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HUMAN-WILDLIFE CONFLICT IN MUMBAI WITH ESPECIAL REFERENCE TO MULUND

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Abstract:

Across the world, incidences of conflicts between human beings and wildlife have been reported to have escalated significantly in recent times. The exponential growth of the human population and their consequently growing needs have resulted in mounting up of pressure on our natural resource base causing such scenarios of conflict. Instances of human-wildlife conflicts are common across various parts of India. The city of Mumbai has been witnessing its own share of human-wildlife conflicts, which have escalated tremendously in recent times. Therefore, in this study, the human-animal conflict in Mumbai is explored with an emphasis on the suburban locality of Mulund. The study in general explores the changing nature of human-wildlife interactions in Mumbai with special reference to the rise of the human-wildlife conflict in the western part of Mulund. Based on these, the study also reflects on plausible measures that can enable resolving the scenario of conflict. The methodology of the study is based on the use of secondary data published in various sources such as journals, governmental reports, news reports, etc. The results of the study expose the inherent problems of the growing urban population and indiscriminate urban expansion as the cause of the conflict.

Keywords: Animals, Encroachment, Forest, Habitat loss, People, Urban

1.0 Introduction:

Human-wildlife conflict represents a struggle to retain one's habitat. These conflicts occur when the actions of either human beings result in a negative impact on wildlife or vice versa (Torres, Oliveira, and Alves 2018). The cases of such conflicts are existent in various places across the world. When human beings trespass into the domain of the wild animals for grabbing more land to meet their growing demands, such conflicts emerge. The loss of habitat forces the animals to raid the human settlements. Unlike, the human-wildlife conflicts in the past, which were mostly of rural or agricultural origin, the recent incidences of human-wildlife conflicts are seen to have more of an urban and suburban character (Messmer 2000). Although the human-wildlife conflicts are termed as a 'threat to the livelihood and safety of the people' (FAO and UNEP 2020), it is no less a threat to the safety and survival of the animals. However, is it really that the animals are entering the human territory? Or, is it the humans who have claimed the territory of the animals to such an extent that the animals are compelled to venture into territories beyond their natural environment for their needs of food and space?

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The urban expansion leading to human encroachment into the wildlife habitat as the cause of the human-wildlife conflict is visible in the case of the Indian city of Mumbai, where the incidences of human-wildlife conflict have been increasing day by day. The situation is alarming, yet it is not uniform across Mumbai, since, such conflict is rampant mostly in those areas that are adjacent to the Sanjay Gandhi National Park (SGNP). Such localities include Goregaon, Malad, Ghatkopar, and Mulund, where there have been many cases of such conflict recently. Due to their close proximity to the SGNP, the peripheral areas of these suburbs are under constant threat of invasion by wild animals from the adjoining forested belt, which is no longer an undisturbed and safe habitat for the wildlife due to anthropogenic interventions. For exploring and understanding the human-wildlife conflict in Mumbai, the need for taking up a general to particular approach is strongly felt, where along with presenting the general picture of the existing scenario, the micro-level study of the specific problem areas is done. Although emphasizing on all the problem areas of Mumbai would have been highly beneficial, due to certain limitations, in the present study only the locality of Mulund has been emphasized.

2.0 Methodology:

The study is aimed at achieving three main objectives, which include – (i) exploring the changing nature of human-wildlife interactions in Mumbai, (iii) examining the existing scenario of the human-wildlife conflict in Mulund, and (iii) reflecting on the plausible measures that can help tackle this conflict. For achieving these objectives, the study adopts a qualitative methodology based on the collection of secondary data from various sources such as articles published in the journals, news reports published by various agencies, reports published by governmental and non-governmental organizations, and information published in the internet by authentic sources. The content gathered from these sources is analyzed, processed, and synthesized accordingly.

Over the years the scenario of human-wildlife conflict across Mumbai has intensified with variations existing across the region. The locality of Mulund is one such problem area that has become infamous for its growing incidents of human-wildlife conflict. The present study explores the issue of human-wildlife conflict in Mumbai with an emphasis on Mulund, a suburban locality, which lies at the north-eastern edge of Mumbai, in the Mumbai Suburban District (Figure 1). Mulund is administered under the T-Ward of the Municipal Corporation of Greater Mumbai (MCGM). In fact, the names – 'Mulund' and 'T-Ward' are used interchangeably to refer to the same area. The inhabited areas of Mulund are divided into two main divisions/localities, namely, Mulund West and Mulund East, by the suburban railway line passing through it.

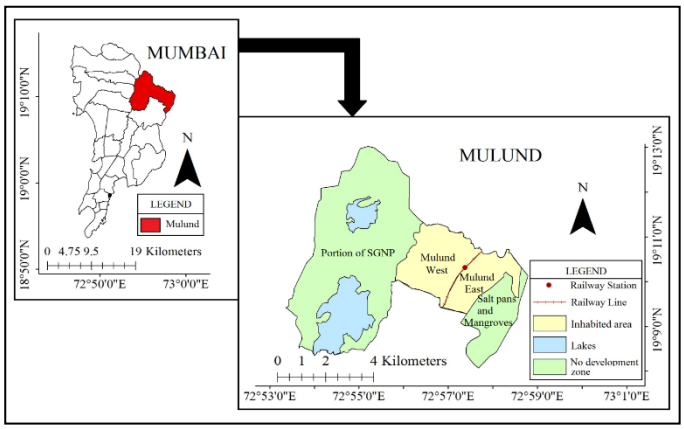

Figure 1. Location of the study area
(Source: Prepared by the authors)

The western half of Mulund shares its boundary with the SGNP, which is a biodiversity-rich forest habitat comprising 'more than 40 species of mammals, 38 species of reptiles, 1000 species of plants, 9 species of amphibians (excluding fishes), 251 varieties of birds, and a large variety of fishes'(Maharashtra Forest Department 2020). Traditionally, the tribal community of the SGNP, 'mostly comprising *Warlis* and *Mahadeo Kolis*'(Choudhary 2020), have been living in the forest maintaining a close harmony with nature. In the last couple of decades, Mulund has undergone tremendous population growth. In 1961, Mulund had a population of 58,536 persons, which by the year 2011 grew to become 3,41,463 persons (District Census Handbook: Mumbai Suburban District 2011). To house, this rising population rampant construction activities stretching to the forest boundaries have disturbed and disoriented the natural rhythm of the forest and its inhabitants, especially the wildlife.

The approach adopted in the study is expected to be not only helpful in attaining greater insights on the issue but also will be beneficial in the formulation of area-specific solutions for mitigating the crisis.

3.0 Existing literature – a concise review:

The interactions and conflicts between human beings and wildlife have been existent since times preceding recorded history (Anand and Radhakrishna 2017; Berger and McGraw 2007; Lee-Thorp, Thackeray and van der Merwe 2000). The earliest depiction of human-wildlife conflict can be seen in the pre-historic cave paintings found across the world (Guthrie 2005). However, studies on the present form of human-wildlife conflict are relatively new (Nyhus 2016). In recent times, the human-wildlife conflict has emerged as a global issue encompassing events detrimental to both human beings as well as wildlife (Anand and Radhakrishna 2017). The existing studies on human-wildlife conflict reveal that its reasons are many and varied. The most important among these reasons are agricultural expansion, the explosion of the human population, urban expansion, destruction of wildlife corridors, and shrinking forests, etc. (Dhingra 2020). Although human-wildlife conflict is of global occurrence, its manifestations and magnitude vary from one part of the world to another (Anand and Radhakrishna 2017). With its fast-growing population, expanding human settlements, and conservation areas becoming more and more surrounded by anthropogenic landscape, the instances of human-wildlife conflicts are on the rise in India (Manral, Sengupta, Hussain, and Rana 2016). Many of these conflicts have been captured in the scholarly works of the researchers who have studied these conflicts in different parts of India from different perspectives. Studies focused on the damages caused by wildlife attacks in India (Madhusudan 2003; Suryawanshi, Bhatnagar, Redpath and Mishra 2013; Sengupta, Binoy and Radhakrishna 2020); as well as studies on mitigating human-wildlife conflicts in India (Athreya, Odden, Linnell and Karanth 2010; Pradhan 2018) have been carried out in the context of the differences in the situations contributing to such conflicts in the various parts of the country.

4.0 Results and Discussion:

4.1 The changing nature of human-wildlife interactions in Mumbai:

The city of Mumbai has sprawled across the Sanjay Gandhi National Park (SGNP), a protected forest area that continues to exist as a piece of paradise for wildlife, surrounded by bustling metropolitan growth. The delimitations of the park are unclear with complex territorial rights over it, rendering it prone to encroachment (Zérah and Landy 2013). As a result, the pre-existing buffer between the Sanjay Gandhi National Park (SGNP) and the inhabited areas has ceased to exist. In fact, there is considerable evidence of encroachment into the forest habitat. Frequent occurrences of conflict between human beings and the animals are reported in those areas of Mumbai that are adjacent to the SGNP. Residents and pets alike have fallen prey to recent animal attacks. The

coexistence between leopards and human beings is known to have prevailed in Mumbai prior to its unprecedented urban growth. However, with the city's growing urban population the earlier known coexistence gave way to human-wildlife conflicts. With the spread of human settlement along the margin of the forest area, there has not only been a rise in the number of people but also in domestic animals such as cats, dogs, and pigs, which are easy prey to the leopards (Subramanian 2018). In recent years, there have been growing cases of human-wildlife conflict in Mumbai. Between the years 1991 and 2013, a total of 176 such cases were reported in Mumbai, of which 84 occurred between 2002 to 2004 (Soumya 2020). As a matter of fact, the SGNP is among the reserves with the highest density of leopards in India (Bose 2017). According to a study conducted in 2018, there are 47 adult leopards and 8 cubs in SGNP (Ghai 2020). However, the area of the national park has shrunk with the expansion of Mumbai (Pillai 2020). Thus, human encroachment into the territory of the wild animals not only makes the residents vulnerable to animal attacks but also poses threats to the animals. The vulnerability is more so in the case of the people residing in the slums and squatter settlements that have grown up along the encroached areas due to the unavailability of affordable housing in the city. There have been several incidences of such attacks in the last couple of years. Thus, the interaction between human beings and wildlife in Mumbai has changed from co-existence to conflict in recent times.

4.2 *The existing scenario of human-wildlife conflict in Mulund:*

The recent urban growth and fast development of urban infrastructure and amenities have not only introduced many transformations to Mulund but also have induced its emergence as one of the preferred residential and commercial destinations of Mumbai suburbs. Consequently, there has been further growth of population and settlements in the suburb. Along with the rest of Mulund, the area along the SGNP has witnessed the growth of human settlements in significant proportions. This has resulted in growing instances of human-wildlife conflict in the area. Reports of residents and pets in Mulund being attacked by leopards are seen to make news headlines from time to time.

Over the years there have been several incidences in Mulund where wild animals and reptiles from the SGNP such as monkeys, leopards, crocodiles, and snakes have made their way into the suburb. Nonetheless, the threats posed by the leopards have been the worst of all. Leopards have injured and even killed people and pets in the suburb. The major incidents of human-wildlife encounters in Mulund in recent years are listed below (Table 1);

The above table reveals that from 2012 to 2020, the incidents of human-wildlife encounters/conflicts in Mulund have taken place every year, barring the years 2015 and 2016. Evidently, almost all of these encounters have been recorded in the western half of Mulund, in the areas close to the SGNP. The incident of January 2018 was an exception in this regard, as it took place in Mulund East, where the leopard covered about 5 km outside the SGNP before reaching the area of the incident, where it attacked the residents.

Table 1: Incidents of human-wildlife conflict/interaction in Mulund (2012 to 2020)

Year	Month	Locality	Details of the human-wildlife encounter
2012	July	Mulund West	A seven years old girl became a victim of a leopard attack, when she was dragged away by it and ultimately killed (Times of India 2012). The victim resided in a poorly built single-room shack built at the edge of the Shankar Tekdi, an encroached informal settlement area (Bhutia 2012).
2013	July	Mulund West	A leopard was spotted wandering into an apartment lobby, where it snatched a pet dog (Gardner 2013).

2014	February	Mulund West	A 6 feet long Cobra was found in the commode of a bathroom in one of the residences of the Nimbkar society in the Mulund colony area (Sengupta 2014).
2015	-	-	None
2016	-	-	None
2017	January	Mulund West	A leopard was spotted lurking in the parking space of the Redwood society, which shares its boundaries with the SGNP (Verma 2017).
2018	January	Mulund East	A leopard found its way to a residential colony in the eastern half of Mulund, where it attacked and injured five people (Mishra 2018).
	March	Mulund West	A 4.4 feet long Marsh crocodile was found in a drain near a construction site in the Mulund Colony area (Tanwar 2018; Naik 2018).
	July	Mulund West	A man trying to save his pet was attacked and injured by a leopard in the New Rahul Nagar (Dalvi 2018).
2019	December	Mulund West	An 8 feet long Indian rock python was rescued from a roadside construction site in Mulund (Singh 2019).
2020	January	Mulund West	A 5.5 feet long adult crocodile was rescued from an artificial pond in a construction site located at Swapnanagari (Singh 2020).

(Source: Tabulated by the authors based on media-content analysis)

Over the years the forest lands in Mulund have invariably come to be encroached by slums as well as high-rises. There has also been a significant controversy related to certain land developed by various builders which were on and off classified and reclassified as forest land, non-forest land, and private forest land, and so on. Recently the Supreme Court's verdict regularized these homes lifting off the private forest land tag (Lewis 2014). These incidents have led to the loss of forest cover and have escalated the encounters/conflicts between human beings and wildlife species in the area.

5.0 Suggestions and Conclusion:

Human beings in their selfish pursuits have been destroying nature and threatening wildlife since times immemorial. Although the incidences of human-wildlife conflict that are taking place in present times may appear to seem like animals are venturing into the human territory, the reality is actually contrary to it as human beings have not only been venturing into the territory of the wildlife but also have been claiming it and transforming it. The poor animals are merely returning into their lost territory, either by mistake or in search of food. Their struggle for survival compels them to enter the human habitations.

Human-wildlife conflicts are becoming a growing cause of concern in Mumbai, which must be addressed as soon as possible. Hence, it becomes necessary to reflect on the plausible measures that can help in controlling the growing crisis. The first and foremost task in this regard would be to clearly delimit the area of the SGNP so that further encroachments and land disputes can be avoided. Due to the urban growth, the SGNP has lost its corridors, which has disconnected it from the other nearby forest areas. This has not only limited and altered the pattern of movements of the wild animals but also slight wandering out of the forest area by the animals means immediate confrontation with the crowded human territory, giving rise to incidents of conflict. Hence, there is a tremendous need for contemplating ways to build wildlife corridors that would connect it to other forests. Mumbai has also been losing its forest area in the name of development. As many as eight upcoming infrastructural projects are planned to pass through the SGNP, destroying 189 acres of forest land (Chatterjee 2020). For instance, a metro rail car shed is planned to be constructed along the Arrey Colony area of Goregaon, where more than 2000 trees have been already chopped down for the purpose, giving rise to severe protest and controversy (Khelkar 2019). Such destruction in the name of development is detrimental to wildlife and the

environment. This will contribute to further growth in human-wildlife conflict in these areas. Therefore, it is high time to rethink alternative ways of going forward with Mumbai's urban development without disturbing and destroying the natural habitats in SGNP for doing so.

The present nature of the human-wildlife conflict in Mumbai is the perfect example of how human beings are exploiting wildlife habitats in the name of development. Unfortunately, not many of us realize that the survival of human beings depends on the survival of wildlife and forests. Unless we realize this, the co-existence between human beings and wildlife will never take place and there will be growing occurrences of human-wildlife conflict, not only in Mumbai but everywhere.

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7.0 Conflict of Interest:

The authors declare no conflict of interest.

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