

Gorilla habituation and the role of animal agency in conservation and tourism development at Bwindi, South Western Uganda

EPE: Nature and Space

0(0) 1–21

© The Author(s) 2020



Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/2514848620966502

journals.sagepub.com/home/ene**Christine Ampumuza** 

Department of Environmental Sciences, Wageningen University and Research, The Netherlands; Department of Tourism and Hospitality, Kabale University, Uganda

Clemens Driessen 

Wageningen University and Research, the Netherlands

Abstract

Discussions of gorilla habituation often emphasise human control of gorillas, whereby gorillas are usually singularly defined by their species membership. This perspective leaves little room for imagining the role of gorillas in habituation, conservation and tourism development processes. In this paper, we use insights from Actor Network Theory and more-than-human geography to explore and reconstruct the practice of gorilla habituation in order to understand gorillas as actors in habituation, conservation and tourism development at Bwindi Impenetrable National Park (hereafter Bwindi), Uganda. To do so, we use the concept of relational animal agency to trace the various ways in which gorillas interact with each other, various groups of people, and their environment. Ethnographic observations, unstructured interviews and document study indicate that gorillas are ‘multiple’ and thus need to be understood beyond their species membership alone. They are involved in intricate relations with each other, with other non-human and human subjects, and their shared environment. Furthermore, gorillas are not completely and passively controlled by humans through habituation: we argue that habituation as a relational process is more complex. Gorillas also habituate other gorillas and arguably can be seen to habituate humans as well. As a result, gorillas co-produce multiple versions of the Bwindi landscape, of conservation, tourism and development practices, as well as multiple ways of being gorillas. Based on these insights, we argue that instead of focusing on control, the dynamics between gorillas and their landscapes could be

Corresponding author:

Christine Ampumuza, Wageningen University and Research, The Netherlands; Kabale University, Uganda.

Email: champumuza@kab.ac.ug

harnessed to explore a dynamic range of possibilities for living together with gorillas, while continuously adapting to issues that will arise in places such as Bwindi.

Keywords

Animal agency, gorilla habituation, Bwindi landscape, conservation, tourism

Conservation, tourism and the Bwindi gorillas

Gorilla habituation tends to be studied as a fully human-controlled process, leaving little room for imagining an active role for the animals themselves. This article reconstructs mountain gorilla habituation using insights from Actor Network Theory (ANT) and more-than-human geography to highlight the role of non-human or animal agency in conservation and tourism at Bwindi.

In Uganda, gorilla habituation is practiced in Bwindi and Mgahinga Gorilla National Park. Bwindi is a forest of 321 km², described as a high-altitude Afromontane forest (UNEP-WCMC, 2011). The area is characterised by steep and high hills and a rich biodiversity (Butynski, 1984). The animals in Bwindi include mountain gorillas, chimpanzees, a variety of monkeys, birds, duikers, elephants, all living amidst various kinds of insects, trees, plants and micro-organisms (Butynski, 1984; Butynski and Kalina, 1993; Uganda Wildlife Authority, 2014). According to the last count, 459 individuals of the global mountain gorilla population of 1063 live in the Bwindi–Sarambwe ecosystem (Hickey et al., 2019). The other mountain gorillas live in Virunga National Park (Democratic Republic of Congo), Volcanoes National Park (Rwanda) and Mgahinga National Park (Uganda).

Prior to the conversion of Bwindi forest into a National Park, local communities had unrestricted access to the forest. The Batwa hunter-gatherers lived in the forest and completely depended on it. The neighbouring Bakiga, Bafumbira, Bakimbiri, Bahutu and Batutsi agricultural tribes accessed the forest for bushmeat, plants, timber, gold, building materials and fish (Blomley, 2010; Namara, 2006). When the Bwindi forest was converted into a National Park, all human activities in the park were prohibited because humans were seen as threats to the mountain gorillas and the forest (Blomley, 2003; Olupot et al., 2009). The Batwa lost access to ancestral homes, and both Batwa and other communities lost their livelihoods, which led to animosity and conflicts (Baker et al., 2012; Blomley, 2003).

In order to address the conflicts, Integrated Conservation and Development Programs (ICDPs) such as Multiple Use Programs, and gorilla tourism with a revenue sharing scheme were introduced (Ahebwa, 2012; Blomley, 2010). There is a body of literature that analyses the effectiveness (Ahebwa et al., 2012; Tumusiime et al., 2018), injustices (Adams, 2013; Kidd, 2014; Tumusiime and Sjaastad, 2014; Tumusiime and Svarstad, 2011) and potential risks (Butynski and Kalina, 1998; Muyambi, 2006) arising from implementing the ICDPs.

This article focuses on gorilla habituation – a process that makes gorillas viewable (Knight, 2009). At Bwindi, an hour of gorilla viewing costs 650USD,¹ and is envisaged to generate revenue for conservation and development projects (Archabald and Naughton-Treves, 2001; Ahebwa et al., 2012). Due to the popularity of gorilla tourism, the demand for habituated gorilla families has grown, and by 2018, their share has increased to 42% of the Bwindi gorillas (Hickey et al., 2019). The increased demand for habituated gorillas has raised concerns among some scholars about the control and commodification of the gorillas

at the expense of local communities' livelihoods (Laudati, 2010b). Furthermore, conservationists such as Butynski and Kalina (1998), and Goldsmith (2014) worry that increasing the number of habituated gorillas comes with health risks for gorillas. In these debates, habituation is presented as a one-dimensional relationship where certain people and their institutions (conservationists, governments and scientists) completely control the gorillas, the habituation process, gorilla tourism and conservation. While this may seem to be the case, we opt to analyse habituation from a relational perspective that pays attention to the role of gorillas in these processes.

A relational perspective emphasised by ANT and more-than-human geographies, starts from the assumption that reality (of agency, structures, conservation, gorillas and habituation, among others) arises from complex relations between humans and non-humans. Following this understanding, we trace the various relations and the realities that ensue in the context of gorilla habituation. Through this, we seek to problematise the current narrative on gorilla control and commodification by highlighting the details of what happens in the process of habituation. We further reflect on the implications of this relational perspective for conservation and tourism practices at Bwindi. In the next sections, we will first review debates on gorilla habituation to set the context. Next, we will elaborate our theoretical positions before discussing the results of nine months of fieldwork in the area.

Habituation of Bwindi gorillas

According to Williamson and Feistner (2003), habituation refers to a process where people (usually scientists and their assistants) repeatedly make non-threatening contacts with gorillas until they lose their fear and ignore the presence of humans. In other words, the people 'become an innocuous part of the gorillas' surroundings' (Gruen et al., 2013: 25). Gorilla habituation by scientists emerged from field ethology (Fossey, 1974) and in situ conservation. Gorillas were the first species to be conserved in situ, after they were found not to survive in captivity (Cincinnati, 2015). Gorilla habituation by scientists started in Rwanda after German colonial army Captain Von Beringe and, later, other Western scientists (Louis Leakey, George Schaller, and Dian Fossey) 'discovered' the mountain gorilla (Van der Duim et al., 2014). Notably, Dian Fossey camped in the forests of Rwanda, recruited other conservationists and local residents to 'make friends with the gorillas' (Fossey, 1970, 1972), eventually habituating them to human presence.

Fossey describes habituation in terms of human presence amidst gorillas no longer influencing the behaviour of the animals:

Daily attempts to establish contact with group 4, or other groups were made throughout the study period (September 1967 to August 1972 inclusive). Before the animals were habituated [...], contact with the observer might have altered the speed with which the group travelled, though probably not its range: at this time therefore, obscured observations (the presence of the observer was not known to the group) were especially valuable. Subsequently, open contacts were attempted only when the group was reasonably secure, obscured observations being made when the group was exploring new terrain, in areas where it might meet extraneous interference. However, group 4 is now so completely accustomed to the observer within its midst, that the speed or direction of travel is no longer affected by observations. (Fossey, 1974: 571)

Drawing on experiences from Rwanda, gorilla habituation was introduced at Bwindi in 1991 with three gorilla families: Katendegyere with 11 individuals, Mubare with 13 individuals at Buhoma and Kyagurilo with 18 individuals at Ruhija. The Kyagurilo group at Ruhija was

habituated for research purposes, while the two families at Buhoma were habituated for tourism (Kabano et al., 2014). Although mountain gorilla habituation is considered to be an effective conservation tool (Goldsmith, 2014; Robbins et al., 2011), there is controversy over the risks associated with habituation and tourism.

Some scholars argue that habituation enables accurate identification of animals and the close study of their behaviour (Gruen et al., 2013). Moreover, Robbins et al. (2011) explain that gorilla habituation also allows easy access for veterinary interventions in case of disease outbreaks. Kabano et al. (2014) add that habituation enables gorilla ecotourism, which generates economic value that could benefit neighbouring communities, while also financing conservation activities and research. Other scholars argue that habituating more than 70% of the gorillas for tourism will discredit tourism as a tool for conservation because a larger number of gorillas will be exposed to human presence (Butynski and Kalina, 1998). Woodford et al. (2002) indicate that exposure to humans will increase the risk of disease transmission. Also, Knight (2009) argues that exposure to humans may involve stress, thus generating negative experiences for the gorillas. Stress and other effects such as behavioural changes, reduced reproductive success and ecological disturbance may compromise the welfare of gorillas (Butynski and Kalina, 1993; Muyambi, 2006).

Towards a more than human understanding of wildlife/gorillas

In the above debates about habituation and its effects, the gorillas feature as a singular and static species that are controlled for the benefit of humans, in terms of economy, pleasure and science. Yet, in everyday practices of conservation and wildlife research, scientists and conservationists often take animals seriously as individual subjects such as in their descriptions of individuals and their behaviour. They approach gorilla families as particular groups with specific characteristics that can enter into complex relations with humans. This everyday active role of gorillas is usually glossed over as irrelevant in most social science literature on conservation, such as in critical accounts of the political ecology of conservation (Brockington, 2002; Duffy et al., 2015) and conflicts around protected areas (Laudati, 2010a, 2010b). Even work on human–wildlife conflicts often focuses attention solely on human experiences and responses, whereby the role of wildlife is assumed to be static, animals performing their generic species-specific patterns of behaviour.

In this perspective, the so called extreme conservation measures can be seen as an expression of a form of biopolitics that combines care with intervention and far-reaching intrusion into the lives and bodies of individual animals in the name of species conservation (cf. Srinivasan, 2014). And, habituation for the tourism economy is viewed as commodifying gorillas and their charismatic presence for their ‘encounter value’. Such a perspective arguably positions animals politically as exploited workers, performing emotional labour to generate surplus value (Barua, 2017). The view of human–animal relations that portrays animals only as objects of the ‘tourist gaze’ (Laudati, 2010a) leaves out the role of wildlife – the subjects/objects (de Silva and Srinivasan, 2019) of conservation, in the process of their own conservation. Haraway (2008) indicates that the relations emerging while producing this encounter-value go beyond the mere extraction of economic worth from Western tourism consumers.

Additionally, there are some scholars who have demonstrated that wildlife is capable of actively and creatively responding to conservation measures and changes in habitats. For instance, the account by Mayberry et al. (2017) of the complexity of human–wildlife conflicts in Botswana describes the many ways in which elephants affect people and the importance for people to learn to interpret and respond to elephant behaviour. However, in this

account, elephants appear as coming with fixed properties that are not affected by their encounters, leaving out of this dynamic the relevance of learning processes the elephants may individually and collectively enter into.

Additionally, through the concept of a 'contact zone', Haraway (2008) illustrates that a lot goes on at the interface between humans and animals. All participants in human-animal encounters can be found to actively configure the power relations in which they find themselves to be entangled, even if these relations are not symmetrical or in balance. Based on these insights, we argue that habituation may not necessarily be predicated on a one-way relationship of control and domination. Who is in charge in these encounters and who has crafted and is managing them is not so clear-cut (Haraway, 2008). The habituation process at Bwindi can be likened to a contact zone. Building on the complexities of human-animal encounters emphasised by Haraway and others, we deploy a relational perspective on animal agency to highlight how gorillas contribute to their habituation, conservation and the tourism economy at Bwindi.

Animal agency: A relational perspective

Throughout history, non-human animal agency and its many conceptualisations – intentionality, goal directedness, phenotypic plasticity, subjectivity, etc – have been a controversial subject in philosophical thought (Derrida, 2008; Oliver, 2009). Commonly, agency is understood as something that can be 'possessed' by individual humans or animals. For instance by psychologist Steward, who argues that 'the basic concept of agency is a very early natural acquisition, which is established prior to the development of any full-blown propositional attitude concepts' (Steward, 2009: 217).

Some work, especially in the analytical style of animal philosophy, follows this line of thinking that tends to regard agency as something possessed by individuals and defined as intentional, predicated on (anthropocentric and humanist) understandings of intentionality and autonomy. This line of thinking implies that certain species of animals may have agency to some extent, deficient, however, from the agency of fully autonomous humans. Agency then is a (potential) characteristic of an individual, reflecting its species' capacities.

As such, animals are envisaged to have no or reduced agency when, for example, their movements are restricted by humans to produce docile and useful bodies for the tourist economy (Rinfret, 2009). The same applies when they are reared for consumption, when they are used to perform in a circus or to any other confinement of animals, while in fact complex and diverse relations can also be discerned in these situations (Palmer, 2002). Ironically, this position in animal ethics that emphasises the curtailing of agency may lead to an understanding of animals as essentially passive victims in any human-animal relation.

In recent liberal political theorising that acknowledges animals as political subjects in their own right (Donaldson and Kymlicka, 2011), a more complex picture emerges of animal political agency in relation to humans. Here, for instance even the mere presence of an animal can change a situation into a politically charged environment.

Approaches developed in animal studies that seek to move the role of animals centre stage ascribe various forms of agency to non-human subjects (Nance, 2013; Swart, 2010). These scholars emphasise the idea that their presumed inability for intentional behaviour beyond instinctive responses, or our inability to unequivocally determine what the animal feels, thinks or chooses, is not as important as the various ways they can be seen to act in practice (Nance, 2013). In these studies, animal agency is illustrated by the animals' ability to attack humans and hide from human view (Martin, 2011), when animals display versatility and success in supposedly human-dominated environments such as cities (Hurn, 2015),

or where animals seem to display various behaviours independent from human observation or interpretation (Bekoff, 2010).

Taking this form of thinking further, self-identified post-humanist or more-than-human scholars conceptualise animal agency not as a capacity that either is or is not ‘possessed’ by individual animals, but something that can be enacted, performed, and that emerges in interactions and relations. Animal agency then is relational and plural. These studies refrain from reducing the animal to its agency (Carter and Charles, 2013). This relational approach does not necessarily stop at extending agency from humans to some selection of animals. Drawing on ANT and other post-ANT (Michael, 2016) theorising, agency has been taken to manifest in the capacity of anything – human or non-human – to produce effects and/or make a difference in the networks that distribute agency across various human and non-human actants (Michael, 2016; Sayes, 2014). In such entanglements, the difference/effect might take the form of authorising, allowing, affording, encouraging, permitting, suggesting, influencing, blocking, rendering possible, forbidding action of other actors (Latour, 2005). A set of terms that range from (seemingly) straightforward causal impacts and more muddled or distributed modes of change.

Michael adds that in these interactions, the animals too change together with other actors as they ‘enter into relations of emergence or becoming’ (Michael, 2016: 143). We are not to assume some essential difference between people and animals in order to appreciate this type of agency emerging from what are then to be understood not as ‘inter-’ but as ‘intra-actions’ (Barad, 2007) resulting in a trans-species entanglement (Chiew, 2014). This means not seeing either people or animals as separate individuals who enter into interactions to influence each other, while bringing their own essential and timeless qualities and capacities with them. Starting from a relational ontology, we can appreciate more-than-human subjectivity, to ‘move us from a concept of “the” subject as a stand-alone agent acting on the world, toward one of subjectivities – constituted in and through our affective relationships with others’ (Ruddick, 2017: 120).

Barua (2014), drawing on ANT, described wild elephant agency as emerging from their complicated entanglement with humans, the landscape and substances such as alcohol. The elephants that are displaced from their home ranges have grown accustomed to drinking the alcohol that is illegally brewed by small farmers. These elephants pay nightly visits to ‘raid crops’ and have learned to follow the smell of brewing alcohol. Here, animal agency is produced in a dynamic between humans, animals, the terrain and material substances, where experiences, motives, intentions and responses are all dynamically reconfigured. Conservation and managing human–wildlife conflict then gravitate around understanding these dynamics as well as the emerging forms of animal agency in relation to their environment and to human responses.

So, on the one hand, in this view we need to take animals seriously as agents who act. At the same time, of course, we must realise that in processes of habituation particular non-human subjects may be produced, which undercuts a self-evident sense of ‘non-human agency’ as something exclusively driven by autonomous wild animals. Instead we – humans and gorillas and other non-humans – find ourselves in intricate processes of adapting and becoming. Processes that are always situated and ambivalent, not to be viewed as ideally harmonious or innocent, but inherently fraught and complex (Puig de la Bellacasa, 2017).

When wildlife conservation is no longer merely a matter of creating a protected area in which animals are left undisturbed, it is clear that we need to take animals and their changing interactions with various humans more seriously in the study of conservation processes.

At the same time, a relational analysis of conservation is also important for understanding how animals as agents may respond to habitat loss and may get locked into a vicious cycle of stress and conflict with local inhabitants. To understand conservation under dynamic conditions, it is important to see how animals can actively take part in driving these dynamics, and to acknowledge the various ways in which their agency plays out in practice, partly driving the conditions of their own conservation.

Methods

Our reconstruction of gorilla habituation, conservation and tourism in Bwindi is based on (1) an in-depth study of reports (Bwindi park management plans, UWA policy documents, scientific articles, monthly field reports of the Human Gorilla Conflict resolution (HUGO) teams (2016–2018) and the Nkuringo Buffer Zone management plan); (2) unstructured interviews with 55 people drawn from community members ($n=11$), primate behavioural ecologists ($n=2$), UWA managers ($n=3$), staff of the lodges frequently visited by the gorillas ($n=3$), six UWA field staff composed of senior trackers who habituated the gorillas ($n=2$), ranger guides who walk visitors to the gorillas ($n=2$), and research and monitoring staff ($n=2$) who conduct the gorilla census and do other field activities, as well as tourists ($n=30$). Data from these interviews were complemented with field-based walk-along observations and conversations by the first author who walked along with gorilla tracking teams, gorilla behavioural scientists and HUGO members during their field activities and information sharing meetings.

Habituation revisited: Multiple gorilla relations

Without habituation, gorillas exhibit a highly dynamic social life within and between families (Robbins and Robbins, 2018; Robbins et al., 2019). Additionally, they interact with people in particular ways. For example, prior to habituation, although both gorillas and humans normally avoided close encounters, gorillas at Bwindi occasionally raided people's gardens (Interview, community leader Ruhija, 2017). For example, according to the Ugandan Game Department archives, crop raiding by gorillas was first documented in 1933 when one of the wardens reported that, while the females and young ones quickly moved back to the forest when chased, 'males only moved when it suited them to do so' (UPCLG, 2013: 9). During habituation and because of tourism, a myriad of relations formed between gorillas and several groups of people, such as scientists, trackers, local communities, rangers and tourists. The first author's field observations and interviews with key informants indicated the following relations in the context of habituation and tourism.

Gorillas–habituation scientists

During the process of habituation, scientists and gorillas are involved in a series of intense exchanges which profoundly affect both. First, scientists look out for traces of the gorillas such as vocalisations, swishing or cracking branches and particular scents to locate the gorillas (Field notes, 2017). The gorillas 'detect the possible presence of humans based on the crackling sounds as scientists walk on dry leaves, and the human scents' (Interview, UWA ranger 1, 2017). The first visual encounter between the gorillas and scientists is always

tense (Interview, senior tracker 2, 2017). Gorillas, presumably ‘not sure if the scientists are there with good intentions or plan to harm them, keep on charging/threatening to attack’ (Interview ecologist 1, 2017). In turn, the scientists raise sticks while making calming grunts and carefully maintaining a maximum distance of 15 m. Furthermore, the scientists have to observe the bodily gestures of the gorillas and their vocalisations, and react to these by for instance grunting back in response to gorilla grunts and by mirroring their behaviour: sitting, picking and eating leaves, scratching their bodies whenever the gorillas do so. These encounters continue on a daily basis, and sometimes at night, for three months (Interview, senior tracker 2, 2017). Habituation is ‘successful when gorillas accept human presence’. However, there are cases when the gorillas remain aggressive to humans even after three months. In such unsuccessful habituation attempts, the trackers abandon that group and look out for another family (Interview, senior tracker 1, 2017).

Gorillas–rangers

The UWA rangers are responsible for the daily monitoring of gorillas, guiding tourists to the gorillas and participating in the gorilla census. The rangers indicated that habituated gorillas normally avoid unhabituated groups. When the two groups do meet, they usually fight (Interview, ranger 1, 2018). The rangers revealed that when habituated gorillas ‘experience or sense danger such as proximity of an unhabituated group or dogs, they move closer to the rangers’ camp’ (Interview, ranger 2, 2018). With such gestures, rangers feel that gorillas recognise them as their ‘friends’ and ‘protectors’ (Interview, UWA ranger 2, 2018). ‘Gorillas fear dogs’ (Interview, senior tracker 1, 2017). Rangers attributed the fear of dogs to poaching: ‘Poachers do not target gorillas but other animals such as duikers and bush pigs. However, when gorillas fall into these traps and snares, they get injured and maimed’ (Interview UWA ranger 2, 2018). Rangers further reported cases where, upon seeing a snare, a gorilla approaches the ranger grunting as he/she moves insisting that the ranger should follow him/her to the spot where the snare is (Interview, ranger 2, February 2018). By facilitating the removal of snares, these gorillas participate in the daily conservation activities.

Gorillas–veterinary doctors

Another example of the intricate human–gorilla interactions was illustrated through gorilla veterinary practices at Bwindi. As mentioned earlier, conservationists thought that habituation would enable easy access to the gorillas for veterinary interventions. These obviously imply encounters between the veterinarians and the gorillas. Usually, during these encounters, doctors conduct regular check-ups for signs of illness. Where necessary, doctors collect samples from the body of the gorillas for further tests or treat the affected body parts (Interview, UWA Research & Monitoring Staff 2, 2017). In order to do so, doctors shoot a sick gorilla with a tranquiliser dart. However, the other gorillas do not always allow the veterinary doctors to get close to a sick gorilla for treatment:

In 2016, gorillas of the Rushegura family shielded a female gorilla, suspected to be ill, from being tranquilised by a veterinary doctor. The veterinary doctor had previously treated another gorilla in the same group. When a gorilla is tranquilised, he/she temporarily falls to sleep. In this second attempt, when the same group of gorillas saw the doctor, they seemed to recall or associate the face of this doctor with a past experience when one of them fell in the presence of this doctor. (UWA Research & Monitoring Staff 1, 2018)

As a result of

this memory, the gorillas moved restlessly while the silverback and other males guarded the suspected patient to the extent that the doctor just had to abandon the exercise for that day. The doctors returned the next day and managed to tranquilise the sick gorilla. (Interview, UWA Research & Monitoring Staff 1, December 2018)

With this example, the veterinary doctor arguably subjected the gorillas to stressful moments. Another way of understanding this situation is that gorillas play a central role in (un)successful veterinary interventions. When they quickly move close to the targeted gorilla, they prevent the veterinarians from treating the sick gorilla, or the veterinary interventions take a long time because of them. When they do not, the veterinary doctors gain access to the sick individual. It is in such relations where gorillas can block or allow a veterinary intervention that we discern agency.

Gorillas–local human communities

Prior to habituation, ‘gorillas and residents avoided close encounters with one another. Accidental close encounters sometimes led to fatalities of either the gorillas or people’ (Interview, community elder, Ruhija, 2017). After habituation, some gorillas move through people’s compounds and gardens (FGD, Nyabaremura 2018). Community members are differentiated and so are their relations with gorillas. The Batwa people who inhabited the Bwindi forest seem to be more knowledgeable about the gorillas’ behaviour than other community groups (Interview with ecologist 1, 2018). Similar observations were made by Pitman (1935) and Amir (2019). They relate to the gorillas at a spiritual level because Batwa consider gorillas to ‘embody certain human spirits’ (FGD, Kalehe, 2017; Interview with Batwa elder, 2019). With such relations, it can be argued that, with or without habituation, gorillas can be considered as relationally agential. They evoke particular feelings. They have an influence on whether people proceed to hunt them or not, or whether they will harvest a particular field. Because if gorillas feed on the crops, that field will be abandoned (Interview with community elder, 2017).

A group of some Bakiga and Bafumbira people collectively known as HUGO (Human Gorilla Conflict Resolution Teams) are mandated to chase the gorillas back into the forest whenever they move onto community land. HUGO members seem to relate to gorillas by way of personally knowing the characters of individual gorillas rather than approaching them as a species or a spiritual being. This is illustrated in the ways members of HUGO teams describe their daily interactions with gorillas:

Most habituated gorillas respond to the drumming, whistling, ringing bells and threats (usually by raising sticks) by retreating to the forest. However, some individuals are ‘stubborn’ because they ‘refuse’ to move back into the forest especially when they are enjoying their favourite crops. (Response during FGD, Buhoma HUGO team, January 2019)

To other residents, gorillas are ‘not always dangerous. They only become problematic (“pests”) when they leave the forest and eat their crops or get tracked on people’s land’ (FGD, Rubuguri, 2019).

From an ANT perspective, it is within such multiple relations that we discern gorilla agency. Agency that is not inherently possessed by the gorillas, but produced and distributed in relations with heterogeneous actors. The varied relations further produce other realities

such as power relations, conservation interventions, conflicts between different groups of people (e.g. HUGO and community members), and between people and gorillas. Our interpretation therefore is that gorillas are not merely victims of power relations and conservation-related conflicts, as they take part in the production of these realities.

Gorillas–tourists

Gorillas are considered to be fully habituated when they ‘allow tourists to visit them’ (Interview, UWA tracker, 2017). However, this is not always the case. What gorillas will or will not do during tracking is never predictable. All tourists reported that gorillas continue eating, playing, grooming and resting in the presence of tourists. Such encounters evoke particular feelings expressed in the tourists’ recollections of ‘moments when gorillas allowed them into their lives’, and evoked feelings of ‘being a part of nature’ or being ‘together with the wild’ (Interview 3). Some tourists felt that young gorillas ‘constantly put up shows’, and ‘pose for nice shots’ (Group Interview 5, August 2018). Some individual gorillas seem to tolerate the presence of people more than others. For example, while ‘friendly Thursday’, of the Kyaguliro group ‘seems to enjoy the presence of people’, Kamuga usually keeps out of view from tourists, researchers and trackers (Walk-along interview with tracker, 2018). Besides, these encounters and behaviours of the gorillas are not always static. There were cases where gorillas that did not seem to be bothered by the presence of people suddenly turned aggressive before the end of the viewing time. To illustrate such a case, we provide an extract of the first author’s experience:

Suddenly the silverback walked toward the spot where I was standing. At a distance of about two metres, he started charging – standing upright and thumping his chest with his eyes wide open. Fear engulfed me. My feet trembled. One of the rangers grabbed my shoulders and reminded me that if I would run, I would be in trouble. The silverback repeated the charge once more. Another ranger figured out that he wanted his right of way to the tree behind me because that was his tree. The ranger had always observed him taking a few minutes away from the family in that particular tree. The ranger holding my shoulders carefully moved me aside. It was tense. As soon as I had been moved away, the silverback climbed the tree and the tracking proceeded normally. (Field notes, 2017)

Here, our ANT-inspired understanding is that the gorilla imposed his particular understanding of the material environment onto the social encounter.

Additionally, some gorillas either ‘refuse or partially participate in tourism encounters’ (Interview, UWA ranger 2, 2018). Rangers and field staff explained that gorillas express their discomfort by charging more than twice. The group of tourists that experienced such encounters was forced to end gorilla viewing before the standard one hour (Group Interview 1 with tourists, 2018). In addition, some gorillas ‘go back to the wild and refrain from encounters with tourists for more than three months’ (Interview, UWA tracker 2, August 2017).

Furthermore, there were times that both gorillas and tourists got closer than the prescribed 7 m. Tourists move closer to take pictures but some close encounters are initiated by gorillas. The following excerpt from the first author’s field notes describes such an encounter:

One of the blackbacks – an adult male whose back is not yet greyed – walked towards me and touched my hand. He was neither scary nor confrontational, he seemed like he was teasing me or checking my jacket. (Field notes, 2017)

The first author's experience described above is not an isolated occurrence. Interviews with tracking teams and a review of tourist blogs and scientific articles (Sandbrook and Semple, 2006) revealed that gorilla-initiated encounters are more common than imagined. Relatedly, contrary to the expectations of the gorilla tourism arrangement, some gorillas visit tourist camps, thereby permitting unpaid views (Interview lodge staff, December, 2018). When gorillas 'hinder', 'disrupt', 'permit' or 'render possible' (Latour, 2005) gorilla tracking activities, they can no longer be considered to be only passive objects of the tourist gaze (Laudati, 2010a; Urry, 2002). They actively take part in the creation of gorilla tourism experiences. Of course, such interactions might produce realities such as commodification, but our core argument is that gorillas play a role in enacting/producing these realities. After all, by now, the 'majority of the current habituated gorilla families have seen humans as part of their neonatal environment' (Interview behavioural ecologist 1, 2017).

Gorillas—gorillas

Since the start of gorilla habituation in Bwindi, there have generally been two categories of gorillas: habituated and unhabituated. However, when observing the dynamics in the daily lives of gorillas, this strict distinction is no longer realistic. The people involved in the habituation process expect the habituated gorillas to continue 'participating' in the established relations. They expect to find them to continue feeding within the mapped ranges and remain trackable. However, the field staff indicated that this is not always the case. Some habituated gorillas split off to form other habituated families. Others separate from their families, go back to the wild, and return after some time, or are never seen again (Interview, UWA research & monitoring staff, 2018). The dynamics of emigration and social organisation of gorillas are complex, but mainly arise from competition for alpha male status, and replacements in case of dead silverbacks (Harcourt and Stewart, 2007; Kabano et al., 2014; Robbins and Robbins, 2018). Male gorillas split from the main family and may lure a few females to move with them to start a new family. Sometimes, a male gorilla leaves on his own and remains solitary until he is able to attract females from both habituated and unhabituated groups (Interview UWA tracker 1, 2017; Interview UWA research & monitoring staff 2, 2018).

The fact that both habituated and unhabituated gorillas leave to join other groups or start new families composed of formerly habituated and unhabituated individuals, implies that habituation is a more complex affair than just a matter of scientists trying to make gorillas get used to human presence. It means that gorillas too are capable of self-habituation or de-habituation: in the case where a habituated gorilla emigrates to and integrates in an unhabituated group. Or, when an unhabituated gorilla immigrates into a habituated family and is able to live among them and be tracked, we argue, such a gorilla has been habituated by the family.

The role of animal agency in conservation and tourism at Bwindi

As noted before, an ANT perspective on non-human animal agency focuses on the various ways in which 'non-human animals enter into relations (...) in which humans and non-humans change together' (Michael, 2016: 143). From this perspective, the changes noticeable at Bwindi are not entirely attributed to gorillas. Rather, the changes are attributed to the process of building these relations around the gorillas. In this perspective, all elements of reality, such as gorillas themselves, agency, conservation, tourism and commodification, are

produced in relation-building processes (Law, 2009). To explain this, we first review how it is that the mountain gorilla occupies a central place not only at Bwindi, but at a global level.

At Bwindi, the relations that we have described in the previous section are not exhaustive. There could be many more relations, and thus other realities. However, our main argument is that the presence of gorillas and their foraging patterns have made a palpable difference in the complex processes that produce realities through particular spatial configurations and management practices of Bwindi. We discern this difference in the various arguments for converting Bwindi forest into a National Park and gorilla ecotourism practices. Both Harcourt (1981) and Butynski (1984) explain some of the ecological benefits of conserving Bwindi forest as an area for water catchment, soil conservation and research on biodiversity. However, they explicitly conclude that the recommendations for turning Bwindi into a National Park were meant solely for protecting mountain gorillas.

Furthermore, unlike other National Parks in Uganda, where tourist numbers are not limited, entrance to the gorilla parks is restricted to a maximum of eight visitors per gorilla family (Interview, ranger 1, 2017). This is because, ‘gorillas get stressed when exposed to large tourist groups such as those that visit other parks’ (Interview with ecologists 1 & 2, 2018). As a result of these (in)capabilities (not withstanding crowds, not surviving in captivity) of gorillas in relation to tourism and conservation activities, the survival of mountain gorillas features in most interventions, policies and controversial debates around Bwindi.

The focus on gorillas in most of the plans, practices and reports on Bwindi management, despite the presence of other fauna such as elephants, duikers, chimpanzees and monkeys (Hickey et al., 2019), is striking. We acknowledge that these studies are relational effects: they are an outcome of processes that bring together particular interests, funds and methods. Such processes further produce power relations, exclusions and othering. However, it is difficult to imagine similar outcomes if the gorillas were extinct or did not exist at all. It is upon such convictions that we understand animal agency to extend to the spatial configuration of Bwindi.

In the first place, although mountain gorillas are believed to have existed alongside humans since time immemorial, they were not scientifically described until Matschie did so in 1903 (Taylor and Goldsmith, 2002). This implies that what we refer to as mountain gorilla is a product of relations and a network of colonialists, local communities, hunters and their equipment and scientific practices of nomenclature and taxonomy. One of the profound reality effects of these studies and associated networks was the production of the mountain gorilla that has become popular today (Van der Duim et al., 2014). One that is considered as the largest non-human primate (McManus et al., 2015), that shares 97.7% of their genes with humans (Adams, 2013). They can only be found in Bwindi and the forest of the Virunga volcanoes, and they cannot survive in captivity (Cincinnati, 2015). These attributes differentiated the gorilla from other animals in Bwindi, but most importantly, played a role in the formulation of policies and conservation interventions at Bwindi. The interventions for in-situ conservation of the mountain gorillas at Bwindi included upgrading the Bwindi forest from a reserve to a National Park (Butynski, 1984; Pitman, 1935), and later introducing gorilla tourism as a conservation tool.

These interventions meant a variety of costs and benefits for local communities around Bwindi (Tumusiime and Sjaastad, 2014). These costs and benefits are different for each of the community groups around Bwindi. Overall, conservation interventions have been the cause of conflicts (Baker et al., 2012) and evictions, as well as disenfranchisement of local communities (Kidd, 2014; Mukasa, 2014). Whereas the Bakiga, Bakimbiri, Bahutu, Batutsi

and Bafumbira communities lived off the Bwindi forest, the Batwa are the most affected as they were evicted from their homes inside the forest. Some scholars argue that this eviction has forced the Batwa to live on the margins of the forest, and certainly, ‘margins of life’ (Tumushabe and Musiime, 2006).

Another contribution of gorillas to the conservation and tourism practices in Bwindi is illustrated by the Nkuringo case. In a complicated and contested process of buying out land from communities, gorillas certainly played an important role. One of the UWA Staff explained that the gorillas seem to have ‘colonised different locations around the forest, gradually expanding the forest boundaries’. The Nkuringo gorilla family ‘spend almost 80 per cent of their time on community land’ (UWA staff, Nkuringo, 2018). ‘Consequently, UWA together with their conservation partners, negotiated with residents to give up 1037.8 acres of land for gorillas’ (Interview, UWA research & monitoring staff 1, 2017). This was in exchange for a high-end lodge in partnership with a private entrepreneur (Interview with community leader 2, 2017). ‘This land was turned into a buffer zone’ (Interview, community leader, August 2017).

This arrangement was riddled with power relations, and interests from national and international conservation organisations, politicians, residents and entrepreneurs. The contested and controversial nature of this arrangement has been studied by Laudati (2010b) and Ahebwa (2012). However, it is difficult to imagine these processes without these gorillas contributing to the expansion of their territory. The Nkuringo group of gorillas frequently ate plants from people’s gardens, the gorilla permits attracted the private investor, and the idea that ‘gorillas don’t eat tea’ (Community leader, 2017; UWA staff, 2017) all overlapped with the ‘Uganda government efforts to increase tea production’ (Interview with official, Ministry of Finance Planning and Economic Development, 2017). Controversies aside, the replacement of subsistence crops with tea plantations has made visible changes to the Bwindi landscape – and the foraging patterns of the gorillas are part of the processes that gave rise to these changes.

Related, gorilla tourism – another non-traditional land use – was introduced and speeded up at Bwindi. Interviews with entrepreneurs, UWA staff and planners at the national level highlighted the importance of gorilla-based tourism for Uganda’s economy. The distribution and management of this revenue is contested and poses challenges (Ahebwa et al., 2012; Sandbrook, 2010; Sandbrook and Adams, 2012). Nonetheless, interviews with community leaders and UWA staff revealed that entrepreneurs and community leaders continue to demand for more ‘tourism sectors’ in their villages. To meet these wishes, gorilla viewing spots (sectors) have increased from one in 1998 to four in 2019. And with the introduction of more tourism sectors, administrative units, institutional arrangements and practices to involve ‘selected’ communities in gorilla conservation activities were put in place.

In all the examples explained so far, it is important to note that, from an ANT perspective, gorillas do not act alone in producing these realities. They are entangled in complex processes that change the gorillas themselves, the different groups of people involved, the landscape, the gorilla tourism economy, conservation policies and practices. In some cases, the gorillas have made gorilla tracking possible, for example by returning the gaze and keeping calm for the one-hour tracking period. In other cases, they have forbidden or worked against the tourism economy by charging or disappearing into the forests. They also sometimes undercut tourism practices by visiting tourist lodges giving away their encounter value ‘for free’. It is within such entanglements with scientific descriptions, policies, landscape, vegetation, people and gorillas that agency is produced and distributed.

Conclusion

In this article, we used relational agency as an analytical lens to reconstruct gorilla habituation in order to illustrate possible ways of taking animals more seriously in the context of conservation, tourism and development.

First, we argue that habituation is a multisided and complex interaction that goes beyond one-way domination, taming or domestication (cf. Swanson et al., 2018) or control (Rinfret, 2009). Moreover, drawing on pre-habituation relations between gorillas and local communities, there is a possibility that habituation can also occur ‘naturally’ or less as an outcome of deliberate policy. Prior to the scientific habituation of gorillas, gorillas and residents moved about in the forest, usually ‘common-sensing’ (Boonman-Berson et al., 2016) each other through various sensory cues, while on the ‘most part avoiding contact and conflict’ (Interview, community elder, 2017). This observation was also made by Fossey (1972); however, Pitman (1935) noted instances where gorillas seemed to be used to the presence of the Batwa and, later, scientists and gold prospectors as early as in the 1930s. This argument is further supported by the observation that unhabituated gorillas that join habituated gorilla groups do not undergo the habituation process, yet they still become ‘viewable’ in the gorilla tourism practice. Therefore, we argue that habituation is a complicated, dynamic process in which gorillas come to influence, and be influenced by conservation, tourism and development practices.

Related to the above point is that gorillas contribute to their own conservation, and the tourism economy that commodifies them. By foraging at different spots of the forest than the unhabituated gorillas do, the habituated gorillas have subtly zoned out the forest into habitats for habituated and unhabituated families. Seiler et al. (2017) also note the spatial partitioning of the Bwindi forest by gorillas and attribute this to social factors such as competition for mates. These findings are interesting from an ANT point of view because they indicate that besides conservation efforts, gorillas too play a role in ensuring that they survive under the conditions of the tourism economy and the resulting geographies.

Although the idea of relational agency and multiplicity is not new (Law, 2009; Mol, 2002), we argue that understanding the multiple relations afforded by gorillas, point to the need for constant adaptation of conservation interventions. We argue that it is no longer sufficient to practice conservation and tourism based only on conventional categorisations into wild, liminal and domesticated animals (Donaldson and Kymlicka, 2011) or in this case, habituated and unhabituated gorillas. Crosscutting political categorisations of these basic types of relations, arguably gorillas in Bwindi can be all three, where some visit a lodge, others intermittently gaze back at tourists, and again others never let themselves be seen. As long as there is an opt-out of habituation and tourist encounters, arguably the range of possible relations for these gorillas can enhance their agency by allowing them to respond to their experiences and actively perform the particular gorilla subjectivity that suits their interests as they perceive these. Under these conditions, habituation is not fully imposed on the gorillas, but offers an optional way of being gorilla.

Equally important is that this view of animal agency enables primatologists, ecologists and conservationists at Bwindi to think about more ways of managing with the gorillas other than the increasingly futile – yet costly – attempts, rules and strategies to restrict or control the interactions of gorillas and humans. As such, political, scientific and policy practices can best be adapted to the changing and multiple animal agencies that emerge, to achieve the best results for both the animal and the non-animal actors.

This also has implications for scientific understanding of gorillas: not only as the ‘*Gorilla beringei beringei*’ that can be found to express novel behaviour, but acknowledging the entangled settings in which knowledge of gorillas – of both habituated and unhabituated gorillas – is produced (Despret, 2016). This implies we could approach gorillas not on the model of a single essential ‘gorilla-ness’, which defines their character, abilities, motives and preferences exclusively and comprehensively by their species. And not just to think of gorillas in binary habituated versus non-habituated terms, but more like the inherently multiple self-hybridising coywolves: reflecting their ‘irreducible indeterminacy’ (Rutherford, 2018).

Does giving up on an ideal of pure untainted wild gorillas in the name of gorilla multiple imply that there is no way to critique certain forms of management and approaches to habituation? Or can there still be good reasons to retain enough non-habituated groups and acknowledge zones in the forest that are off-limits to tourists or other interventions: specifically, to ensure this dynamic range of options for gorillas to become more or less habituated? Building on the relational understanding of agency, this geography of granting options to wildlife should not be merely seen as simply allowing for gorillas to ‘consent’ to being subjected to habituation by not opting out of this situation. That would gloss over the intricate relations between gorillas themselves, and between gorillas and humans, that shape their lives in Bwindi. The aim is not to somehow resolve the ethical concerns of this situation, but to live with the ambivalences of the ongoing circulation of care, in search of ways to ‘enact nonexploitative forms of togetherness (that) cannot be imagined once and for all’ (Puig de la Bellacasa, 2017: 24). And, we would add, the imagining and judging of which is not an exclusively human prerogative.

Implications for conservation and tourism development

It is important to note that the gorilla habituation case discussed in this paper is a particular one – or what ANT-scholars term as an exemplar (Law, 2009). To understand the nature of habituation and its effects on gorillas and their relations to various others, it can be contrasted with the relations emerging in forms of intensive, or ‘extreme’, conservation of other species in various places across the globe. For instance, the extreme measures taken to conserve whooping cranes through captive breeding, as described by Van Dooren (2014), reveals the extent to which conservation efforts that seek to reproduce individuals of a species can have far-reaching effects on these animals. According to Van Dooren (2014), imprinting produces

a relationship with humans *at the expense of* a whole set of other ways of being, often severing the possibility for a bird’s relating with others of its own species, and so profoundly altering its chances for social and procreative relations. (Van Dooren, 2014: 103)

Whereas the lives of whooping cranes seem wholly orchestrated, this arguably contrasts with Bwindi mountain gorillas, who more actively switch between habituation and non-habituation, rather than inflexibly executing imprinted action plans.

Gorilla habituation discussions are often premised on the assumption that habituation is an irreversible process entirely controlled or executed by humans guided by sound scientific field guidelines (Williamson and Feistner, 2003). We have demonstrated that prior to the arrival of scientists, gorillas seemed to have been habituated by local communities. Moreover, gorillas are, to some extent, capable of self-habituation and de-habituation. The observations at Bwindi and elsewhere (see Amir, 2019) challenge Knight’s (2009)

argument that reverse habituation means humans have to withdraw from the interaction. Gorillas too can withdraw from these interactions. Similarly, when establishing a norm for the distance people should keep when viewing gorillas, scientists did not imagine that gorillas too would initiate closer contacts (Sandbrook and Semple, 2006); and when setting the limit of eight people per day, they did not envisage that some gorillas would come to tourist lodges regardless of the number of visitors therein. This further implies that land-use-based interventions such as clearing herbaceous plants and planting buffer crops to keep gorillas inside and restrict their movements (Seiler and Robbins, 2016) are bound to be unsuccessful as gorillas may soon adapt to these interventions.

Related, the continued growth of the gorilla population (Robbins et al., 2011) amidst increased tourism sectors at Bwindi and the entire Virunga Massif, calls for a rethinking of the argument that habituation and tourism may lead to reduced reproductive success (Butynski and Kalina, 1998; Muyambi, 2006). Furthermore, opponents of habituation emphasise that it increases the risk of disease transmission (Woodford et al., 2002). Nevertheless, in these debates, it is important to consider that gorilla mortality is not only human-induced. Gorilla deaths also occur as a result of injuries sustained from gorilla–gorilla fights, and tree falls. Moreover, habituated gorillas can significantly contribute to their own conservation/survival, as observed in cases where gorillas directed rangers to the snares of poachers or dismantled these themselves (Than, 2012). More so, gorillas have been shown to allow a variety of practices, as in the case of the captive western lowland gorilla Koko who famously communicated with her human keepers using a modified version of American Sign Language (Morin, 2015). Such observations call for openness to the various relations that gorillas are capable of. By considering what gorillas can do other than getting used to human presence, conservationists can come up with interventions that pay more attention to how gorillas contribute to conservation and tourism practices.

Furthermore, the arguments about commodification for tourism (Laudati, 2010a), and control in conservation (Rinfret, 2009), disregard the fact that the gorilla tourism economy only survives if a significant number of gorillas do not just endure but also return the tourist gaze – allowing these visitors to participate in the at first scientific and now touristic tradition of encountering gorillas (Haraway, 2013). Besides, although the gorillas have been made viewable through habituation (Fossey, 1974; Knight, 2009), they still need to retain enough of their ‘wildness’ to stay in the forest and not come to lodges and give away their encounter value for free, as then the gorilla economy would no longer function. Based on this analysis, we reiterate that it is insufficient to conclude that gorilla tourism at Bwindi is entirely human-controlled because it exists in and through intricate relations between animal and non-animal actors. In these relations, both the gorillas and other actors adapt and re-adapt incessantly.

Our relational analysis of the practice of habituation further indicates that habituation is a mutual process where both the gorillas and humans get habituated to each other’s presence, resulting in novel forms of interaction, both in direct encounters and through reconfiguring the landscape. In sum, by analysing the multiple relations that gorillas engage in and how they spatially play out, we situated animal agency in gorillas’ interactions with other actors, and their ability to influence habituation itself, involving gorilla tourism, conservation interventions and the ever-changing Bwindi landscape. Such a view of gorillas and animal agency in general, enables a better understanding of animals as conservation actors (see also Jepson, Barua and Buckingham, 2011) and challenges the common assumption that only humans control the shaping of conservation, tourism and the associated landscapes.

Highlights

- Gorilla habituation is mostly studied and practiced as a process fully controlled by humans.
- Gorilla habituation is not a one-dimensional human control of gorillas, but a mutual process of becoming, learning and adapting together.
- Gorillas form multiple, diverse relationships with each other, various groups of people and their landscape, thereby participating in their own conservation.
- Multiple gorilla relations produce profound effects on the gorillas themselves, humans and the Bwindi landscape.
- Animal agency in the context of gorilla habituation is relational, plural and an effect of intricate relations with various actors.
- To ensure gorillas can at least to some extent voluntarily participate in their own habituation, ample space and unhabituated groups of gorillas would need to be maintained.

Acknowledgements

We thank Uganda Wildlife Authority for granting the first author the research permit to conduct fieldwork at Bwindi; all research participants who contributed their ideas, experiences and clarifications; Dr Nkurunungi John Bosco of the Department of Biology at Mbarara, University of Science and Technology, Uganda; Yulia Kisora, Professor Rene Van der Duim, Dr Martijn Duineveld and Dr Stasja Koot of Wageningen University, and Dr Krithika Srinivasan of the Institute of Geography University of Edinburgh, for their comments on the initial draft.

Declaration of conflicting interests


The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The work of the first author was supported by funding from NUFFIC (the Dutch organisation for internationalisation in education) under Grant Number PhD.16/0019.

ORCID iDs

Christine Ampumuza  <https://orcid.org/0000-0001-9866-1912>

Clemens Driessen  <https://orcid.org/0000-0003-1695-1524>

Note

1. Recently another gorilla viewing activity: “Gorilla Habituation Experience” has been introduced whereby a guest spends four hours with gorillas in the process of habituation at a fee of US\$1500. Available at: <https://www.bwindiforestnationalpark.com/gorilla-habituation-experience.html> (accessed 13 July 2020).

References

- Adams WM (2013) *Against Extinction: The Story of Conservation*. London: Earthscan.
- Ahebwa, WM (2012) *Tourism, livelihoods and biodiversity conservation: an assessment of tourism related policy interventions at Bwindi Impenetrable National Park (BINP), Uganda*. (Doctoral). Wageningen University, Wageningen.

- Ahebwa WM, van der Duim R and Sandbrook C (2012) Tourism revenue sharing policy at Bwindi Impenetrable National Park, Uganda: A policy arrangements approach. *Journal of Sustainable Tourism* 20: 377–394.
- Amir APH (2019) Who knows what about gorillas? Indigenous knowledge, global justice, and human-gorilla relations. *IK: Other Ways of Knowing* 5: 1–40.
- Archabald K and Naughton-Treves L (2001) Tourism revenue-sharing around national parks in Western Uganda: Early efforts to identify and reward local communities. *Environmental Conservation* 28: 135–149.
- Baker J, Milner-Gulland E and Leader-Williams N (2012) Park gazettement and integrated conservation and development as factors in community conflict at Bwindi Impenetrable Forest, Uganda. *Conservation Biology* 26: 160–170.
- Barad K (2007) *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham: Duke University Press.
- Barua M (2014) Volatile ecologies: Towards a material politics of human–animal relations. *Environment and Planning A* 46: 1462–1478.
- Barua M (2017) Nonhuman labour, encounter value, spectacular accumulation: The geographies of a lively commodity. *Transactions of the Institute of British Geographers* 42: 274–288.
- Bekoff M (2010) *The Emotional Lives of Animals: A Leading Scientist Explores Animal Joy, Sorrow, and Empathy—And Why They Matter*. Novato: New World Library.
- Blomley T (2003) Natural resource conflict management: the case of Bwindi Impenetrable and Mgahinga Gorilla National Parks, southwestern Uganda. In: Castro AP and Nielsen E (eds) *Natural Resource Conflict Management Case Studies: An Analysis of Power, Participation and Protected Areas*. Rome: Food and Agriculture Organization of the United Nations., pp.231–250.
- Blomley T (2010) *Development AND Gorillas?: Assessing Fifteen Years of Integrated Conservation and Development in South-western Uganda*. London: IIED.
- Boonman-Berson S, Turnhout E and Carolan M (2016) Common sensing: Human-black bear cohabitation practices in Colorado. *Geoforum* 74: 192–201.
- Brockington D (2002) *Fortress Conservation: The Preservation of the Mkomazi Game Reserve, Tanzania*. Bloomington: Indiana University Press.
- Butynski TM (1984) Ecological survey of the impenetrable (Bwindi) Forest Uganda and recommendations for its conservation and management. Technical Report, pp.166–183. Wildlife Conservation International, New York Zoological Society, USA.
- Butynski TM and Kalina J (1993) Three new mountain national parks for Uganda. *Oryx* 27: 214–224.
- Butynski TM and Kalina J (1998) Gorilla tourism: A critical look. In: Conservation of Biological Resources. New York: Wiley, pp.294–313.
- Carter B and Charles N (2013) Animals, agency and resistance. *Journal for the Theory of Social Behaviour* 43: 322–340.
- Chiew F (2014) Posthuman ethics with Cary Wolfe and Karen Barad: Animal compassion as trans-species entanglement. *Theory, Culture & Society* 31: 51–69.
- Cincinnati N (2015) Too sullen for survival. In: Nance S, Colby J, Gibson AH, et al. (eds) *The Historical Animal*. New York: Syracuse University Press.
- de Silva S and Srinivasan K (2019) Revisiting social natures: People-elephant conflict and coexistence in Sri Lanka. *Geoforum* 102: 182–190.
- Derrida J (2008) *The Animal That Therefore I Am*. New York: Fordham University Press.
- Despret V (2016) *What Would Animals Say if We Asked the Right Questions?* Minneapolis: University of Minnesota Press.
- Donaldson S and Kymlicka W (2011) *Zoopolis: A Political Theory of Animal Rights*. Oxford: Oxford University Press.
- Duffy R, St John FA, Büscher B, et al. (2015) The militarization of anti-poaching: Undermining long term goals? *Environmental Conservation* 42: 345–348.
- Fossey D (1970) Making friends with mountain gorillas. *National Geographic* 137: 48–67.
- Fossey D (1972) Vocalizations of the mountain gorilla (*Gorilla gorilla beringei*). *Animal Behaviour* 20: 36–53.

- Fossey D (1974) Observations on the home range of one group of mountain gorillas (*Gorilla gorilla beringei*). *Animal Behaviour* 22: 568–581.
- Goldsmith ML (2014) Mountain gorilla tourism as a conservation tool: Have we tipped the balance? In: Russon AE and Wallis J (eds) *Primate Tourism: A Tool for Conservation?* Cambridge: Cambridge University Press, p.177.
- Gruen L, Fultz A and Pruetz J (2013) Ethical issues in African great ape field studies. *ILAR Journal* 54: 24–32.
- Haraway DJ (2008) *When Species Meet*. Minneapolis, MN: University of Minnesota Press. ISBN-13: 978 -0 -8166 -5046 -0.
- Haraway DJ (2013) *When Species Meet*. Minneapolis: University of Minnesota Press.
- Harcourt AH (1981) Can Uganda's gorillas survive? – a survey of the Bwindi Forest Reserve. *Biological Conservation* 19: 269–282.
- Harcourt A and Stewart KJ (2007) Gorilla society: What we know and don't know. *Evolutionary Anthropology: Issues, News, and Reviews* 16: 147–158.
- Hickey JR, Uzabaho E, Akantorana M, et al. (2019) BwindiSarambwe 2018 Surveys: monitoring mountain gorillas, other select mammals, and human activities. Kampala: GVTC, IGCP & partners.
- Hurn S (2015) Baboon cosmopolitanism: More-than-human moralities in a multispecies community. In: *Cosmopolitan Animals*. New York: Springer, pp.152–166.
- Jepson P, Barua M and Buckingham K (2011) What is a conservation actor? *Conservation and Society* 9: 229–235.
- Kabano P, Arinaitwe J and Robbins MM. (2014) A brief history of habituated gorillas in Bwindi Impenetrable National Park. *Gorilla Journal* 7–10.
- Kidd C (2014) Bwindi Impenetrable National Park: The case of the Batwa. *World Heritage Sites and Indigenous Peoples' Rights* 147.
- Knight J (2009) Making wildlife viewable: Habituation and attraction. *Society & Animals* 17: 167–184.
- Latour B (2005) *Reassembling the Social. An Introduction to Actor-Network-Theory*. New York: Oxford University Press.
- Laudati A (2010a) Ecotourism: The modern predator? Implications of gorilla tourism on local livelihoods in Bwindi Impenetrable National Park, Uganda. *Environment and Planning D: Society and Space* 28: 726–743.
- Laudati AA (2010b) The encroaching forest: Struggles over land and resources on the boundary of Bwindi Impenetrable National Park, Uganda. *Society and Natural Resources* 23: 776–789.
- Law J (2009) Actor network theory and material semiotics. In: Turner BS (ed) *The New Blackwell Companion to Social theory*. United Kingdom: Blackwell Publishing Limited, pp.141–158.
- Martin JA (2011) When sharks (don't) attack: Wild animal agency in historical narratives. *Environmental History* 16: 451–455.
- Mayberry AL, Hovorka AJ and Evans KE (2017) Well-being impacts of human-elephant conflict in Khumaga, Botswana: Exploring visible and hidden dimensions. *Conservation and Society* 15: 280.
- McManus KF, Kelley JL, Song S, et al. (2015) Inference of gorilla demographic and selective history from whole-genome sequence data. *Molecular Biology and Evolution* 32: 600–612.
- Michael M (2016) *Actor-Network Theory: Trials, Trails and Translations*. Thousand Oaks: Sage.
- Mol A (2002) *The Body Multiple: Ontology in Medical Practice*. Durham: Duke University Press.
- Morin R (2015) A conversation with Koko the gorilla. *The Atlantic* 28.
- Mukasa N (2014) The Batwa indigenous people of Uganda and their traditional forest land: Eviction, non-collaboration and unfulfilled needs. *Indigenous Policy Journal* 24.
- Muyambi F (2006) Assessment of impact of tourism on the behaviors of mountain gorillas in Bwindi Impenetrable National Park. MSc (Unpublished Thesis). Makerere University, Kampala.
- Namara A (2006) From paternalism to real partnership with local communities? Experiences from Bwindi Impenetrable National Park (Uganda). *Africa Development* 31: 37–66.
- Nance S (2013) *Entertaining Elephants: Animal Agency and the Business of the American Circus*. Baltimore: JHU Press.

- Oliver K (2009) *Animal Lessons: How They Teach Us to Be Human*. New York: Columbia University Press.
- Olupot W, Barigyira R and Chapman CA (2009) The status of anthropogenic threat at the people-park interface of Bwindi Impenetrable National Park, Uganda. *Environmental Conservation* 36: 41–50.
- Palmer C (2002) Taming the wild profusion of things? A study of Foucault, power and animals. *Environmental Ethics* 23: 339–358.
- Pitman C (1935) The gorillas of the Kayonsa Region, Western Kigezi, SW, Uganda. *Proceedings of the Zoological Society of London* 477–494.
- Puig de la Bellacasa MP (2017) *Matters of Care: Speculative Ethics in More Than Human Worlds*. Minneapolis: University of Minnesota Press.
- Rinfret S (2009) Controlling animals: Power, Foucault, and species management. *Society and Natural Resources* 22: 571–578.
- Robbins MM, Akantorana M, Arinaitwe J, et al. (2019) Dispersal and reproductive careers of male mountain gorillas in Bwindi Impenetrable National Park, Uganda. *Primates* 60: 133–142.
- Robbins MM, Gray M, Fawcett KA, et al. (2011) Extreme conservation leads to recovery of the Virunga mountain gorillas. *PLoS One* 6: e19788.
- Robbins MM and Robbins AM (2018) Variation in the social organization of gorillas: Life history and socioecological perspectives. *Evolutionary Anthropology: Issues, News, and Reviews* 27: 218–233.
- Ruddick SM (2017) Rethinking the subject, reimagining worlds. *Dialogues in Human Geography* 7: 119–139.
- Rutherford S (2018) The Anthropocene's animal? Coywolves as feral cotravelers. *Environment and Planning E: Nature and Space* 1: 206–223.
- Sandbrook C and Adams WM (2012) Accessing the impenetrable: The nature and distribution of tourism benefits at a Ugandan National Park. *Society & Natural Resources* 25: 915–932.
- Sandbrook C and Semple S (2006) The rules and the reality of mountain gorilla *Gorilla beringei beringei* tracking: How close do tourists get? *Oryx* 40: 428–433.
- Sandbrook CG (2010) Putting leakage in its place: The significance of retained tourism revenue in the local context in rural Uganda. *Journal of International Development: The Journal of the Development Studies Association* 22: 124–136.
- Sayes E (2014) Actor–Network Theory and methodology: Just what does it mean to say that nonhumans have agency? *Social Studies of Science* 44: 134–149.
- Seiler N, Boesch C, Mundry R, et al. (2017) Space partitioning in wild, non-territorial mountain gorillas: The impact of food and neighbours. *Royal Society Open Science* 4: 170720.
- Seiler N and Robbins MM (2016) Factors influencing ranging on community land and crop raiding by mountain gorillas. *Animal Conservation* 19: 176–188.
- Srinivasan K (2014) Caring for the collective: Biopower and agential subjectification in wildlife conservation. *Environment and Planning D: Society and Space* 32: 501–517.
- Steward H (2009) Animal agency. *Inquiry* 52: 217–231.
- Swanson HA, Lien ME and Ween GB (2018) *Domestication gone wild: politics and practices of multi-species relations*: Duke University Press.
- Swart S (2010) *Riding High: Horses, Humans and History in South Africa*: New York: New York University Press.
- Taylor AB and Goldsmith ML (2002) *Gorilla Biology: A Multidisciplinary Perspective*. Cambridge: Cambridge University Press.
- Than K (2012) Gorilla youngsters seen dismantling poachers traps – A first. National Geographic Online. Available at: <http://news.nationalgeographic.com/news/2012/07/120719-young-gorillas-juveniletraps-snares-rwanda-science-fossey/> (accessed 20 November 2019).
- Tumushabe G and Musiime E (2006) Living on the margins of life. The plight of the Batwa communities of South Western Uganda. ACODE Policy series, No. 17.

- Tumusiime DM, Bitariho R and Sandbrook C (2018) Bwindi Impenetrable National Park. In: Sandbrook C, Cavanagh CJ and Tumusiime DM (eds) *Conservation and Development in Uganda*. Boca Raton: Taylor & Francis.
- Tumusiime DM and Sjaastad E (2014) Conservation and development: Justice, inequality, and attitudes around Bwindi Impenetrable National Park. *Journal of Development Studies* 50: 204–225.
- Tumusiime DM and Svarstad H (2011) A local counter-narrative on the conservation of mountain gorillas. *Forum for Development Studies*. Boca Raton: Taylor & Francis, pp.239–265.
- Uganda Wildlife Authority (2014) Bwindi Impenetrable National Park: General Management Plan 2014 – 2024. Kampala.
- UNEP-WCMC (2011) Bwindi Impenetrable National Park Uganda. *Protected Areas and World Heritage*. United Nations Environment Program.
- UPCLG (2013) *POLICY MEMO: Bwindi General Management – 2013 to 2023 planning process*. UK: Uganda-Poverty and Conservation Learning Group.
- Urry J (2002) *The Tourist Gaze*. Thousand Oaks: Sage.
- van der Duim R, Ampumuza C and Ahebwa WM (2014) Gorilla tourism in Bwindi Impenetrable National Park, Uganda: An actor-network perspective. *Society & Natural Resources* 27: 588–601.
- Van Dooren T (2014) *Flight Ways: Life and Loss at the Edge of Extinction*. New York: Columbia University Press.
- Williamson EA and Feistner AT (2003) Habituating primates: Processes, techniques, variables and ethics. In: Curtis DJ and Setchell JM (eds) *Field and Laboratory Methods in Primatology: A Practical Guide*. Cambridge: Cambridge University Press, pp.25–39.
- Woodford MH, Butynski TM and Karesh WB (2002) Habituating the great apes: The disease risks. *Oryx* 36: 153–160.