252	78	67	87	20	16	9	1
2019	332	84	80	214	27	28	5	2
2020	117	8	24	23	13	11	2	0
2021	68	11	182	36	12	16	2	0

Fig. 2: Number of rescued animals during pre-pandemic and post-pandemic era (data from the wildlife rescue centre, Jodhpur)

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Lukewarm staff and Wildlife monitoring in the Protected Area- The Desert ecosystem is a vast and difficult terrain in Rajasthan. The Western Rajasthan particularly the Jaisalmer district, which is the last home of the majority great Indian bustard population already having less forest personnel, the pandemic has created a more difficult situation attributed to sick personnel, who need medical care and attention with a few days off from the job. Even after the end of the pandemic Government of India has issued orders to open offices with 50% capacity for more than two months which also has created difficulties to monitor the vast stretch of the desert ecosystem. Along with, NTCA, the Government of India, and the Government of Rajasthan have issued an order for the closure of Tiger reserves of the nation as a tiger from Vandalur zoo, Chennai tested positive for COVID-19 vide F. NO. 15-38/2010-NTCA (part) dated 7th June 2021. Lack of tourism has devastated revenue and affected small-scale industries surrounding the protected areas. Lack of accessibility, lesser tourism, lack of fuels, and loss of maintenance of forest properties has created more difficulties in biodiversity monitoring and conservation. Due to lesser personnel, many states of India have undergone major occurrences of forest fire. Alongside, protected areas the wild animals that existed in the vicinity to humans like those are of ex-situ protected areas are reported to be a victim of the pandemic. National Zoological Authority, Delhi has confirmed tiger is being tested for COVID-19. Pandemic also created heavy death toll as mentioned and leads to loss of skilled personnel creating major havoc in planning and saving the wildlife of protected areas.

DISCUSSION

Before COVID 19 different zoonotic diseases like Ebola, AIDS, yellow fever, etc. have already taken a heavy toll on human health and the economy. Globally COVID-19 has infected 96 million people and taken 2 million lives as of January 2020 [16]. Western Wet markets are also present in another Amazonian region of Latin America and West and Central Africa. These meats are sold for basic survival or as luxurious items. Poaching and illegal markets alongside traditional medicines are major reasons for the carrier of zoonotic diseases alongside the smuggling of bushmeat to different developed countries [16]. As common theory persists, zoonotic diseases only emerge from wild-meat consumption, but it has been proved wrong. Zoonotic diseases can also emerge from a farm that has been kept unhygienic or from legal or illegal transportation of live animals. Many believed that zoonotic disease can also arise from melting permafrost of the Arctic or Antarctic [16]. According to Ministry of Health and Family Welfare (MoHFW) data of India as of Dec-2021 India have 270885 active cases, 33094529 cured cases, 448817 deaths due to COVID-19 [17]. According to the Department of Medical, Health, and Family Welfare, (DoMHFW), Rajasthan as of Dec-2021 has 954827 positive cases and 8955 deaths [18]. The theory suggests COVID-19 caused by SARS-CoV-2 emerges from the wet market of Wuhan province of China entitled to wild meat consumption by humans. Across South-East Asia illegal pet trade is quite common and needs a strict hand. These markets often sell meats that are kept in unhygienic condition.

All of the sectors in the country have been through drastic impacts at all levels from local to global. India had implemented its first-ever lock-down on 25th March 2020. Alongside India, many other major South Asian and European economies have started lockdown or the movement halt during 2020, likewise, Hongkong during January, South Korea in February, New Zealand, Spain, United Kingdom, Norway, and Germany in March, Japan, and Singapore in April [19], which further led to inadequate management and inefficient conservation capabilities in a protected area. The Jodhpur lone has 112422 cumulative COVID-19 cases till December-2021 (DoMHFW) [18]. India has also made significant progress in clean cooking and energy accessibility while keeping up with renewable energy targets and thus reducing local air pollutions. Since 2000, seven hundred million people have gained access to electricity and eighty million new liquefied petroleum gas (LPG) connection has been made. Rajasthan Renewable Energy Corporation Limited (RRECL) has installed 7738 MW of solar energy installed, 4338 MW wind energy installed, 120.45 MW ground biomass, and 545 MW Solar Roof Top (under Net metering Scheme) has been installed with a total capacity of 12741.45 MW [20].

Lockdown has a very adverse impact on human health and the same has remained for wildlife conservation. Similarly, the same impacts have been also recorded in the major regions of Western Rajasthan like Jodhpur. Globally, 20-30% losses of tourists were attributed to the pandemic during 2020. If monitored closely, from 2017 till 2020 the number of tourists of Jaisalmer has been on

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sharp decline by 143.71% in 2020 than that of the previous year. The scenario remained the same for the Jodhpur region too. Jodhpur has seen a drastic decline in touristic population by 213% in 2020 than that of the previous year [21]. This leads to a reduction in revenue and local community markets. The Jaisalmer region is famous for critically endangered species the Great Indian Bustard, which is the endemic species of the Thar Desert, finds its major home in fewer selected patches in Desert National Park and adjoining regions of it [22]. This drastic reduction in tourism although facilitated widespread animal movement but increases loads of cases in poaching and killing of wild animals including the Peacock the national bird of India. Despite having some positive impact on Pandemic negative impacts has outweighed them particularly in wildlife conservation [16, 23-24]. Furthermore, this inefficiency has been seen throughout all sectors from Industrial to hospitality, transportation, agriculture, and many more. The same has been remained true for the Western Rajasthan too. Reduced atmospheric pollution due to a halt in the industrial and transportation sector had revived the environment by a bit [25]. Before the rise of this pandemic during 2020, 1% rise in CO_2 in each succeeding decade has been noted without any change during 2019 [26]. The emergence of COVID-19 has reduced the daily global CO_2 emission rate by -17% when compared to the mean emission rate of 2019 attributed to the only half-chance in the surface transport [25]. Analysis of TRAFFIC India, states that the poaching cases of India raised by twice compared to lockdown period that that of Pre-lockdown [28]. During the lockdown, the Western Rajasthan has seen more than 30 cases of killing of wild animals which is higher than that of the usual hours [29]. Loss of tourism in protected areas results in loss of forest revenue. According to Millennium Ecosystem Assessment, the forest provides us with cultural, provisioning, regulating, and supporting services [30]. To maintain its integrity and uniqueness of forest revenue plays an important role. Due to the loss of tourists, revenue has been lost leading to loss of protection and alongside the pressure of communities depending on forest made forest to degrade irreversibly. Poachers will take advantage of the situation and hunt wildlife illegally more frequently when sick personnel or personnel were attending their sick relative due to pandemics. Moreover, psychologically personnel would like to take more leaves to be with family in difficult times [16]. Loss of research and assessment has made the loss of trending and important news from the area due to loss of first-hand communication with wildlife personnel. Furthermore, the lockdown has made it difficult to travel and gather information due to closure on transportation industries. Even after the opening lockdown hospitality industries were shut down for a major period that creating a lack of residing places around the habitat and study. Researchers find difficulties in first-hand socio-economic surveys with communities living in the vicinity of forest fringes as fear about the pandemic persists among commoners [16]. In many cases, shortage of funding due to sudden economic drop made a study give closure in half or drop completely. Subsequently leading to loss of projects, and skilled conservation personnel created more difficulties in forest monitoring, assessment and most importantly joblessness thus, created a downfall in biodiversity conservation.

CONCLUSIONS

Although some positive effects were observed during the lockdown, the downfall of revenue and economy has affected severely outweighed all positive counterparts. Loss of jobs and lack of research and had made poorer planning and monitoring leads to increased poaching scenarios in Western Rajasthan during the COVID pandemic.

There needed a newer approach and planning in case the pandemic emerges again in the future.

ACKNOWLEDGMENTS

Author would like to acknowledge Forest Department of Rajasthan for the provision of rescue data of animals during COVID-19 pandemic hours.

CONTRIBUTION OF AUTHORS

Research concept- HS Gehlot
Research design- HS Gehlot and Tapan Adhikari
Supervision- HS Gehlot
Materials- HS Gehlot and Tapan Adhikari
Data collection- HS Gehlot and Tapan Adhikari
Data analysis and Interpretation- Tapan Adhikari
Literature search- Tapan Adhikari
Writing article- Tapan Adhikari
Critical review- HS Gehlot
Article editing- HS Gehlot
Final approval- HS Gehlot

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DOI: 10.21276/SSR-IIJLS.2021.7.6S.18

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