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Navigating urban wilderness

Exploring interactions between wild nonhuman and human animals in Mumbai, India

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[1] AI-Generated image of urban human-wildlife coexistence in Mumbai, using OpenAI's DALL·E model (2023).

MSc thesis

Rosa M. Spruit
Wageningen University & Research
Sociology of Development and Change group
Prof. dr. Bram Büscher
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Student registration number: 1047934
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Abstract

Wild animals are increasingly living in urban areas, providing an interesting context for researching coexistence of people and wildlife. Yet, a knowledge gap remains in understanding this phenomenon in urban areas, particularly across different species. This thesis investigates the setting of the Sanjay Gandhi National Park (SGNP) in Mumbai, India, which is situated alongside human neighbourhoods. Here, some wildlife species pose threats to human safety, and vice versa, while other species simply live amongst humans. Living together with wild animals in urban areas produces different challenges for human and nonhuman animals, to which the concept of coexistence could be of aid. Yet, the current approach to coexistence in Mumbai does not always address these challenges. Thus, the aim of this thesis is to investigate the dynamics of urban human-wildlife interactions (HWI) in Mumbai in relation to the concept of coexistence, involving both types of species, in particular leopards, macaques, mongooses, and snakes. The research adopts an ethnographic case study approach, in which 17 semi-structured interviews were held with 28 informants, complemented by participatory and auto-ethnographic observations.

The results reveal a paradox where humans strive to establish a framework for HWI, while this control is challenged by different wildlife species that demonstrate an autonomy independent from people. In response, humans attempt to increase control through harmful wildlife management targeting individual leopards, macaques and snakes. Through a bias towards particular species, mongooses are exempted from harm. Additionally, the current approach to HWI exacerbates certain social disparities. The thesis concludes that coexistence is now mostly defined by humans, but in reality, animals also contribute to its dynamics. Harmless wildlife species like mongooses receive less attention in coexistence approaches despite their importance. Advancing coexistence involves recognizing the autonomy of wild animals, since they are inherent parts of urban ecosystems.

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1. Urban human-wildlife interactions: an introduction

Cities around the world have been seeing an unexpected influx of wildlife over the past few decades, leading to more interactions between human and wildlife with varying outcomes. While some people may be confronted with financial damage, physical injuries and even death, others develop a strong emotional connection to nonhuman individuals. Furthermore, particular nonhuman animal populations are challenged by inhumane wildlife management. For example, in New Zealand and Australia, thousands of animals considered as invasive species suffer a slow death every year from air dropped poison, since they threaten the existence of many native species. Besides trained conservationists, school children, community groups and Indigenous iwi are encouraged to join the operation through installing traps in their garden and by shooting individuals (Marris, 2021). Other nonhuman animal populations become sensationalized and safeguarded through anthropomorphizing by human fandoms, such as a bald eagle pair that nested in Pittsburgh in 2013. The pair attracted human crowds that wanted to get a glimpse of the eagles, after which nest cams were installed. When both eggs in the nest broke, people left roses and sympathy cards in their mourning, suggesting the birds had become symbols of particular human values (Alagona, 2022). These examples illustrate how the fate of (urban) wildlife species increasingly relies upon human perceptions and the established definitions of wildlife (Alagona, 2022; Frank & Glickman, 2019; Marris, 2021; Saraswat et al., 2015).

Human-wildlife interactions (HWI) are increasingly being investigated as an emerging academic field. Until recently, HWI were mainly studied by conservation biologists in their connotation as human-wildlife conflicts (HWC, Pooley et al., 2017; Toncheva & Fletcher, 2021). A focus on conflictual relations overlooks positive and neutral HWI, for example, feeding wild birds or simply seeing a wild animal, which are likely to be more prevalent than negative interactions (Frank et al., 2019; Jolly et al, 2022). Moreover, positioning wild animals as consciously combative with humans reinforces existing human-nature dichotomies, since negative HWI emphasize a conscious antagonism between wildlife and humans (Pooley et al., 2021; Soulsbury & White, 2015). To provide a more holistic understanding of HWI, a transformation from HWC to coexistence has been coined (Madden, 2004). Yet, the amount of research done on *urban* human-wildlife coexistence is not nearly as much as the amount of non-urban coexistence research. Urban areas have traditionally been excluded from ecological research as a result of persistent human-nature dichotomies. People's acknowledgement of the recent urban wildlife influx demonstrates cities are indeed relevant ecosystems (Alagona, 2022).

Although more attention is needed for the considerable benefits human and nonhuman urban residents can gain from encountering each other (Soulsbury & White, 2015), tolerant communities that closely interface with wildlife likely face a myriad of hidden impacts from particular wildlife interactions (Barua et al., 2013). Considering the influence of current political-economic structures on different forms of HWI (Fletcher & Toncheva, 2021) reveals so-called coexistence inequalities: disparities in the uneven distribution of the costs and benefits of coexisting with wildlife (Jordan et al., 2020). It is very plausible such coexistence inequalities are stronger in urban areas already characterized by high inequality. Thus, the urban wildlife influx likely has different consequences for different groups of people, and therefore potentially exacerbates existing urban inequalities in its current context.

Urban HWI often take place in areas marked by high levels of urbanization and unusually rich biodiversity, allowing for a myriad of overlaps between human and nonhuman spaces. Mumbai, India exemplifies such a setting, where the Sanjay Gandhi National Park (SGNP), a protected area spanning 104 km^2, is situated alongside human neighbourhoods. Notably, SGNP stands

out as one of the few protected areas in India that exists within the municipal borders of a metropolis (Surve et al., 2022), making it a valuable site for investigating the dynamics of urban HWI. Urban HWI have been investigated by focusing on four key species: leopards, macaques, mongooses and snakes. The following paragraphs will explain the rationale behind selecting these species for investigation.

In 2015, photographs of leopards walking the streets of Indian cities went viral. The Sanjay Gandhi National Park (SGNP) in Mumbai is an unexpected home to the largest leopard population of India, who often enter the surrounding neighbourhoods to feed on domestic animals (Pavid, n.d.). The surrounding human communities are said to be "(…) totally remarkable in their tolerance of allowing animals into their city" (Devas, 2016: para. 7). Occasionally, this tolerance gets disturbed by fatal leopard attacks. The years 2002-2004 saw an unusual increase of four yearly attacks to an average of 17 per year. It was the same period in which a translocation program of leopards was initiated (Athreya et al., 2010). Translocation of big cats can be considered counterproductive and harmful as it induces chronic stress for felines due to disturbances in social organization, habitat changes, and the capturing and transportation process, ultimately increasing the vulnerability of the nonhuman animal (Dickens et al., 2010). Additionally, management techniques aimed at relocating or removing individual organisms may present a significant selective force in (urban) systems (Schell et al., 2021). After the peak of attacks, SGNP management decided to no longer be a destination for translocations, and awareness sessions about leopard behaviour were set up. Harmful human-leopard interactions have decreased since, but still occur (Conniff, n.d.).

Whereas leopards in Mumbai's residential areas are framed as a new phenomenon, macaques have become increasingly urbanized over the last few decades; a so-called 'becoming-urban of macaques' has occurred (Barua et al., 2021:2). Macaques are an interesting species for investigating human-wildlife interactions, as they exemplify the multiplicity of relationships existing between humans and wildlife. Macaques transcend human boundaries of categorization by adopting multiple roles through their interactions with people: as pets, symbols of wild nature, representatives of Hindu god Hanuman, crop raiders, or employees (Radhakrishna et al., 2013). Being neither fully domesticated nor wild, people seem to have paradoxical relationships with macaques. Most scientific research on human-macaque interactions is carried out in rural areas of northern India. Rhesus macaques are distributed across north- and north-eastern India, whereas bonnet macaques are endemic to peninsular India – Mumbai's area (Anand & Radhakrishna, 2018). There have been 'more and more' reports of monkey sightings at Mumbai's railway stations along forest edges, but also in areas with less greenery. The number of macaque sightings likely rose as a result of leopards increasingly feeding on feral dogs, which are macaques' natural predators (Raj, 2022). Living in close proximity to macaques in certain parts of India has been associated with negative interactions, occasionally leading to severe outcomes, including fatalities (Gopalan & Radhakrishna, 2022; Joshi, 2019; Singh, 2021).

Whilst leopards and macaques seemingly play a significant role in urban HWI in Mumbai, wild Indian grey mongooses are deceptively absent. Since they are highly avoidant of people and do not form a direct threat, the species is hardly considered by people in urban areas. Yet, their high adaptability to human habitats results in high estimates of their population size in cities (Singh, 2022). Nevertheless, mongooses are well-known for fighting and killing venomous snakes, and some perceive the species as natural pest controllers since their diet consists of rodents, birds, insects and human garbage (Gulshan 2019). The inclusion of mongooses in the research revealed a potential bias towards certain species, resulting in a selective application of conservation management methods that exempt mongooses from harm.

Based on the above, some people connect mongooses to snakes. Snakes are included in the research as they represent one of the most occurring human-nonhuman encounters in Indian urban areas. In Hindu scriptures, snakes occupy a complex status, being seen as sacred, malevolent, and cursed. These beliefs contribute to both fear and tolerance, creating a complex perception. This leads to widespread fear-driven snake killings, especially in cities and peri-urban borderlands (Narayanan & Bindumadhav, 2019). The fear-driven perceptions are not unfounded, since India experiences one million snake bites annually, resulting in approximately 45,900 deaths. (Narayanan & Bindumadhav, 2019). To address the issue of snake killings, numerous voluntary so-called snake rescuers strive to remove snakes from urban areas in response to human requests. However, removing snakes from their capture location appears counterproductive, especially when located beyond their 'home' area. Translocated snakes tend to move greater distances outside of suitable habitats and occupy larger activity ranges (Barve et al., 2013). Additionally, the translocated snake may returns to its capture site if the translocation site is close enough. Most importantly, translocated snakes experience much lower survivorship compared to non-translocated snakes (Wolfe et al., 2018).

Problem statement

The unusual location of a national park in close proximity to human neighbourhoods in Mumbai increases interactions between people and wildlife. Living together with wild animals in urban areas produces different challenges for human and nonhuman animals, to which the concept of coexistence could be of aid. Yet, the current approach to coexistence in Mumbai does not always address these challenges. Thus, this research aimed to comprehend the dynamics between people and wildlife in Mumbai by investigating the following research question: How do diverging human relations with leopards, macaques, mongooses and snakes correlate with the concept of coexistence in the urban context of Mumbai, India?

The specific research questions are as follows:

1. What do human relations with leopards, macaques, mongooses and snakes in Mumbai look like?
2. What are people's attitudes and perceptions of leopards, macaques, mongooses and snakes in Mumbai?
3. How do people respond to the presence of leopards, macaques, mongooses and snakes in Mumbai?
4. How do these human-nonhuman relations relate to the concept of coexistence in Mumbai?
5. How may coexistence be described in the context of this research?

2. Employing coexistence: theoretical framework

This chapter provides an overview of the existing theories, concepts, and their definitions to clarify the significance and challenges associated with urban wildlife coexistence. An important aspect of the framework concerns persisting human/nature dichotomies, which serve as the basis for misconceptions and inconsistencies regarding nonhuman entities and their designated spaces. By embracing the concept of coexistence, these human-defined boundaries become blurred. Previous research has examined human-leopard, human-macaque and human-snake relations in both rural and urban settings. Human-mongoose relations have yet to receive similar attention within current debates. Consequently, a knowledge gap exists concerning human-wildlife coexistence in urban areas and across different species.

Human-nature dichotomies

Humans have increasingly separated themselves from nature and wildlife, resulting in a myriad of human-nature dichotomies (Büscher & Fletcher, 2020; Marris, 2021), expressed through the creation of exclusive spaces for humans and non-human species. Such spaces are defined by physical and figurative boundaries, for example metal fences, or the wilderness concept. Boundaries increasingly blur in areas where people and wildlife share the same landscape, complicating the separation of human and non-human spaces. The ascribed meaning of wildlife by societies as well as their place in society are continuously shaped and re-defined, as the relationship between humans and what is considered as wildlife is constantly evolving (Frank & Glikman, 2019).

Incoherent conceptualizations

Human-nature dichotomies seemingly result in incoherent conceptualizations of wilderness, wildlife and nature. Wilderness is often defined as that which is not controlled by humans, yet, in order to protect it, wild places and organisms are controlled by wildlife management practices. Since wild animals are assumed to exist independently from human influences, ethical obligations towards wildlife are presented as having to leave them alone and protect habitats to let nature take its course (Marris, 2021). Recently, ideas about the existence of an autonomous nature have been contested. The demise of an autonomous nature is accelerated by two popular notions: 1) the diagnosis of the Anthropocene, which asserts that human influence has been dominating all nonhuman processes to the extent of it being a detectable layer in the geological record, and 2) the proclamation of the “end of Nature”, referring to expansion of human influence precipitating the end of nature as a distinguishable self-willed force (Büscher & Fletcher, 2020). This is important, because there is no space for wildlife to live independently from humans within such concepts. By acknowledging the extent to which humans have been integrated into their environment allows for taking certain obligations towards it (Büscher & Fletcher, 2020; Marris, 2021). Accurate conceptualizations of wildlife and nature are essential parts of coexistence, because human responses and attitudes towards wildlife depend on people’s definitions of wild animals (Frank & Glikman, 2019).

Coexistence continuum

Positioning wild animals as consciously combative with humans reinforces existing human-nature dichotomies, seeing negative HWI emphasize a conscious antagonism between wildlife and humans (Pooley et al., 2021; Soulsbury & White, 2015). Within academic debates concerning HWI, the near exclusive investigation of HWC pushes out neutral and positive interactions, which is reflected in the absence of alternative terms to describe such interactions (Soulsbury & White, 2015). Yet, these possibly represent the majority of all interactions (Soulsbury & White, 2019). The term coexistence was coined to catalyse a paradigm shift from conflicts to a more holistic understanding of relations between humans, wildlife and nature (Madden, 2004). Based on this challenge, Frank & Glikman (2019) propose the coexistence

continuum. It enables a categorization of human behavioural responses towards wildlife based on underlying attitudes, in degrees that range from conflict to coexistence. Table 1 displays the categories as described by Frank & Glikman (2019). Although the continuum could be interpreted as a linear process in which conflict and coexistence occupy opposite poles, the categories should be seen as fluid and open for redefinitions. Within the continuum, HWI should be considered as multidimensional, dynamic, and context-dependent (Frank & Glikman, 2019). The table merely functions as a clarification. Additionally, coexistence does not presume the absence of conflict, for conflict is part of life (Pooley et al., 2021). Exploring how conflicts can be transformed into acceptance of wildlife in human's proximity may indicate a pathway towards mechanisms that enhance coexistence and tolerance towards wildlife (Frank & Glikman, 2019).

Table 1 Categorizations of human behavioural responses to wildlife based on underlying attitudes, as described by Frank & Glikman (2019: 11).

Category	Behavioural responses to wildlife
Extremely negative/conflict	This category is characterized by human attitudes and behaviours that can result in the retaliatory or intended killing of wildlife. It includes people that show support for eradication policies and/or the sabotage of species conservation.
Less negative	This category includes people that disagree with species management and conservation, but likely don't take direct actions against wildlife. They show support for wildlife management responses such as lethal control, selective killing and relocation, but the killing itself is seen as a management intervention undertaken by wildlife agencies, and not as retaliatory.
Neutral/mixed	This category includes people with no interest in wildlife and an indifference towards wildlife issues. It is characterized by passive tolerance and passive coexistence.
Positive/coexistence	Includes people with a deep affiliation to nature, and the willingness to forgo one's own interests to further those of wildlife. Some seek a full integration of wildlife within human landscapes. This category is characterized by humans favouring the needs of wildlife.

Urban ecosystems

Nonhuman wild animal species have inhabited areas in the vicinity of humans for as long as humans have lived in settlements. The gradual influx of more wildlife in urban areas reminded humans these areas are ecosystems, suggesting wildlife species are inherent parts of urban areas (Alagona, 2022; Soulsbury & White, 2015). Urban habitats across the world exhibit some common ecological characteristics, in which HWI typically occur more frequently in intermediate levels of development adjacent to green spaces or natural areas. The intensity of HWI can be subject to parts of animals' life cycles, such as nesting or denning (Soulsbury & White, 2015).

Adjusting to cities can be hard for wild animal species as its landscapes tend to change quickly and often, as well as the disappearance of corridors that connect safe habitats in cities (Soulsbury & White, 2015). The disappearance of some species and the thriving of others in urban environments shows a disparity in survival rates related to urban habitats (Alagona, 2022), which is likely associated with the diverse ways in which different species utilize urban

areas and available resources. These range from concentrated use outside the urban area and occasionally including an urban fringe, to use that spans the entirety of urban spaces (Soulsbury & White, 2015). Essentially, species that translocate easily and feed on an opportunistic diet tend to do better in urban landscapes than specialists who prefer a fixed territory. Furthermore, wild animals' diet in urban habitats is frequently complemented by subsidies - food provided by humans that would otherwise not be available in the organism's food web, for example by the widespread feeding of wild birds. The line between resources and subsidies can become blurry, shown by animals feeding on people's recreational fruit trees and by scavenging human waste (Alagona, 2022). The ways in which species utilize urban areas and resources likely impacts the frequency and outcomes of HWI, as it may increase or decrease the likelihood that human and nonhuman animals cross each other's boundaries. Additionally, species involved in negative HWI tend to be non-random, as they are inclined to have broad dietary requirements, which obliges them to live in close proximity to high densities of human populations (Soulsbury & White, 2015).

Urban inequalities

Human and nonhuman urban residents can gain considerable benefits from encountering each other (Soulsbury & White, 2015). Some people living in urban areas actively seek wildlife interactions through feeding wild animals. This can be illustrated with an example from India, in which the feeding of macaques around temples by urban residents that experience mental distress has been shown to carry a considerable positive impact on people's mental wellbeing (Barua et al., 2021). Nevertheless, even though particular communities that closely interface with wildlife are tolerant of it, they likely face many hidden impacts from wildlife interactions, such as diminished psychosocial wellbeing, disruption of livelihoods or uncompensated costs (Barua et al., 2013). As environmental enhancements tend to increase the cost of living in urban areas, protecting and restoring urban habitats may impede equal sharing of the costs and benefits of urban wildlife among diverse groups of people (Alagona, 2022). This consideration responds to a recognition of the influence that current political-economic structures may have on different forms of different HWI (Fletcher & Toncheva, 2021). The disparities in the uneven distribution of the costs and benefits of coexisting with wildlife have been termed coexistence inequalities (Jordan et al., 2020). It is very plausible that such coexistence inequalities are stronger in urban areas already characterized by high inequality. Thus, the urban wildlife influx likely has different consequences for different groups of people, and therefore potentially exacerbates existing urban inequalities in its current context.

Leopards, macaques, mongooses and snakes in India

In India, the urban landscape is home to a diverse array of wildlife species, each with their own cultural and symbolic significance. Cows hold paramount importance nationwide, while macaques are revered as representatives of the Hindu god Hanuman. Elephants symbolize the deity Ganesha, bears are associated with Jambuvan, and the feline deity Waghoba is worshipped in villages across Maharashtra (Dhee et al., 2019; Ghosal & Kjosavik, 2015). These species gain symbolic representation through religious and mythological narratives, illustrating the connections between humans and wildlife in the Indian context.

Examining HWI within this context reveals an interplay of beliefs, perceptions, and behaviours. For example, a case study on Waghoba highlighted two contrasting perspectives. The "nonmodern practice" views humans and leopards as interconnected in a web of moral and social relations, recognizing leopards as social actors with morality, empathy, and reciprocal interactions. In contrast, the "modern practice" of conservation perceives leopards as separate from human society, devoid of social history and considered as amoral and apolitical entities, relying on state protection and scientific intervention (Ghosal & Kjosavik, 2015). These differing

views shape the dynamics of human-leopard interactions and reflect the varied conceptualizations of nature and wildlife in urban settings.

Additionally, the mongoose plays a central role in a tale internationally well-known as "Llewellyn and his Dog" and within India as "The Brahmin and the Mongoose." The story recounts a woman mistakenly killing her mongoose, misinterpreting blood on her baby as an attack when the mongoose was actually defending the baby by killing a snake (Blackburn, 1996). Perhaps, macaques are seen as so-called ‘awkward creatures’, organisms that must die in order to let others live (Ginn et al. 2014), and are therefore of lesser significance to humans than the other species.

Similarly, human-macaque relations are diverse and often multifaceted. Macaques transcend human boundaries of categorization by adopting multiple roles through their interactions with people. They can be regarded as pets, symbols of wild nature, representatives of Hanuman, crop raiders, or even employees. For instance, in Thailand, the practice of employing pig-tailed macaques for coconut picking involves an unequal yet cooperative relationship, as humans benefit economically while macaques receive food, shelter, and protection. Macaques often receive food from people due to their association with Hanuman, and populations residing in temples generally receive more protection compared to those outside temple boundaries (Radhakrishna, 2013).

Snakes, too, hold a significant presence in India, adapting easily to challenging conditions in their search for food, including human neighbourhoods. Therefore, human-snake encounters are increasingly common in urban areas. In Hindu scriptures, snakes occupy a complex status, being seen as sacred, malevolent, and cursed. These Hindu religious beliefs contribute to both fear and tolerance, creating a complex perception of snakes. This leads to widespread fear-driven killings, especially in cities and peri-urban borderlands, where Hindu superstitions and human unease about nonhumans in exclusive urban human areas prevail (Narayanan & Bindumadhav, 2019). Thus, snakes seemingly embody a contradiction; the species are seen as sacred beings while simultaneously being perceived as killable beings. The fear-driven perceptions are not unfounded. India experiences one million snake bites annually, resulting in approximately 45,900 deaths, since about 50 out of the 285 snake species in India are venomous enough to pose a significant threat to humans (Narayanan & Bindumadhav, 2019). Dangerous encounters between humans and nonhumans often exerts a desire to re-assert human exceptionalism and supremacy, resulting in revenge and further killing of nonhumans (Ginn et al., 2014).

Concluding, the concept of coexistence aims to overcome challenges posed by (a focus on) negative human-wildlife relations. The coexistence continuum enables a categorization of human behavioural responses towards wildlife, in degrees that range from conflict to coexistence. Urban wildlife coexistence can be investigated by focussing on HWI in cities, the outcomes and frequency of which are determined by urban characteristics, wildlife species, as well as human perceptions and attitudes of wildlife. Leopards, macaques, mongooses, and snakes each embody unique roles, challenges and symbolic representations. Comparing the dynamics people have with each species may reveal how the concept of coexistence can be of aid in overcoming the difficulties of living together with diverse wildlife species in urban areas.

3. Methodology

The methodology chapter of this thesis outlines the research design, data collection methods, data analysis techniques, and ethical considerations used in the study on urban wildlife coexistence. The research design employed was an ethnographic case study. Data was collected using semi-structured interviews, participant observations and auto-ethnography. Data analysis followed an interpretative and reflexive approach. Measures were taken to protect informants, including obtaining informed consent and ensuring confidentiality. This section aims to enhance transparency, replicability, and provide a foundation for future research.

In order to gain a comprehensive understanding of urban human-wildlife coexistence and diverging human-wildlife relations, this research adopts an ethnographic case study approach. This approach seemed suitable as it allows for examination of wholes rather than parts and Is suitable for investigating phenomena when it is not desirable or possible to introduce interventions (De Vaus, 2001). Ethnography enables investigating phenomena by making sense of the social world by collecting data in 'natural' settings without specific set ups for research purposes (Hammersley & Atkinson, 2007). The research process follows a phased iteration approach, wherein data collection strategies are based on key issues or findings from the preceding phase. Both data collection methods correspond to a phase in this iterative process.

3.1. Operationalization

The operationalization section focuses on the translation of theoretical concepts into measurable indicators to ensure the research's validity and reliability. Table 2 outlines the measurement instruments used for this purpose. Section 3.2. discusses the instrument selection process.

Table 2 Concepts to be measured and corresponding measurement instruments.

Concept	Instrument
Human relations to leopards, macaques, mongooses and snakes.	Semi-structured interview questions.
Differences between human relations to different wildlife species.	Semi-structured interview questions.
Categorization of human behavioural responses to wildlife as according to the coexistence continuum.	Participatory observations and interview questions on wildlife management strategies.
Human attitudes towards leopards, macaques, mongooses and snakes.	Semi-structured interview questions.
Descriptions and meaning of coexistence in context of this research.	Semi-structured interview questions.

3.2. Data collection

This section describes the chosen methods for data collection. Qualitative ethnography enabled the production of contextual, in-depth knowledge about human relations to leopards, macaques, snakes and mongooses, as the approach enables to study phenomena within their context and considers subjective meanings created by people (De Vaus, 2001; Hammersley & Atkinson, 2007). In order to achieve the necessary understanding of human-wildlife relations, I chose to collect descriptive data gathered via observations. To increase internal validation, I

employed two different data collection methods, which reduced the risk of measurement issues and biases unique to each method. The chosen methods are described below.

In order to gain insights in the diverging human relations and underlying attitudes to leopards, mongooses, macaques and snakes, semi-structured interviews were conducted with different key actors. This type of interviewing was chosen because it seemingly provides structure to interviews, which ensures the possibility of touching upon necessary topics prepared beforehand. This was essential as there would likely not have been the possibility to conduct a second interview with all informants. Semi-structured interviews also enable little control over informants' responses, allows them to open up, and enables them to express themselves in their own terms and at their own pace. By using convenience- and snowball sampling, participants who are affected by or show interest in urban wildlife were identified. The selection criteria for participants is further elaborated in section 3.4. Using an interview guide likely improves the reliability and comparability of qualitative data (Bernard, 2018). An interview guide was used for reference points, which can be found in Appendix B Interview guide. The interviews were held at the informant's house, workplace or in a café. I held 17 interviews, in which I spoke to 28 people in total, because other informants would join the conversation spontaneously. The duration of the interviews varied between 50 minutes and 3.5 hours, with an average duration of 1 hour and 50 minutes, producing 30 hours of interview audio recordings in total. Three interviews were held with tribal members who did not speak English, during which a bilingual informant directly translated their answers into English for me. The other 14 interviews were held in English. Data was stored by recording the audio on my phone and by taking additional notes. The audio of three interviews could not be recorded. These interviews are recorded by elaborate note-taking. Details of the data management are further elaborated upon in paragraph 3.8.

Gaining a better understanding of the categorization of human behavioural responses towards wildlife through the coexistence continuum called for in-depth data collection. This was done by participatory observations, as this method allows for recording information about such responses in 'natural settings' (Bernard, 2018). Four participant observations were conducted, varying between two and seven hours. The focus of the participant observations was based on identified key issues that emerged from the semi-structured interviews. People's behavioural responses towards wildlife were observed within SGNP and in other parts of Mumbai. The observations and corresponding informal conversations were recorded by taking notes. Complimentary to participant observations, I gathered data using the approach of autoethnography. This method uses personal experiences to illustrate facets of a cultural experience. It also allows to produce meaningful and accessible research grounded in personal experience, deepening the capacity to emphasize with what is presented in the research (Ellis et al., 2011).

3.3. Research site

This section provides a general description of the research site. The Sanjay Gandhi National Park (SGNP), spanning an area of 104 km2, is among the rare protected areas in India that lie within the municipal boundaries of a metropolis (Surve et al., 2022). Being one of the most popularly visited protected areas in the country, SGNP is home to approximately 43 tribal hamlets occupied by the Warli and Mahadev Koli tribes (Surve et al., 2022). Despite its location surrounded by a densely populated megacity, the park faces pressures such as unplanned construction, industrialization, and vehicular emissions (Everard et al., 2020). Nevertheless, the park sustains numerous plant and animal species within its fragmented green areas (Andheria, 2021). Additionally, the park plays a vital role in contributing to the water resources of Mumbai and Thane, while exhibiting better air quality and temperature regulation compared to other parts of the city (Everard et al., 2020).

The research site specifically consisted of three neighbourhoods adjacent to SGNP: Aarey milk colony, Borivali and Mulund-West, displayed in figure 1 and figure 2. These neighbourhoods were selected for their small proximity to the park, because of numerous reports of negative human-leopard interactions in Aarey (Bhalerao, 2021), and the seemingly diverse characteristics of the neighbourhoods (MBTV by Magicbricks, 2022). Choosing neighbourhood residents as the study group created an open research setting with no formal barriers for entering the research site or accessing the study group (Hammersley & Atkinson, 2007).

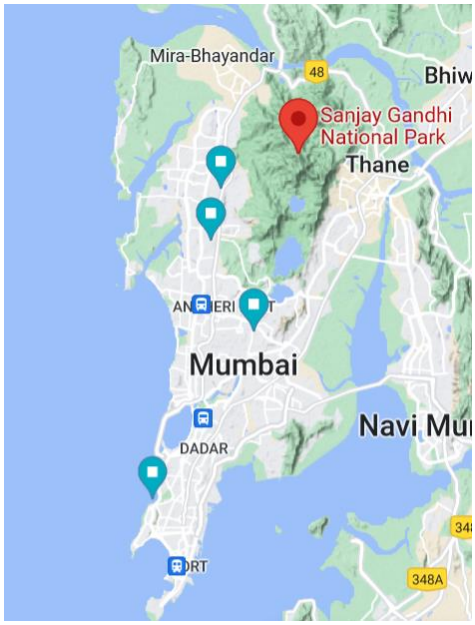

Figure 2 Location of SGNP in Mumbai

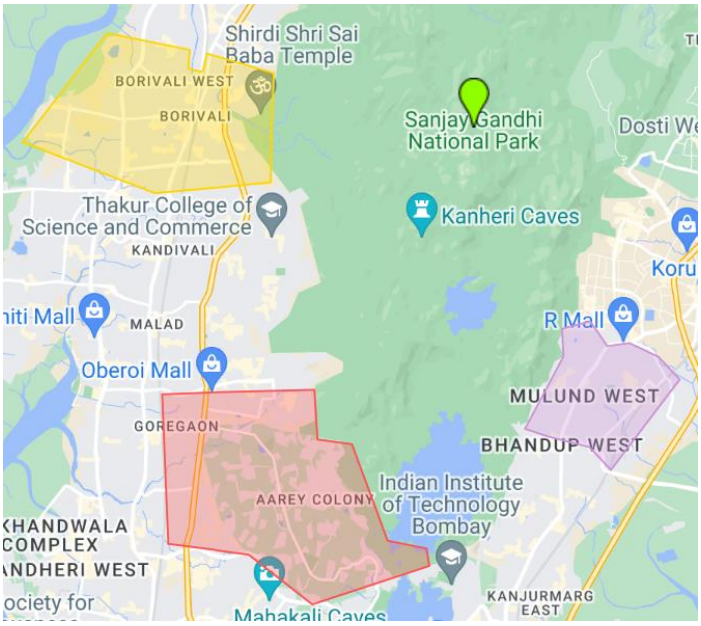

Figure 2 Proximity of Aarey milk colony, Borivali and Mulund West to SGNP

3.4. Participants

This section discusses the study group of this research, which mainly consists of residents that live in three selected neighbourhoods located around SGNP. Relevant key actors and stakeholders within the research site were identified by following leads in news articles, announced events or activities concerning urban wildlife on social media websites and the website of SGNP. Table 3 outlines an overview of all relevant actors. Prior to the start of the fieldwork, a desired number of informants for semi-structured interviews (column 4) was formulated relative to the importance and size of each category (column 1). The baseline for each category is set to 1. The category of civilians/residents is considered as essential for gaining diverse perspectives on the research topic, hence, their number is set to 6. Column 5 (Real#) displays the number of informants I interviewed. Some informants fit with multiple categories, hence, the total number of column 5 does not correspond to the total number of informants of this research. A disparity between the informants I expected to talk to and the informants I ended up speaking to is reflected in the difference in numbers of column 4 and column 5. An overview of the informants, leads for new informants, their contact details, their relevance, and their contribution to the research were stored in a database. A detailed display of each informant and their role is depicted in Appendix D Informants. Informants for participant observations were selected by convenience sampling.

Table 3 Overview key agents/participants

Category	Entity	Relevance to research	#	Real#
Organized groups	Aarey Conservation Group	Action group to protect and/or conserve the forest area.	1	2
Civilians	Residents	Frequent interactions with wildlife.	6	16
NGO's	WCT	Human-Wildlife Interface Management.	1	0
	RAWW	Working on human-wildlife conflict mitigation.	1	0
	WWA	Wild animal rescue operations in Mumbai.	1	2
	WCS – India	Running a program on Human wildlife interactions.	1	1
	Thane CPCA	Wild animal rescue operations in Thane district.	1	1
	Unknown NGO	Active in central India on human-tiger relations	1	1
Total				5
Government bodies	SGNP management	Controlling key area of the research site.	1	2
	Maharashtra Forest Department	Responsible for management of SGNP, among others.	1	1
	Mumbaikars for SGNP project	Set-up by the Maharashtra forest department, aiming to assist in management human-leopard interactions.	1	3
	Thane Forest Department	Sub-department of Maharashtra forest department.	1	0
Total				6
Professionals	Monkey catchers	Relocating and transporting monkeys upon call for monetary payment.	2	0
	Snake rescuers	Relocating snakes	0	2
	Journalists	Specialized on the topic of HWI	0	1
	Conservation biologists	Freelance, setting leopard camera traps	0	1
Total				4

Participants were considered as either *residents* of a neighbourhood in the research area or as *experts* on the research topic. Each informant is anonymized by substituting their personal name by either their professional role, or by the role they played in the research. The following list presents an overview of all informants:

- Adivasi (Malhar Koli and Warli)
- Conservation biologist
- Head of NGO on tigers in central India
- Head of Wildlife welfare association (NGO)
- Honorary wildlife warden of Thane
- Journalist
- Junior snake rescuer
- Leopard rescue team member (government)
- Members ACG (action group)
- Mfsgnp project coordinators (government)
- Office staff Thane CPCA (NGO)
- Researcher WCS-India (NGO)
- Residents of Mulund, Thane district, Borivali and Aarey milk colony
- Senior snake rescuer
- Veterinarian (government)

3.5. Data analysis

The collected data was analysed by using an interpretative and reflexive approach. This means I interpreted the qualitative data using the discussed theories and my personal reflexivity. Relevant citations were selected from the data based on the insights they offered into informants perceptions and motivations regarding urban HWI. These citations are categorized, interpreted and discussed based on their relation to the research question.

Certain aspects of the data transcriptions were adjusted. I decided to include non-words such as ‘uh’, but no vocal sounds, such as laughing. The readability of some sentences was obstructed by faults of the transcription, in which case I altered the transcript. Unrelated “small-talk” is deleted from the transcriptions. To anonymize informants, personal names and other trackabilities to informants were deleted as well.

3.6. Ethical issues

Ethical dilemmas

My positionality has most likely impacted the responses I received from informants. Informants likely won’t benefit directly from the research. They may have felt as if they had to live up to certain social expectations. Past experiences of wildlife interactions may have been traumatizing to informants, and they may have carried strong emotions or sensitivity towards wildlife, which could have been triggered by the interviews.

The religious component of this research focuses predominantly on Hinduism, as it has a strong tradition of nonhuman animal representation and worship. As a result, practices of animal worship and presentation in most other (forms of) religion were excluded from the research. The topic of religion was considered as sensitive within the current political context. As such, questions about which religion informants identify with were avoided during interviews.

Confidentiality and anonymity
Data is anonymized and stored securely. Research results will be shared with informants. Informants will be given the opportunity to review and discuss the results prior to any form of publication. It is aimed to share the final research output with informants, ideally making it available publicly.

Informed consent
Participants were informed about what it means to participate verbally. I addressed voluntary participation, the ability to withdraw at any time, data storage, and anonymity. They were provided with the opportunity to ask questions about these topics (Hammersley & Atkinson, 2007). Overt ethnography likely leads to biases in observable human behaviour, but is ethically preferable over covert ethnography. In practice, collecting data using the method of participatory observation created ethical issues concerning participation consent. Many informal, unstructured interviews occurred so spontaneously it limited obtaining full consent of each informant.

Harm/exploitation
To avoid knowledge exploitation, it must be ensured informants can at least benefit indirectly from the research (Hammersley & Atkinson, 2007). Thus, I aim to develop a holistic understanding of people's relations to wildlife, as this could inform wildlife management practices and reduce issues around urban wildlife. As the SGNP area has been investigated in the past concerning similar topics, I tried to avoid over-researching by trying to approach different informants.

Consequences for future research
To reduce possible expectations of and dependency on future researchers, informants were not paid or awarded for participating (Hammersley & Atkinson, 2007).

3.7. Limitations
This section describes limitations of the research design and methodology and their potential consequences. By having an outsider perspective, a full understanding of informants' experiences was not possible. Moreover, the short time frame of this research only allowed for 2 months of fieldwork. This likely limited the collection of comprehensive data, since building trust with informants in order to facilitate full and honest discourse is time-consuming.

The external validity or transferability of this research is low due to the ethnographic character of the study and the use of in-depth, qualitative data. Using non-probability- and snowball sampling for the participant selection likely resulted in a self-selection bias (De Vaus, 2021). For example, all informants seemed to have a high affiliation to the research topic and the majority of informants was of similar age and educational attainment. By being dependent on English for the semi-structured interviews, not all population groups were equally accessible to be included in the research. The design of a case study allows for an in-depth investigation of a specific context, but the generalizability of the results to a larger context is limited by the small sample size of this research and specificities of the research site. However, the diversity in informants' roles increases the generalizability of the research to populations of other cities with similar characteristics and high frequencies of HWI.

The internal validity of the research is low due to several aspects. Since part of the data collection is done in a retrospective way, such as addressing experienced wildlife interactions that occurred in the past, the method is partly dependent on people's ability to recall the past. This likely led to recall bias of the results. By using multiple sources for data collection, the accuracy of the data may have improved (De Vaus, 2021). Data collected by interviews is likely to be biased by reactivity, which refers to people changing their behaviour when they know that

they are being studied. In this study, reactivity is reduced by using active and passive participatory observation and autoethnography (Bernard, 2018). As a result of the interpretative character of this study, observer bias and confirmation bias likely affected this research. This is partly addressed by triangulation of data collection methods and sources (De Vaus, 2021). The data is likely affected by response bias, which occurs when informants feel like they should align with social norms and expectations, resulting in social desirability. To reduce the response bias, I attempted to use unambiguous and neutral language during the interviews (De Vaus, 2021). The open setting of the research by choosing residents as the main actor to be investigated and a publicly accessible national park enabled easy access to the study group and research site. However, these decisions limited full immersion in a group for the data collection, since the group was not defined and bounded clearly. Following the argumentation of Hammersley & Atkinson (2007), this likely affected my ability to fully understand the experiences of the study group.

3.8. Data management plan

The collected data of this research is managed following the guidelines of the Data Management Policy of the Space, Place and Society Section of Wageningen University and Research (2021)[1] and its corresponding Individual template. An elaborate description of the data management plan and the template can be found in Appendix A Data management plan SPS

1 Sources derived from the Brightspace of SPS Wageningen University & Research (not publicly accessible)

4. Exploring human-wildlife dynamics: empirical analysis

This chapter discusses the main empirical research findings about human relations with leopards, mongooses, snakes and macaques, and their implications for coexistence in Mumbai. The observations reveal a paradox where humans strive to establish a framework for HWI, while this control is challenged by different wildlife species that demonstrate an autonomy independent from people. In response, humans attempt to increase control through harmful wildlife management targeting individual leopards, macaques and snakes. Through a bias towards particular species, mongooses are exempted from harm. Additionally, certain groups of people are favoured over others, revealing coexistence inequalities: disparities in the uneven distribution of the costs and benefits of coexisting with wildlife, increasing the vulnerability of some people.

In the following discussion I will break down these elements by presenting observations that indicate an independent agency of nonhuman animals, followed by observations that suggest humans attempt to establish a framework for HWI. This is followed by a discussion of the effects of current wildlife management on wild animals, and an exploration of how current HWI potentially exacerbate existing urban inequalities.

4.1. Wildlife autonomy

This section displays wildlife's autonomy independently from people across the four different species.

Macaques

Informants consistently described human-macaque relations in Mumbai as a nuisance. This perception was associated with macaques frequently entering people's homes and gardens in search of food. The former coordinator of Mfsgnp (2022) recalled what residents had told her: "They were just like we have never eaten mangoes of our tree. Never. It's only the monkeys that eat mangoes of our tree".[8] Another informant shared a similar encounter, stating, "They walk and then they come when they know the fruit season is there. So like the mangoes and they don't take the upright ones, they take the best ones. (…) Same thing with the coconut" (journalist, 2023).[2] Two other informants echoed this sentiment:

> Plenty of monkeys come here. They hang out on the grill outside. (…) So, they would use these ropes to the wire to connect to the other buildings (…) we had so many monkey attacks at our home. They would just come in and steal away fruit and everything that is there in the kitchen (Residents from Mulund, 2022).[3]

Additionally, another informant described the visits of macaques they often received as:

> you get 200, 250 monkeys, pregnant monkeys and mother monkeys and father monkeys, everything. They all go and they destroy all the trees, whatever they want to destroy, they'll play around with it. Destroy it and go (Neighbour 1 of journalist, 2023).[4]

The citations are important as they show how macaques demonstrate autonomy in their movements and food consumption. Informants depict macaques as consistently transgressing

[2] Journalist. Interview by author. January 7, 2023. Mumbai, India.
[3] Residents from Mulund. Interview by author. December 23, 2022. Mumbai, India.
[4] Neighbour 1 of journalist. Interview by author. January 7, 2023. Mumbai, India.

human boundaries of acceptable behaviour by describing macaque activities as attacks that cause damage and as stealing. These descriptions highlight how human-macaque interactions are predominantly categorized as negative, in which macaques seem to be viewed as entitled and damaging thieves. Human attempts to control macaque populations have largely failed. Some informants expressed a sense of helplessness in preventing macaques from trespassing their boundaries, as two informants stated: “You just kind of shoot them away? We can't do much, right? But we have some sticks, but they are so used to humans” (Residents from Mulund, 2022).[3] The citation suggests that macaques leave human individuals feeling powerless, thereby indicating an ability to take decisions separately from human influence.

Snakes

Snakes emerged in the research because the majority of informants brought up stories of snakes themselves. The strong association to snakes when discussing HWI may be explained by their important role in Hinduism, and by the insight that snakes frequently inhabit territories claimed by humans, which was illustrated by one informant: they're found in the toilets, they're found in the kitchens, uh, under blankets when people are sleeping, when people are just going into the blanket and then they find something cold and slippery” (Thane CPCA, 2022).[5] This informant sketches an image of snakes frequently invading peoples’ boundaries of human space and safety.

The relationship between humans and snakes is predominantly characterized by ‘superstitions’, which refers to beliefs that include notions of snakes punishing individuals for past harm caused by family members, families being blessed or cursed by snakes, male snakes seeking revenge when a female snake is killed, and cobras carrying diamonds on their heads (junior snake rescuer, 2023; senior snake rescuer, 2023).[12] [6] Human attempts to act on such beliefs are translated into snake worship practices. This is illustrated by one informant: “In Southern India, you will have a small, snake worship places outside of every house. (…) My native place also, we have it in Kerala. Every year we still do a puja [offering]” (Head of NGO, 2023).[7] These observations essentially highlight the dual perception of snakes as both malevolent and sacred, and their frequent invasion of people's safety boundaries. The contradictory beliefs surrounding snakes complicate the work of the so-called snake rescuers, who are expected to voluntarily relocate snakes from human-defined areas. The junior snake rescuer (2023) said his work mostly consists of explaining people the benefits of leaving the snake undisturbed, unless it poses a significant threat to people.[12] These examples suggest that snakes, like macaques, exhibit a lot of autonomy in their movements and habitat choices, indicating a certain level of independence until they are detected by humans.

Leopards

Leopards frequently cross the human-made borders of SGNP, occasionally entering human residencies. Leopard encounters seem to have a bigger impact on informants than interactions with other species. The journalist (2023) said: “Snakes are definitely dangerous. But if snakes bite, at least you've got the hospital and you can run within one hour you can be saved. But from leopards you cannot be saved”.[2] The potential danger a leopard poses to humans, along with their highly avoidant behaviour, may explain the significance a leopard encounter holds for people. The following citations matter as they show how the context of an encounter, such as duration and distance to the nonhuman individual, are important for the effect it has on people. Descriptions by informants about their emotions during leopard encounters range from feeling mesmerized to very scared. One informant described it as: “Jell-O excited. (…) I feel it

[5] Head NGO focussing on tigers in central India. Interview by author. January 3, 2023. Mumbai, India.
[6] Thane CPCA. Interview by author. December 27, 2022. Mumbai, India.
[7] Senior snake rescuer. Interview by author. January 3, 2023. Mumbai, India.

was a leopard (…) it was so, it was so careful. (…) I am still living that experience. (…) I can't say it was the leopard, but I hope it was" (Past coordinator Mfsgnp project, 2022).[8] The informant attributes specific characteristics such as carefulness to the leopard. Despite lacking tangible evidence of the interaction, the mere thought and anticipation of such an encounter excites the informant. Another informant had a similar experience: "And that was like so mesmerizing. I was, uh, so happy. (…) I was so super excited. (…) I said, I'm sure this course is going to be very rewarding, because today I saw leopard" (ACG member, 2023).[9] This informant expected prosperity from encountering a leopard. Malhar Koli informants received a leopard visit at their home. Although the leopard walked on their porch and they made brief eye contact through the open front door, the informants were not scared of the animal (Malhar Koli, 2023).[10] This experience contrasts with how the informant from Thane CPCA (2022) remembered seeing a leopard:

> We have had a very, very close encounter with the leopard. (…) She just came here, waited, went away. (…) it was really scary to see the animal there. Vicious. Very vicious. (…) I can't even explain it to you, but I can just tell you in one word. It was scary. It was very scary. [6]

This informant describes the leopard encounter vividly as a very scary experience, contradicting preceding observations. These citations show how the informants were unable to predict, provoke or refrain from a leopard encounter, regardless of their desire. Humans cannot fully control or predict leopard behaviour, despite their attempts, such as employing camera traps. In addition, some informants explained the precautions they took to prevent negative interactions with leopards, illustrated by the following citation:

> Normally we don't come late. (…) he goes around about 10, 10:30. That is the time I'm scared for him also. And for my, for us also, we don't like to go out. (…) Because we have tried to take precaution not to go out after eight o'clock. (Neighbour 2 of journalist, 2023)[11].

This informant fears for family members who need to go out after dark. Additionally, Warli informants (2023) explained:

> whoever there in the house, she says nobody gets out. All small children also inside (…). And then everybody gets inside. So also the chickens go in the houses and all the like, also the dogs and cats.[12]

This citation suggests the informants take responsibility for their livestock to be kept safely from leopards at night. These informants seemed to live in a high probability of encountering leopards. They indicate to protect themselves from the autonomy of leopards, as leopards seemingly 'decide' when they will inflict harm on people, to which people are powerless. Taken

[8] Past coordinator of the Mfsgnp project. Interview by author. December 26, 2022.
[9] ACG member in Aarey. Interview by author. January 3, 2023. Mumbai, India.
[10] Malhar Koli in Aarey. Interview by author. January 30, 2023. Mumbai, India.
[11] Neighbour 2 of journalist. Interview by author. January 7, 2023. Mumbai, India.
[12] Warli. Interview by author. January 18, 2023. Mumbai, India.

together, the findings above indicate the leopard population in SGNP has a certain autonomy over their lives.

The independent value attributed to leopards by people is further illuminated by practices relating to the deity Waghoba by informants considered as tribals or Adivasi. The Malhar Koli informants (2023) said: “No, actually we worship the leopard. Leopard is our God”.[10] A Warli informant (2023) explained further:

> one of the leopards will look out for a village. (…) That particular Waghoba whom they're praying will take care of all the evil spirit and evil leopards. Who will harm them, their children, their livestock, and agriculture .[12]

The informant suggests communities that worship the Waghoba deity view one leopard in the area as an embodiment of the deity, who will protect the village from varying dangers. Waghoba originally represents tigers, but as tigers went extinct in the national park, they are substituted by leopards. Another Warli informant (2023) said: “Tiger is a big brother and leopard is a small brother. So where there is a big brother, the small brother will be under control”.[12] The informant refers to tigers and leopards as brothers controlling each other’s population, attributing agency and human attributes to the nonhuman species. Additionally, Malhar Koli informants (2023) explained:

> Sometimes we didn't see them, but we know they are here because dogs bark differently when leopards are here (…) we hear dogs bark. And then we understand that’s leopard. (…) Smell of the leopard. Different smell. (…) Dogs can smell that.[10]

These notable interactions involving (stray) dogs have an impact on people's interactions with leopards, to the extent that it enhances their sense of safety. This creates a paradoxical relationship among leopards, dogs, and humans, as humans offer shelter to dogs, which in turn attract leopards to human areas, yet the dogs can simultaneously serve as a warning system for humans regarding the presence of leopards.

Mongooses

Interestingly, most informants could not tell me as much about mongooses as compared to the other species. This may be illustrated by one informant: “I can tell you about monkeys. I can tell you about leopards. I honestly cannot tell you about the mongooses”. (Past coordinator Mfsgnp, 2022).[8] Moreover, the informant from Thane CPCA (2022) said: “they're very shy and not very visible. So there is not much data about mongooses” [6.] Whereas this informant seemingly uses mongooses’ characteristics to explain her knowledge gap, the residents of Mulund-West (2022) said:

> Yes, there are some mongooses, but they're like not an issue. (…) It's not very, it's not bothering. It's not harming you. In fact, the folk tale tells it takes away the snakes. So in a way people know that they're going to help you out. [3]

This citation is important as it indicates the informants seemingly explain their knowledge gap by mongooses as if not being problematic enough. They framed mongooses as a helpful species, and struggled to provide significant information when asked about them. The informant from Thane CPCA (2022) suggests something similar when the informant talks about

mongooses: “the only thing to be worried about is transmission of pathogens”.[6] These citations suggest informants assumed only negative stories about animals matter for my research.

Notably, all informants automatically associated mongooses with snakes. This is explicitly expressed by the informant from Thane CPCA (2022): "So when you talk about mongooses, it would be good if you could find out something about snakes".[6] The reciprocal connection between snakes and mongooses is echoed by the junior snake rescuer (2023): "Well-known Hindi saying, the snake is the friend of a farmer, as they protect crops from rodents [including mongooses]. This is why people worship snakes".[13] These citations reveal a dual perspective where snakes are both feared and worshipped, while mongooses are regarded as human allies for their role in snake elimination. Conversely, snakes are seen as farmers’ allies due to their ability to control rodent populations. It is worth noting that among the discussed species, mongooses stand out as the only one that does not seem symbolized or worshipped within religious practices, and the only species for which informants consistently express predominantly positive attitudes.

Across all species

Informants that showed increased engagement with wild animals seemed to recognize nonhuman agency more. One informant expressed a remarkably high tolerance of leopards: “I've seen them so many times. (…) They don't do anything. They, they're scared of humans, I guess” (neighbour 2 journalist, 2023).[11] This citation suggests neutral HWI could lower fear of certain wild species. Moreover, the conservation biologist (2023) explained about the Malhar Koli community in Borivali:

> So generally if somebody gets bitten by a snake, people are scared, but not, not angry at the snake. (…) Oh, long back. His younger brother died of a snake, (…). He doesn't have any grudges or, you know, sort of hostility for the snake. (…) So that is the best thing, you know, that life moves on.[14]

The citation suggests a high tolerance of snakes, even when it results in the death of a close family member. The remarkable level of acceptance or tolerance towards wild nonhumans considered as dangerous was repeated by the Warli informants (2023): “(…) the leopard ate chickens from this tree here. (…) So he saying that the mistake is of the chickens also because they were kept inside the home. They went to the tree. So he has no grudges, no nothing”.[12] The Warli informant (2023) continued by explaining: “So earlier individuals used to pray on their own. It was not collective, but then they realized that it should be collective. So they, they did it collective. And that's how it's [leopard attacks] reduced”.[12] This citation is notable, as it shows how community members attribute specific social practices to the effectiveness of Waghoba, thereby enhancing its impact on themselves. These observations indicate that informants attribute agency to leopards by acknowledging how the worship of Waghoba can serve as protection for the community when sufficient prayers and offerings are made. Essentially, those who engage in practices related to Waghoba seemingly recognize a greater degree of independence for leopards compared to informants who do not.

HWI seemingly generate both conflict and collaboration between people. The journalist (2023) explained: “(…) we have a society WhatsApp group. (…) if you've spotted a snake, then you put it on the group saying listen, I’ve seen a snake here. Please be careful”.[2] This citation

[13] Junior snake rescuer. Interview by author. January 4, 2023. Mumbai, India.
[14] Malhar Koli in Borivali. Interview by author. January 18, 2023. Mumbai, India.

suggests communities collaborate and put warning systems in place for nonhumans considered as dangerous. The informant continued by explaining how there was an ongoing conflict in the WhatsApp group about an unknown resident that allegedly fed cats (journalist, 2023).[2] Stray cats are known to attract leopards. The journalist (2023) explained that after each leopard sighting in the neighbourhood, other residents would show frustration with the mysterious cat feeder.[2] These anecdotes show how HWI have the ability to change human social interrelations, fostering both collaboration and conflict.

Overall, the research findings suggest that wild animals exhibit a certain autonomy independent from people. Consequently, species that have the potential to inflict major damage to people, such as leopards and snakes, induce mechanisms in which people attempt to control these species, thereby diminishing part of the animal's independence. Species that receive religious representation simultaneously tend to pose significant threats to people, suggesting that humans seek control over these species through religious practices. As a result, the independence of less dangerous species, like mongooses, may be comparatively higher.

4.2. Human attempts to control wildlife

This section presents observations that show how humans aim to establish a framework for HWI as a response to the autonomy many wild animals demonstrate. This is followed by a discussion of the consequences of current wildlife management on nonhuman individuals.

The four species are visible to humans in different degrees, depending on different factors, such as animal behaviour and spaces separated by people. Macaques and snakes may be regarded as examples of species with a high and frequent visibility to humans, which produces strong human responses towards them. Leopards are not very visible to humans. Yet, due to the significant threat they pose to people, the species still evokes strong human responses. Mongooses have a low visibility, barely seeming to have a direct impact on human lives. As soon as species form a threat to humans they enter a sphere of vigilance. This is translated through conscious precautions taken by humans, strong human emotions in human-animal encounters, representation of the species in religion, and harmful wildlife management methods.

The Indian forest department has decided that wild animals who pose a threat to humans need removal, so-called rescuing, when in too close proximity to people. Due to SGNP being located alongside human neighbourhoods, wild animals frequently inhabit areas defined as a human space. Various wildlife rescuers I spoke to explained how their job is essentially about human crowd management, and not about rescuing wildlife. Whereas leopards are only allowed to be rescued by a small team employed by the forest department, there are numerous snake rescuers who work on a voluntary basis. The senior snake rescuer (2022) I spoke to said: “Because what we actually do is we don't rescue snakes, we rescue humans. We catch a snake from a place and then dump it somewhere else without understanding it's life, without understanding it'll survive there or not”. This citation is important because it exemplifies the prioritization of human needs over the needs of snakes.

The influence of humans in HWI is also shown by a citation by the junior snake rescuer (2023): “During snake rescues, people scream and shout. (…) People are way more scared in these situations than the snake itself. We always take a volunteer to manage crowds by telling them to stay away”.[13] Additionally, a member from the leopard rescue team (2023) said: “Police is very important. Crowd management. So that's more important than the leopard itself. (…) because of the crowd now the rescue operation gets hampered”. [15] These citations demonstrate how humans are considered as having a greater impact on animal rescue

[15] Leopard rescue team member. Interview by author. January 18, 2023. Mumbai, India.

operations than the nonhuman individual that requires removal. The junior snake rescuer (2023) explains how human responses in human-macaque interactions differ from interactions with other species: “People start gathering around the monkey, and usually people respond angry after a bite. They demand the removal of monkeys, ASAP. They complain to the forest department. I don’t think relocations work. It might even increase conflicts”.[13] This citation shows how removing macaques from human spaces is not an effective way to mitigate issues produced by human-macaque interactions.

Moreover, many informants suggested mistrust towards authorities and the government. The previous coordinator of Mfsgnp (2022) said:

> we've just had people blame the forest department that you have left the leopard here
>
> you tell the leopard where to go you do this (…) it's very antagonizing to stand there
>
> and be like they are blaming us but we've not done that and it's a lot of hate.[8]

This citation suggests mistrust of people towards authorities and the government, by blaming them for wildlife attacks on humans. This shows how residents may render human authorities as responsible for harmful HWI. This mistrust was seemingly also present the other way around. For the Warli community, deer formed a nuisance because they caused damage to their vegetable field, similarly to descriptions of other informants about macaques. Since park visitors had structurally been feeding deer, they ate the fruits and vegetables cultivated by the community. When the community filed a complaint with the forest department, they allegedly responded by saying that the community should be grateful for the deer as it meant leopards were not active in their area. However, the community had never experienced problems with leopard attacks (Warli informants, 2023).[12] This example suggests mistrust in the Warli community by the forest department.

The reciprocal mistrust between residents and government may be strengthened by the frequent turnover of government officials in India, with replacements occurring every three years. This was mentioned by many informants as a constraint to collaboration between wildlife professionals and the government. One informant said that due to the frequent turnover of government officials, it was difficult to gain long-term support from the forest department for wildlife management that considers the position of wild animals (honorary wildlife warden, 2023).[16]

Taken together, these observations show how humans strive to establish a framework for HWI. The Indian government has decided that wild animals considered as dangerous who cross human boundaries need to be removed from the area. Yet, the people who demand the removal often pose a constraining factor to such operations. Furthermore, a reciprocal mistrust between residents and government officials constrains support for wildlife management that considers the perspectives of nonhuman animals and the people affected by it.

The following paragraphs discuss the effects of current wildlife management on wild animals. Individual leopards and macaques considered as harmful, usually after attacking a human, are often labelled as unsalvageable. One informant showed me a caged macaque that was likely mistreated earlier in its life by people and thus showed extreme aggression to people. As a consequence, the monkey would likely spent the rest of its life captivity, justified as being protected of itself and its environment (honorary wildlife warden, 2023).[16] Additionally, SGNP accommodates a small population of leopards living in captivity that were captured by the rescue team after causing harm on people. This accommodation is not publicly accessible to

[16] Honorary wildlife warden. Interview by author. January 25, 2023. Mumbai, India.

protect the wellbeing of the animals. One informant told me that occasionally the wrong leopard is captured, since it's difficult to differentiate between individuals. After a certain time, especially young leopards held in captivity cannot survive by themselves, making it impossible to set the wrongly accused animals free in the park. The majority of captured leopards are pregnant females, as this group shows most aggression towards people. As a result, leopard cups have to spend their lives in captivity in the park (veterinarian, 2023).[17] Furthermore, macaques are generally 'bullied' by people. There is no effective way yet to mitigate the nuisance related to macaques. People usually try to scare them away to avoid problems. This is often done using sticks, throwing small objects, or by kicking and shouting at them.

Both snake rescuers advocated against removing snakes as it does not consider the position of snakes. They said they focused on promoting tolerance and raising awareness of alternative safety measures for snakes. Moreover, relocating snakes to forest patches will not prevent snakes from seeking shelter in human houses. Essentially, as described in the theoretical framework, snakes may relocate the area of capture. Hence, it could be seen as a way to move the problem from one person to another. Mongooses are the only species not considered as harmful, and thus the only ones not facing challenging responses by people. They can be seen as disregarded by people, yet, as a result, this neglect might contribute to more independence.

Many informants directly or indirectly reiterated a narrative of unequal attention from wildlife professionals for specific wildlife species, such as birds or snakes, as compared to leopards, in which they framed them as being neglected. According to the honorary wildlife warden (2023), these species have an 'equal need for attention'.[16] The senior snake rescuer (2023) described it as: "People will not rush to see a snake, but people will rush to see a leopard somewhere".[7] The citation suggests a disparity in public interest for snake sightings compared to leopard sightings. The neglect narrative is also shown by a disparity in the resources the forest department invests across species. The department employs a rescuing team specialized in leopards with designated equipment, whereas snake removals are fully outsourced to volunteers. According to the veterinarian (2023), who was also a member of the leopard rescue team:

> I don't give importance to the snake when it enters in someone's house. (…) But if the leopard enters into someone house (…) I have to get out of this place and go and do the operation. (…) that animal is dangerous to human life. (…) If he can escape he will injure more than 50 people and the life threatening injuries. Snake can't go bite 50 people. No, he's only bite one or two.[17]

This citation is important, as it shows how, according to the informant, an individual leopard can have a much bigger negative impact than an individual snake. However, it does not fully justify the neglect narrative and undermines the impact of species as a whole, as the number of snakes entering human homes is much higher than the number of leopards. Other informants also mention the disparity between the harm inflicted by a species and people's responses to each species:

> People die more of monkey bites or dog bites (…) Everyone is focusing on that one death that happened in a decade by a leopard. (…) But there are more people falling

[17] Veterinarian. Interview by author. January 23, 2023. Mumbai, India.

> down from the train. (…) When you hear about a leopard attack, why it registers so strongly in your mind but something that you see every day or death every day, it doesn't register (Residents Mulund, 2022).[3]

Another informant explained: “It's a lot of things. It's glamor, it's life threatening. It's the amount of damage each of these animals can cause. (…) You know, any journalist will want to cover a leopard story more here” (WCS-India, 2023).[18] The veterinarian (2023) argued the neglect narrative is mostly reiterated by wildlife professionals who specialized in so-called neglected species, since they feel neglected in their field themselves.[17]

Following the argumentation of neglected species, macaques could be seen as neglected twice. Firstly, through HWI discourses that prioritize leopards, since the damage of macaques on humans is not comparable to that of snakes or leopards. Secondly, macaques were not classified as a neglected species by any informant. According to this argumentation, mongooses would be neglected in three ways: 1) through HWI discourses that prioritize leopards, 2) by not being classified as a neglected species by informants, and 3), as explained earlier, by being considered as a species not relevant for this research. Important to note is that the favouring of certain species also becomes apparent through this research in other ways. The majority of information shared by informants concerned leopards. Therefore, the discussion of results focuses extensively on leopards and, to a lesser extent, on snakes, while providing comparatively less information about macaques and mongooses. This may reflect the difficulties of overcoming the favouring of certain species and allocating equal attention and resources to all wildlife species in urban areas.

The consequences of favouring species and neglecting others differs across species. Leopards receive more public attention through research and media, yet, this also results in an increased number of captive leopards, as each leopard involved in negative HWI is demanded to be captured. Snakes are a contradictory species in HWI, as they are neglected compared to leopards by the forest department for not employing a special snake rescue team, yet, they receive significant importance through Hinduism. Due to being widespread in urban areas, their habit of seeking shelter in human homes, and the life-threatening danger they can pose to humans, people’s responses are far-reaching, often resulting in killing the snake. Macaques are neglected by the forest department for similar reasons as the snakes. They don’t present life-threatening danger to people, yet, they still pose a nuisance. As a response, they are often bullied away or captured, thus, their neglect does not benefit the species. This contradicts mongooses, which are benefitted by the multi-layered neglect. Since the species is being disregarded by people and does not pose harm, people seemingly fully tolerate the species.

According to the coexistence continuum as proposed by Frank & Glikman (2019), which is discussed in chapter 2 (theoretical framework), human responses observed in this research can be categorized across species. The dominant response to snakes fit the category of extremely negative (conflict), since according to informants, many people involve in retaliatory or intended killing of snakes after encountering one. However, the increasing number of voluntary snake rescuers could result in a shift towards predominantly neutral or positive behavioural responses towards snakes. Responses to mongooses may be categorized between neutral and positive, since most informants show an indifference towards the species, combined with positive associations related to mongooses killing snakes. Macaques and leopards likely fit in the category of less negative, as the response they received by informants

[18] WCS-India. Interview by author. January 12, 2023. Mumbai, India.

can be described as support for wildlife management responses such as lethal control, selective killing and relocation, but the killing itself was seen as a management intervention undertaken by wildlife agencies, and not as retaliatory. Some informants could overall be categorized in the positive (coexistence) category, as the behaviour and attitudes they discussed seemingly demonstrated a deep affiliation to nature, the willingness to forgo one's own interests to further those of wildlife, and the seeking of a full integration of wildlife within human landscapes.

4.3. Exacerbated urban disparities

This section explores how urban HWI potentially exacerbate existing urban inequalities by discussing observations that show how harmful consequences of HWI vary among different groups of people, depending on their vulnerability.

The majority of informants provided a similar categorization of the people living in close proximity to the national park: so-called 1) locals/encroachers/slums, 2) tribals, and 3) high-rise residents. This categorization allowed for valuing each category differently, in which tribals were valued the most, followed by high-rise residents, and locals as the least.

Adivasis

The term Adivasi refers to heterogeneous tribal groups across India, who are recognized as 'Scheduled Tribes' by the Indian constitution (Bhengra et al., 1999). This research includes informants from Malhar Koli and Warli communities, who registered as Adivasi. Some Adivasi informants indicated to not have land rights and to be denied necessary governmental support, suggesting they are in a way marginalized within the society (Malhar Koli, 2023; Warli, 2023)[10] [12]. Yet, in the context of urban human-wildlife coexistence, most other informants framed tribals as an example of how coexistence 'should be done'. The conservation biologist (2023) even described tribals as the 'real inhabitants' of the national park.[19] Furthermore, the informant said: "Being in the forest for generations and living with the leopard for day in day out (…) So their understanding is far, far better. (…) That becomes their instinct in a way. (…) To keep away from leopard" (conservation biologist, 2023).[19] This may substantiated by another informant:

> (…) I understood that though this family is a tribal family, but have been staying in cities for a long time, that understanding or knowledge somewhere have gone away. These non-tribal families who are staying in jungle are not yet able to develop those instincts which tribal families have (Member ACG in Aarey, 2023).[9]

The informant suggests coexistence with wildlife can be developed by people when they live in close proximity to wildlife for a longer period of time, and that urban areas reduce this ability as it increases the distance between humans and nonhumans.

High rise

The conservation biologist (2023) described the hypocrisy of some wealthy high-rise residents moving closer to the national park, and using their power and influence to demand the removal of leopards and other wildlife from the area, which the informant described as 'their habitat'.[19] However, all informants I spoke to that I would categorize as high rise showed large amounts of tolerance towards wildlife by saying that they moved into the habitat of wildlife, and that people should adjust accordingly. Most 'high rise' informants moved into the areas close to the

[19] Conservation biologist. Interview by author. January 11, 2023. Mumbai, India.

national park relatively recently. They indicated they were surprised to find about the wildlife species living in the park and the challenges that come with it. This is illustrated by two informants when they talk about their initial expectations of the neighbourhood Mulund: “In urban city like Mumbai, people don't expect to be, at least I was not aware of that, you know, though we knew, yes, there are animals, but what animals we didn't know” (Residents Mulund, 2022).[3]

Locals

An distinctive aspect of urban HWI is the interplay with social inequalities that often characterize urban areas. Frequent HWI potentially strengthen such inequalities through an unequal distribution of the costs and benefits of living with wild animals. The third group of informants’ categorization, so-called locals, pose an example of this unequal distribution. Informants provided quite reproachful descriptions of this group, which they simultaneously termed as locals, encroachers, and informal settlements [residents]. One informant explained the term encroachers as: “(…) some of the slum dwellers, they're not originally from here. So they're encroachers” (WCS-India, 2023).[18] The informant continued by saying: “Most of them do have negative attitudes towards leopards. They're not very happy with the leopards. Like they would want the leopard to be removed from that area or not be there” (WCS-India, 2023).[18] The citation illustrates a view reiterated by many informants, in which this group was seen as a threat to wildlife by increasingly encroaching areas that ‘belong to’ nonhuman animal species. Particularly comparing the view locals had on leopards compared to the view of tribals was popular among informants. This may be illustrated by a citation of the conservation biologist (2023): “(…) people are saying, other than tribals, they say, please, cage them animals, cage them leopards. They say that animals are coming at our house, but that is wrong. They are coming at animal's house”.[19] Interestingly, the sentiment of encroachment was seemingly less strong for high-rise residents who resided in buildings that could also be seen as invading SGNP, suggesting it may has to do with more than only building settlements in the national park.

Many so-called locals rely on the forest for necessary activities, such as defecation, entering the city, and supply of cooking wood, which increases their risk of being the prey of a leopard. The conservation biologist (2023) said:

> (…) all the settlements, they are termed as encroachers. They are illegal. So they don't have, uh, basic amenities like light and sanitation and all that. So they use the park for toilets. (…) So then already you, you realized it's about the people and not the leopard.[19]

This citation is relevant as it indicates a vulnerability of locals to harmful leopard interactions, created by their dependency on their direct environment. This may be complemented by a citation of the member of ACG (2023):

> (…) we are not supposed to sit down in the jungle in the evening. (…) the tribals will never do that. (…) People do not know that. It's not there in their understanding. And that's how most of the leopard attacks happen to non-tribal community people.[9]

Comparing locals to tribals is relevant, as both groups inhabit SGNP, and both depend on the forest. This citation shows how locals are more vulnerable than tribals, since they miss the knowledge necessary for adjusting their behaviour to avoid harmful interactions with leopards

that tribals have. Two informants resided in a high-rise that was adjacent to the national park. They showed me an informal settlement in the park from their rooftop, and pointed out the routes around the building that leopards often took as shown by camera traps. The routes included areas around the building, and leopards had been spotted sitting on top of the fence, but they were unable to enter the building. The houses in the settlements, on the other hand, offered no physical obstacles to wildlife, while they neighboured the frequent routes taken by leopards by being located inside the park. Concluding, the unequal differences in the built environment of urban areas seemingly have an impact on the vulnerability of people in relation to wild nonhuman animals.

4.4. Defining coexistence

This section explores the meaning of coexistence based on information provided by informants. This may be of aid in achieving an understanding of the relation between coexistence and the dynamics between human and nonhuman animals in Mumbai.

Some informants suggested life in urban areas breeds intolerance towards nonhuman nature. This is shown by the following citation:

> I have seen that intolerance is an urban characteristic because of the stress of day to day living. (…) Because we are so caught up from seven o'clock till nine o'clock, we are only earning money. And traveling from and to work (Thane CPCA, 2022).[6]

This view is reiterated by the senior snake rescuer (2023), who said: “Urban people don’t know how to behave when in very close proximity to the national park”.[7] Furthermore, the informant suggested:

> And people are more and more purely urbanites (…) they don't have people around them who tell them how forest used to be, how we used to live in rural India (…) I think there is lesser and lesser understanding or knowledge and information about wild animals. (…) the urban mentality is thinking that wild animals should be in the jungles” (Senior snake rescuer, 2023).[7]

Another informant shared a similar view: “(…) but in the urban areas, that understanding of the importance of nature and animals as a part of nature is lost somewhere” (Member ACG, 2023).[9] These citations indicate how the informants view urban areas as obstructive for coexistence, because people become increasingly more distanced from their environment. They show how informants connect a low tolerance for wild animals to a decrease in knowledge about how to live in close proximity to wildlife. The citations also suggest a disappearance of coexistence over time.

One informant described the relation between Adivasi communities and their environment as:

> They live together means they are more neutral when they see leopard. They're not scared, but they're also not, it doesn't bother them. So somewhere a lot of unlearning has happened with respect to nature, how human beings are a part of nature. And we need to coexist with all the other form of nature (Member ACG, 2023).[9]

This citation emphasizes how a neutral relationship between people and wildlife is important for coexistence. The intertwining of nature and people seemed to be part of the belief system of the Malhar Koli community in Aarey (2023), who said: “Actually nature is our God. (…) we are also protecting because if people cut down our trees, then indirectly it's cutting our gods”.[10] Furthermore, they said: “Actually we consider the wild animals as our family members only. So we doesn't harm them and they doesn't harm us. So it's, uh, understanding between they and us” (Malhar Koli, 2023).[10] By describing a relation of neutrality between wild animals and people through an understanding of kinship, the informants describe coexistence as reciprocal tolerance between nonhumans and humans.

Concluding, while acknowledging this is likely a generalization and simplification of the research findings, coexistence may be described as a neutral relationship between human and nonhuman animals, consisting of reciprocal tolerance. It also should acknowledge the intertwining of people and nature, and promote knowledge about how to live in close proximity to wildlife. Essentially, based on the main research findings, the coexistence framework should consider the autonomy demonstrated by wild animals and the negative effects HWI may have on existing urban disparities.

5. Conclusion

This thesis aimed to attain a comprehensive understanding of urban human-wildlife coexistence in Mumbai. The central research question was as follows: How do diverging human relations with leopards, macaques and mongooses correlate with the concept of coexistence in the urban context of Mumbai, India?

Living together with wild animals produces different challenges for human and nonhuman animals, to which coexistence could be of aid. Yet, the current approach to coexistence in Mumbai does not always address these challenges. Insights into the dynamics between humans, leopards, macaques, mongooses and snakes in Mumbai reveal how coexistence is now mostly defined by humans, but in reality, animals also contribute to its dynamics by demonstrating independent autonomy. In this paradox, humans strive to shape a framework for human-wildlife interactions, while this control is challenged by different wildlife species that demonstrate an autonomy independent from people. In response, humans attempt to increase control through harmful wildlife management targeting individual leopards, macaques and snakes. Coexistence may be advanced by exploring more positive approaches to conservation that consider the position of different wild animals. Essentially, the autonomy of wild animals needs recognition when a framework for HWI is established, since human and nonhuman animals are both inherent parts of urban ecosystems.

Through a bias towards particular species, mongooses are exempted from harmful wildlife management. There are more harmless wildlife species, such as mongooses, compared to wildlife species that pose a danger to humans. While these species are favoured over others and seemingly live in more coexistence with people, they have yet to receive similar attention in approaches to coexistence. Employing a rescue team and other relevant resources for all wildlife species could be an initial step in this direction. The unequal distribution of outcomes of HWI across species also holds for different groups of people. The current approach to HWI exacerbates certain social disparities, since unequal differences in the built environment of urban areas seemingly have an impact on the vulnerability of people in relation to wild nonhuman animals. These differences in people's vulnerability to wildlife should be overcome by offering physical protection and necessary knowledge.

Recommendations

Avenues for future research may take into account possible inequalities between people related to snake relocations, and focus predominantly on the relation between HWI and other social inequalities. Additionally, it should expand its scope to include other religions for comparative analysis and consider interactions between different religions in relation to wild animals. To address the bias towards negativity in the current HWI framework, researchers should adopt a strategic approach that ensures the inclusion of neutral and positive HWI. Identifying areas that are less satisfied by research on human-wildlife coexistence could be an initial step in this direction. By focusing on species living in urban areas that are not necessarily considered dangerous, future research may reveal more insights into neutral and positive ways of coexisting with wild animals in urban areas.

6. Reflection

The outcomes of this research have provided insights into urban human-wildlife coexistence in Mumbai. This chapter provides a reflection on the research process. The limitations and potential consequences of the research design are discussed, as well as practical implications that occurred during the research process.

Coexistence seemed hard to map out as I observed an inherent bias towards negative HWI among informants, translated by a tendency to focus on problematic wildlife interactions by informants, as well as in auto-ethnographic observations. As a result, less attention was placed on neutral and positive HWI. This may be explained by the amount of research and attention placed on human-wildlife conflicts (HWC) in the past. Many informants seemingly perceived HWI within a framework of HWC. It may also relate to stronger emotions that negative interactions provoke as compared to neutral and positive interactions. This influenced my approach to coexistence as focussing on dangerous species and negative interactions. Including a strategy to deliberately cover neutral and positive interactions could have been of aid in overcoming this bias.

Employing snowball sampling led to a bias in participants, shown by all informants seemingly having an affiliation to wildlife. On the other hand, it is possibly inevitable to have this affiliation for the majority of people living in close proximity to a national park, to which the awareness programs of the forest department may have contributed. Moreover, I had no access to informants who could be categorized as 'locals' for several reasons. I was told by multiple informants there would be language barriers. Essentially, informants that were willing to translate for me had no relations to locals, and did not consider locals as relevant sources for my research. As a result, coexistence and human-wildlife relations are perceived from a framework in which there is a knowledge gap about an essential group of people.

Participant observations were only possible on macaques, as these are the only species I could see. Due to a lack of observations in the park, the participant observations were held in other parts of Mumbai as well, and the observations obtained through autoethnography were gathered in parts of India outside of Mumbai. As a result, insights in the delineated research site are incomplete, and 'spill-over' of other areas into this research has occurred. It is assumed there are no significant differences in people's responses to macaques across India.

The foundation of this research consists of an interpretative approach. Therefore, this section discusses personal reflections on my ability to interpret and collect data. This is partly determined by my positionality, especially since ethnography is a relational experience and practice. The broader facets of my social identity consist of being a middle-class, Dutch/European, white, 25 year old, able-bodied, heterosexual, cis women. As a result, I have had the privilege to enjoy general societal acceptance, different kinds of safety, access in a broad sense of the word, a lack of social stigma, general comfort and other privileges throughout the fieldwork process. During the research, my positionality might have triggered particular forms of self-presentation, which influenced what informants thought of me, in turn impacting the type of responses they provided. On the other hand, it is possible informants may have not taken me seriously due to my identification as a women and as a student.

This research can be seen as being conducted in the context of neo-colonialism, as India is a former colony. Essentially, I engaged in neo-colonial structures through extracting information while interviewing people. It is likely informants were more willing to be of aid in my research because of my positionality. Participating in the people may have raised certain expectations, and it possibly also had an impact on the responses I received from informants.

The practicalities of doing fieldwork in India influenced the research as well. Since Mumbai is big, unexpectedly long commuting times often resulted in me arriving late at appointments. This never seemed to be a problem to informants. The spread of knowledge about locations, prices and opening times seemed to be determined by mouth-to-mouth communication, which made me reliant on my social network and spontaneous encounters. Things often turned out differently than expected and promises were not always kept. Most informants were overwhelmingly helpful and happily directed me towards other informants..

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8. Appendices

Appendix A Data management plan SPS

This plan and the protected storage of data aim to prevent (partial) data loss and make sure that the data remains traceable, accessible, and usable. The plan follows the following SPS principle: "(…) data is not open and accessible for third parties, unless indicated differently in the project's data management plan and discussed with the research participants." (Wageningen University and Research, 2021; 1). Seeing the ethnographic approach of this research project, the collected data is considered as confidential and must be treated accordingly. Raw data, processed data, and code-files collected in this research will be stored on WUR servers. This data will be stored in the open formats of .txt, .doc and .xlsx. I am responsible for the 'completeness, comprehensibility, transparency, and compliance with confidentiality/privacy regulations of the research data'. Prof. dr. Bram Büscher is responsible for management and submission of the research data. After the research project ends, the complete data-set will be submitted, and "data will be stored in accordance to the SPS data policy and legal requirements on a central location ('w-drive') of the university for a period of 10 years." (Wageningen University and Research, n.d.; 1).

Observations and informal conversations were recorded and structured using four types of fieldnotes:

- **Fieldnotes** - contains observations gathered from participant observations and auto-ethnographic observations, additional notes of semi-structured interviews, and notes of informal and unrecordable interviews, which can be found in Appendix C Field notes.
- **Diary** - describes personal feelings and perceptions, methodological notes that deal with technique in collecting data, and analytic notes that lay out ideas about the research topic.
- **Log** - contains a daily planning, a list of activities done on each day and an overview of held and planned interviews, which can be found in Appendix D Informants.
- Part of the fieldnotes is a database that provides an overview of contact details of informants, and their role in the research. For protection of the identity of informants, the information cannot be included in this thesis. Interviews were coded in the following format: [number][expert/resident][#participants interview].

1. Organizational context

Name researcher	Rosa Spruit
Name supervisor(s)	Bram Büscher
Chair Group	Sociology of Development and Change (SDC)
Start date of project	1 September 2022
(Expected) end date of project	31 September 2023

2. Research project

Title	Navigating urban wilderness: Exploring interactions between wild nonhuman and human animals in Mumbai, India
Project summary	Research aimed to gain a holistic understanding of human relations with leopards, macaques, mongooses and snakes and the relation to coexistence in Mumbai, India. The study design is an ethnographic case study design, in which descriptive data will be gathered through observations. Over the course of two months, data is collected through ethnographic fieldwork in Mumbai. Data collection methods are semi-structured interviews and participant observations. The field site will be the Sanjay Gandhi National Park in Mumbai. Participants are wildlife professionals, residents living around the park, local government officials, as well as other relevant stakeholders.

3. Define data management roles

Roles	
Who is **collecting** the data?	Rosa Spruit (researcher)
Who is analyzing the data?	Rosa Spruit (researcher)
Other (Do you make use translators or others who help you with collecting and/or analyzing data)	N/A
Partner organization	N/A

4. Data storage while doing your research (after your research, your submit your data for protected storage by the university)

Data stage	Specification of type of research data	Storage location during research	Back-up location
Raw data	Content: 1. Audio-recorded semi-structured interviews; 2. Audio-recorded structured interviews; 3. Field notes; 4. Transcribed interviews; 5. Written observations. Context: Semi-structured and structured interviews were conducted with all the above mentioned stakeholders in English. The audio was recorded on my personal phone. The location depended on the preference of participants. All interviews were transcribed on my personal computer. Additional pictures were taken on my personal phone. Fieldnotes were written daily. An excel file with all the relevant contact details of participants was stored in the encrypted folder. Participant observations were conducted in SGNP. Participants were park visitors. Observations were recorded by using fieldnotes. During the activities, they were written in a notebook. Afterwards, were be typed out on my personal computer. Data was moved from my personal phone to the encrypted folder on my computer daily, after which it was deleted from my phone.	Personal phone Personal notebook Access: Rosa Spruit	<u>During research</u>: Encrypted folder on my personal computer which was kept in a locker. Access: Rosa Spruit <u>After project has finished</u>: data will be stored on local drive of Wageningen university & research for a duration of 10 years. Access: Bram Büscher and Rosa Spruit.
Processed data	N/A		
File structure	Give your folder the flowing name “Data_[last name]_[thesis]_[[year}. Giving your data files in this folder a descriptive		

	name (such as “interviews”, “observations”, “pictures” etc.)		
Protection	My phone can only be accessed using a password. My laptop can only be accessed by a password and the storage folder of the data will also be encrypted using a password.		

Appendix B Interview guide

My research focusses on relations between people and leopards, monkeys and mongooses in the urban environment of Mumbai, specifically in the neighbourhoods around SGNP. (consent recording, anonymity, voluntary participation, data storage, results sharing).

0. Could you tell me something about your work and how it relates to urban wildlife?

Human relations to leopards, macaques and mongooses

1. How would you describe a wild animal?
2. Can you describe an encounter with a leopard or monkey that you have experienced or seen yourself?
3. Can you elaborate on the different impacts leopards, macaques, mongooses and snakes can make on people?
4. Can you describe how Indian beliefs and values might impact the relationship between people and wild animals?
5. Can you elaborate how living in a city might impact the relation between people and leopards, macaques and mongooses?

Symbolic representations religion/mythology

6. Can you elaborate on myths, stories or religious meanings related to leopards, macaques and mongooses you know of?
7. In what ways do these determine the relationship between people and wild animals?

Wildlife management & willingness to coexist

8. Can you describe the best ways to protect and manage wild animals in Mumbai?
9. How would you describe coexistence between people and wild animals?
10. Can you describe why people might think wild animals should not be living in Mumbai?
11. Can you describe what can people do to foster positive interactions with wild animals?

Appendix C Field notes

Participant observations & autoethnography

Elephant islands, 15 December 2022, 15:00 – 19:00

Together with a friend I decided to visit the caves on the elephant islands in Mumbai, hoping to see interactions between people and monkeys. After a boat ride of 1,5 hours, we got on a crowded train that took us to the starting point of a hill. We were quite rushed as we had about an hour on the island before the last boat would take us back. The place was full of excited Indian-looking families and trash was covering all parts of the island, nonetheless, it the most quit place I've experienced in Mumbai so far. After walking uphill through an alley filled with souvenirs and hustlers, my friend and me separated ways. I was going to climb the hill to the top, as my Indian friend would visit the caves. The entrance of the caves was filled with macaques. A small, excited crowd gathered around a man who was playing with a water bottle and a macaque. People were cheering and the man seemingly enjoyed the game. The macaque eventually got hold on the water bottle and took it to a spot 3 meters further to open and drink it, after which it casually walked back to a troop. The monkeys generally remained calm and appeared to ignore the people. Some were snacking on plastic food wraps or fruits. On my way up I spotted lots of cows roaming around. People seemed to ignore them, except for one woman who tried to touch a tail, probably seeking *puja* (blessing). When I entered the entrance of the climb to the hilltop, a woman behind a vendor handed me a stick and tried to warn me for the dangerous monkeys that were sitting on branches above us. She was quite insistent and I didn't want to go through the hassle of refusing the stick, but I suspected her to expect me to buy a drink from her vendor or to give her money in return for the stick service. I continued walking and saw more foreigners that held a stick without using it. The monkeys were all appearing to mind their own business on the branches above us. I approached a man behind another vendor, who told me the monkeys were not dangerous at all and that a stick was not necessary. When I tried to explain I only had it as I did not want to refuse the stick from the insisting woman, he did not seem interested in what I had to say. The more I walked uphill the less people were around. I approached a troop of macaques sitting on the path when no one else seemed to be around, and it was the first time I encountered these animals while being alone. I tried to keep my head down as I started feeling intimidated. One macaque that seemed to be covered in wounds and skin irritations started growling at me, which, to my own surprise, made me feel a little scared of them, especially since it didn't seem very unlikely they might be suffering from rabies. Luckily they kept distance from me and I could walk to the top. On the way back, the macaques seemed unbothered by my appearance. I ran into my friend, and to my surprise she hadn't received a stick from the vendor woman. As expected, she acted offended when I returned the stick and refused to pay her something in return. We managed to take the last boat back to the city, when the sun started to set. At some point, the space around the boat was filled with seagulls flying around it for about 10 minutes. People on the boat seemed to get excited and started feeding them and taking videos and pictures of the spectacle. The seagulls snatched food from people's hands and both birds and people did not seem scared or hesitant to be in close proximity to each other.

Aarey Colony, snake rescue operation, 4 January 2023, 17:00 – 17:30

During the interview with the junior snake rescuer (07exp1), he got a call of a snake sighting. A supposedly highly venomous snake was spotted next to a house, five minutes walking distance from our interview location. He started talking faster and suddenly seemed a bit tense and thrilled. I noticed I also felt a little nervous by the snake being 'highly-venomous', but also very excited about this opportunity that had landed in my chest. We went there to see if the snake needed 'rescuing'. A colleague snake rescuer joined, who brought a metal hook. I could sense a certain excitement in the air. When we arrived at the house it was surrounded by about ten people. They seemed excited and were very friendly to us. The snake was spotted in a

shrub 2 meters from the house. The adults didn't allow their kids to come closer to the shrub. The two snake rescuers and the residents talked in Hindi for about five minutes. The snake rescuer told me afterwards that it was best to keep the snake in the shrub and that it would probably do no harm, and that there would probably be five more snakes in the shrub, so investigating and removing all of them would have been pointless. He said that the residents were 'very agreeing' to what he told them. A lot of kittens were roaming around the house, and I wondered if they were not in danger of the snake, after which I realized that this was exactly the point that the senior snake rescuer tried to make the day before: that snakes are best left alone and that humans cannot prevent snakes from eating without starving them. It was a complicated situation, in which the highly venomous snake posed a threat to the people living there, whereas the people also posed a threat to the snake and its habitat.

Canheri caves, 20 January 2023, 07:19 – 14:35
A friend and me decided to visit the famous Canheri caves, located in the SGNP. We cycled to and inside the park, and I was hoping to witness many interactions between wild animals and people. During the bike ride to the park we encountered many macaques and langurs, which were roaming around trees. When we passed the tribal communities I had visited earlier that week, I saw many deer around the houses.

10:45
We got engaged in a conversation about the park's inhabitants with a man who was walking the same path as us. I mentioned the problems tribal communities face concerning deer eating from their agricultural fields, and the man said that deer deserve to steal from people because they need to eat as well. He said: "*they have the right to eat*," and that people have encroached way more than they should have. My friend said in response that tribals may need some training on how to deal with animals and that the tribals in this particular forest were "white washed" compared to "real" tribals in more isolated locations. It was a statement I had picked up by other people in Mumbai before. Later, he told me about a tribal woman that was employed by his parents to raise him. When he was small, she would bound him on her back while she was cooking or doing other chores. She must have been a 'real' tribal.

11:08
The entrance of the cave was filled with macaques. A man who looked like a foreigner was eating a guava, which a macaque tried to grab from his hands. The people standing around it started to get involved and make funny comments about the macaque. One of the guards standing next to me started throwing stones, aiming next to the macaque. The man eventually walked away from the defeated macaque, which was making sizzing sounds. My friend and me were discussing how nonsensical the man was for eating in front of all these monkeys, and I have to admit I think we both felt as if we were behaving smarter than him.

11:30
I asked a security guard if all the guards were holding wooden sticks to scare away monkeys, to which he replied affirmative. He also confirmed they received special training for it, although I wasn't sure if he fully understood my English.

12:30
When we arrived at the main caves, it was filled with macaques - around 50 in total. They approached people, leaving very little space between themselves and the people. My friend and me started to climb a stairs going to the top of a cave, which was less busy than downstairs. Macaques started to surround us while keeping a few meters distance, without looking at us directly. They seemed to make an effort to pretend to not notice us while they were following us by keeping their heads in different directions. I was carrying two small plastic packages of banana chips hidden in my bag, and whenever I moved these made a crackling

sound. Once they noticed this sound they approached us closer and closer up to almost touching me. My friend got nervous and was convinced the monkeys would attack us for the food, and after a while I also started feeling very intimidated. I realized it's not so easy to completely avoid negative interactions with macaques. When we walked away they kept a little distance, which allowed us to exchange one of the packages quickly while facing the sun, since the macaques could not pay attention to us if they had to look in the sun. When the noise was reduced after the exchange, the macaques lost interest in us. We also noticed they did not come close to us when we were inside caves, maybe because they were quite dark.

13:00
On top of the hill, we encountered three men who looked like Hindu monks. One of them pulled out a bag filled with what looked like seeds from his robe, and scattered it on the ground. Macaques ran to the seeds to eat them, while the men slowly kept walking down while scattering the food. My friend mentioned this was "a good way" of feeding monkeys as the men were not making direct contact with the monkeys and was giving out healthy food.

(Wildlife) animal hospital, 25 January 2023, 16:45 – 17:25
I got to witness how a young wild eagle received surgery on its wing, after which it was tested for flying in a room with glass walls. Sadly it flew itself against a glass wall, leading to a new wound. The bird was constantly surrounded by around 8 people, who acted very casual after the bird had flown to the glass wall. I was told many eagles got injured by kite lines during a kite festival the previous weekend. After some talking in the animal hospital, I was taken on a visit to the NGO's wildlife shelter. There were two domesticated young macaques (rhesus and bonnet), several injured eagles, and many crocodile babies, turtles and tortoises that were rescued from illegal wildlife trade schemes. There were also many parakeets that were going to be released in the wild the next day, after having been in a rewilding program for over a year. These were rescued from fortune teller schemes, in which they were mistreated and underfed by humans. The two macaques were clearly used to humans: I was challenged by the staff to reach inside my bag as if I was getting out food, to which the macaques responses in excitement by making sounds and offering their hands. A third macaque was kept in a separate cage and seemed to suffer from skin issues, which was sizzing angrily at us and looked very scared. The staff told me it was probably mistreated by people to such extend it would always attack people, and that it would best spend the rest of its life in a sanctuary.

Varanasi, 1 February 2023, 11:05 – 11:08
While walking down an alley, I encountered a macaque sitting on a roof just above the street. It was alone and looked at me as I approached. I felt a little intimidated by the possibility of a rabies-infected host sitting above me, but accidentally made eye contact with the monkey for a moment. When I was passing the macaque, it made a growling sound and grabbed the top of my head. Luckily I was left unharmed, leaving the macaque behind. Everyone else in the street stared at me with their usual poker face, as if this happened daily with foreigners. This made me feel more ashamed for acting against everything I knew about how to interact with wild macaques by making eye contact.

Unstructured informal interviews

Project leader & coordinator Mfsgnp project, 18 December 2022, 15:10 – 16:30
Offer to facilitate my research by sharing contact details of relevant people and inviting me to relevant activities for my research, so I can do participant observations in these activities.
The project functions as a platform to manage human-leopard interactions, and is legally not allowed to handle wild animals (e.g. rescue operations). This is where the rescue team of the Maharashtra forest department comes in. The project engages with residents across ethnicity and class. It runs on a voluntary basis with most volunteers not having a background in wildlife. Conflict and encounters with leopards can create major stresses among people, so the project

engages with the police department for crowd management. The fire department is sometimes also needed. The forest department has an active role in dealing with wild animals.

The project has been set up by the forest department, by financial resources which were made available after a peak in attacks in 2003-2004. After 6-7 years these were still unused, so the project was created. It functions independently from the department. It has active interventions through conversations with residents, activities to raise awareness and to advise the forest department based on (scientific) research "*to bring in science"*. An example is media workshops to influence the public perception, which helps shape human-leopard interactions. The project is not a science project but community-based.

By increased possibilities of technological developments it has become easier for people to engage with wild animals. For example, evidence gained from camera traps is shared in WhatsApp groups of residents, which starts conversations about efforts people can make to reduce risks of negative leopard encounters (e.g. waste – and lights management). The project usually engages with local leaders. People are generally only interested after leopard sightings or incidents.

Many people's first instinct when they see a snake or bat is to kill it. However, many people also worship many animals. Cobra snakes are associated to Shiva, and owls are represented through many myths. Animals are usually perceived positively by residents who have been here for long. New residents often have a different perspective of the animals.

Advise to change macaques to monkeys, as people experience more interactions with different monkey species.

The living with leopards network is the same project applied to a larger area in India.

<u>Relation NGO's</u>
It's mixed and depends on the NGO. In the past the project has shared a negative perception of NGO's as an entity, which has not improved the relationships. There have been collaborations in the past, but there were instances in which the NGO's felt overruled. The project tried to avoid situations in which the NGO's created problems. The relation also depends on the officer in the forest department.

I may focus on a critical analysis of the project through conducting interviews and observations. Focus on negative feedback on the project in these conversations.

<u>Leads</u>

1. The previous coordinator has a background in sociology, so would be an interesting person to talk to.
2. My informant of WCS has been part of the project.
3. One project member has been living around the park his whole life > would be a good entry point.
    1. One informant is a journalist and part of the Aarey conservation group, which would also be interesting.
    2. The officer who created the project has retired but would be an interesting person to talk to. I will be invited to talk to him if Mfsgnp finds a suitable date for it.
    3. The deputy of the forest department is approachable.
    4. One project member lives in Vile Parle (my current locality), but is not very active.
    5. There is a college professor who has been active in the park, and now many of his students are active in relevant research there.

Senior forest department officer, 25 January 2023, 18:45 – 19:00
I was introduced to a senior forest department officer, assistant of the head deputy. We briefly talked about the C32 leopard that was quite problematic in 2020/2021. It was difficult and many people got injured. The monkey situation was annoying. She did not have much space for questions. The honorary wildlife warden afterwards mentioned how great she was as she "had a heart for wildlife", many other officials don't have that, which can make the work of anyone in the wildlife field hard. The forest department consists of different elements. All the officials change every three years.

Informal conversation with a soon-to-be Buddhist monk, 11 January 2023, 21:00
After having explained my research purposes, he told me he often fed monkeys in an Ashram in India. He preferred langurs over macaques as they were "more polite and smarter". They offered a hand for the human to put food on it, and waited patiently as he peeled oranges for them, whereas macaques would snatch the food from his hands and didn't seem to understand to wait for the peeling. I've heard statements of people's preference for grey langurs over macaques more often. They were described as more polite, calm and intelligent, whereas macaques were often referred to as nasty and mean.

Unrecorded informal conversations throughout fieldwork
People that I casually met who were originally from Mumbai were all surprised when I told them about the high biodiversity in Mumbai, and all of them did not know about the leopards, dolphins, crocodiles, flamingos and other 'aesthetic' wild animals who habitat the metropolitan area. Many people, especially those coming from other states, refused to believe these animals were living in Mumbai. They even told me I was doing research in the wrong area, followed by a list of protected areas and national parks where I should have done my research.

Semi-structured interviews

01exp2
The interviewee's wife unexpectedly joined the interview, which led to new insights and also productive discussions between the two interviewees.
The boundary between urban and forest is fluid, but the contrast is high. Miraculous that so many leopards living in the forest lead to zero casualties among people. Building gathers green trash and makes compost, also solar panels. Related to karma: moral obligation to nature from people translated through protecting/conserving biodiverse areas. 50+ bird species spotted. People living in settlements cooked on top of hill which was dangerous and used forest as toilets, forest department build public toilets to prevent this. Leopards have been seen in area around building. But urban development is also necessary. Would be better if whole country is holistically developed including more "natural areas". Never wants to leave area.

They showed me the view of their bedroom, which looked upon a big hill in the national park and had remarkably little noise, fresh air, many birds, trees that covered the view on slums in winter time but not in the summer when the trees let go of their leaves. There was a temple dedicated to Waghoba close by.

03exp1
Is this related to religious meanings/myths related to animals in India?

What is your understanding of coexistence?

Rehabilitation centres – where are these? Leopard refugee centre in SGNP.

Can I talk to people living in slums/settlements?

Suggest places to visit: Aarey, bus from Borivali to thane → go around it to see it.

Slum residents most vulnerable.

Rehabilitation centres – where are these?

Speak to the forest department & rescue team

Living with leopards book

Connect to residents/slum dwellers through:

1. Mulund
2. Borivali
3. Aarey (one resident especially)

04exp1
Many animal protection laws are unnecessary. Animal rescue centres like this one are often funded privately. The interview had to be interrupted a few times. Important finding: change mongooses to snakes due to their high variability of people's perceptions.

05res1
Bias in participants: upper-class and high affiliation to nature. Map of the history of development of Aarey. There's a village in Maharashtra with a very high prevalence of Cobra's → coexistence.

06exp2
Rural areas: higher tolerance and acceptance of wild animals than in urban areas. They are in the wilderness, which urban people tend to forget. In urban areas, residents of high rise buildings are hardest to convince. Urbanisation → moving away from traditions → aversion towards wildlife increases.

Fear of snakes > fear of leopards.

07exp1
Recording inside SGNP is not allowed to not disturb wild animals. Much data on SGNP is available. I'm not allowed into the core zone of SGNP. Caneri caves are open for visits. Safaris of captive animals are also there, and the taxonomy centre, nature info centre. The Instagram page of SGNP offers information on trails into the core zone.

More than 100 rescuers in team.

An informal conversation after the interview of ~30 minutes was not recorded. The snake rescuer mentioned the importance of local people within nature conservation practices. Conversation without local people is not existing or impossible, hence they cannot be ignored and their opinion should always be recognized and taken into account. If someone wants to kill many snakes, you cannot judge that, because that would be patronizing. These people should not be forgotten. He also said he was mocked by his professors (in his wildlife degree) on doing this voluntary work. His mission is to have a day without any phone calls for snake rescues. Usually he gets a few per day, depending on the season, with more calls on days which are very hot or cold or in the monsoon season. Most rescued animals are snakes, but also many monkeys and some crocodiles in illegal trade, as well as some pangolins.

In a specific tribal hamlets many snakes were killed, he went there and gave his phone number, which was written on the walls with the description of "snake man". They called him often, and it really helped, since snakes are rarely killed in the hamlet now. He knows most people in the environment. The volunteer work does pay a toll on his social life. He mostly rescues animals or is studying.

The landscape of Aarey mostly consists of small forest patches separated by roads. There's no suitable corridor for wildlife to manoeuvre in the area. For this reason, the wild animals in the area have been there for generations, and are completely adjusted/used to human presence and things such as light and noise pollution. The problem is with the people. He focused a lot on conflicts, which happened mostly with "new" residents. The tribals had 'more coexistence'.

Many people mention the construction work in Aarey resulting in high level of smog in the area, called "dust". This is a phenomenon everywhere in Mumbai, most plants have leaves covered in the dust, but the phenomenon is apparently new to Aarey since Covid (due to the construction work of new projects). Many people develop a cough from this, after spending two days in the area I also got a cough, which could be the result of this.

11exp1
27-01 Asiatic library Colaba hosts an event on urban ecology → must visit

He will share:

- Podcast link
- Contact details
- Press release (?)
- Relevant papers/reports

IUCN wrote an report on why coexistence in Mumbai works so well.

12res1
Locals: not indigenous

Tribals: have been living in SGNP for generations.

Pada: tribal hamlet. This one is called Talav Pada (talav means pond).

30-50 years ago people came to encroach the park for free and cheap space, and easy daily employment. Some tribals don't allow locals, but some mix. This village only has tribals, one original one and one migratory tribal.

Tribal refers to a specific caste, there's 3 tribal casts: Worali (majority), Malhar Koli and Tahakari.

Leopards come in at night and go away. They come to feed on dogs and spotted deer.

People are scared but they only come in night time, so people don't go to isolated places at night. They go to toilets at night. This area hasn't witnessed attacks for a long time. Tribals worship Waghoba, Jaramarie and Maramarie. They have no land rights.

Many birds and spotted deer came very close to the house.

14res2
160 houses in total. I'm invited to join a Punjab Worali festival (offering) on 25 January.

Many people feed deer (morning walkers + a vehicle that gives them food) → deer started to steal from the tribal's vegetable garden. People in India are emotional, which is why they like feeding wildlife. There's a fine of 1000 rupees which they get on the spot. People think feeding wildlife is a good thing, but they focus on the "wrong" things.

17res3

Until two years ago the farmers used to keep livestock, such as goats and chickens. Leopards kept eating them. Two years ago the farmers decided to focus on the cultivation of fruit and vegetables.

The government tells the tribal villages that their living space is unsafe due to leopards and snakes and other wild animals. They picture them as slum areas, and include the tribal villages within their slum development program. They tell the tribals it's safer to live in a flat.

2 months ago a leopard came to the houses porch. It wanted to chase a domestic cat into the living room, but as soon as it saw the people in the room it ran off. It was caught on camera.

Appendix D Informants overview

Table 4 Interview overview

#	code	date	Name informant	# people	personal names	region	time		duration	hours	recording?	transcription?	backup?
1	01exp2	18-dec	Mfsgnp project	2		Borivali	15:00	16:00	01:00:00	1:00	0	1	1
2	02res2	23-dec	Members Mfsgnp Mulund	2		Mulund-W	14:20	16:30	02:10:00	2:10	1	1	1
3	03exp1	26-dec	Previous coordinator Mfsgnp	1		N/A	19:30	21:10	01:40:00	1:40	1	1	1
4	04exp1	27-dec	Thane CPCA	1		Thane	14:30	15:30	01:00:00	1:00	1	1	1
5	05res1	3-jan	Member ACG Aarey	1		Goregaon	9:15	12:00	02:45:00	2:45	1	1	1
6	06exp2	3-jan	Senior snake rescuer & wife	2		Thane	16:30	17:45	01:15:00	1:15	1	1	1
7	07exp1	4-jan	Junior snake rescuer	1		Aarey	14:30	17:30	03:00:00	3:00	0	1	1
8	08res1	5-jan	Member ACG trees	1		N/A (Khar)	18:15	19:05	00:50:00	0:50	1	1	1
9	09res5	7-jan	Journalist, husband & neighbours	5		Goregaon	15:00	18:30	03:30:00	3:30	1	1	1
10	10exp1	11-jan	Conservation biologist	1		Thane	13:50	15:30	01:40:00	1:40	1	1	1
11	11exp1	12-jan	WCS-India	1		Dahisar-E	15:30	16:45	01:15:00	1:15	1	1	1
12	12res1	18-jan	Tribal member Malharkoli Borivali	1		SGNP (Borivali main exit)	10:30	12:00	01:30:00	1:30	1	1	1
13	13exp1	18-jan	Leopard rescue team member	1		SGNP (Borivali main exit)	12:30	13:45	01:15:00	1:15	1	1	1
14	14res2	18-jan	Tribal members Warli	2		SGNP (Borivali main exit)	13:15	14:32	01:17:00	1:17	1	1	1
15	15exp1	23-jan	Veterinarian	1		SGNP wildlife hospital	11:05	12:30	01:25:00	1:25	1	1	1
16	16exp2	25-jan	Honorary wildlife warden and head of NGO	2		Thane	16:30	19:00	02:30:00	2:30	0	1	1
17	17res3	30-jan	Tribal members Malharkoli Aarey	3		Aarey forest	09:15	11:45	02:30:00	2:30	1	1	1