

Research Activity Report
Supported by “Leading Graduate Program in Primatology and Wildlife Science”

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Affiliation/Position	Primate Research Institute/D1
Name	Raquel Costa

1. Country/location of visit
Entebbe and Bwindi Impenetrable National Park, Uganda
2. Research project
“How gorillas perceive the world: assessing the current impact of mountain gorilla ecotourism in Bwindi Impenetrable National Park (Uganda)”
3. Date (departing from/returning to Japan)
06.12.2017-06.03.2018
4. Main host researcher and affiliation
Dr. Gladys Kalema Zikusoka, Conservation Through Public Health, Uganda
5. Progress and results of your research/activity
<p>This report presents the progress of my PhD project which aims to assess the behavioural responses of habituated mountain gorillas during tourist visits in Bwindi Impenetrable National Park, Uganda. In this second field work season I collected behavioural data under a new outline which was the product of the trials and experience acquired in the first season (September/October, 2017). I gathered around 180 hours of data for all the individuals of Rushegura group (14 individuals in total). Preliminary analysis of this data suggests that animals affiliate twice more after ecotourism exposure than before ($p=0.022$). Affiliation entails grooming and physical contact between animals. Hence, this result suggests an increased social cohesion of the group after the exposure to visitants, which may indicate that the animals see these encounters as potentially risky. Further analysis is necessary, but the present results caution a disturbance in the gorilla's behaviour related to the tourist visit.</p> <p>Alongside my regular observation of the animals in their daily routine, I was lucky to witness a couple of very interesting events: the intervention of Gorilla Doctors on 3 individuals with injuries and diseases (and their posterior recovery), and the meeting of two groups in the same site, with the consequential interactions between members.</p> <p>The Gorilla Doctors' first intervention took place on January 17th, with the assessment of the three fragilized gorillas (the group's silverback and two adult females). In the following day, with the necessary preparation the first intervention occurred after the tourist visit. The focus was an adult female named Buzinza, who was wounded during a fight late December. Buzinza could not use the arm or even put weight on it. I had observed the deterioration of her condition as she struggled to move and feed. However, she managed to keep up with the group. Her son, Kabunga, another male juvenile, Kamara and the group's older blackback, Kalembezi, were always with her and keeping her company. Kabunga and Kamara showed a lot of affiliative behaviours during this period. During the Gorilla Doctors' intervention, Buzinza was sedated (by darting), immobilized and a complete health check was performed. In her arm, the Gorilla Doctors found a massive infection.</p>

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For the first time in Bwindi, an x-ray was performed on a wild gorilla. This exam showed that the infection was severe and had reached the bone. The Gorilla Doctors cleaned the wound and injected Buzinza with antibiotics and painkillers. After the reversal from the anesthesia, I followed Buzinza and continued recording her behavior to accompany her recovery. I saw the three individuals mentioned before approaching her and grooming her while Buzinza was still feeling the effects of the anesthesia. I continue to follow her in the next days and I witnessed her improvement – with time, she started to move better, feed better and even use the arm. However, even when I left Bwindi, she could not flex the arm to a full extent and I wonder if the bone has calcificated in a way that will prevent her full flexion of the arm permanently. In any case, this intervention was indeed a success and saved Buzinza’s life. She continued to receive antibiotics throughout the next month to insure the infection heals.

The day after Buzinza treatment, Gorilla Doctors also treated the silverback, Kabukojo, and an adult female, Ruterana, for parasites. These two individuals presented severe signs of weight loss and, indeed, I recorded little feeding behavior during my observations. The severe parasitical burden was assumed due to the physical signs and the large quantities of live parasites in the fecal samples. Again, the treatment is continuous but in the following weeks I did observed an improvement in feeding behavior.

I have learnt a lot during these episodes, not only in veterinary aspects but I also could make the parallelism of my own behavioural observations and the animals’ physical conditions, which is very interesting in my view.

Another exciting moment of this field work season was the union of two habituated groups of gorillas. It was January 27th, and my study group had travelled to the border of Buhoma sector and Nkuringo sector. In the morning, arriving at the location, we found only the two blackbacks from Rushegura and an unidentified juvenile female. One of the blackbacks, Kalembezi, was continuously displaying for this new individual. Later, we found the rest of the family Rushegura, interacting with the Nkuringo group upper in the hill. Unlike my study group, Nkuringo group has two silverbacks (father and son) who ensure the group stability and security. These individuals were also larger in body size and both have the entire back silver, which means they are grown silverbacks, while Kabukojo, the silverback in Rushegura, is still a young silver. Although one of Nkuringo silverbacks (the father) presented some evidence of fighting with some wounds on his back, the interactions we witnessed were quite pacific between the adults, who only occasionally displayed (including adult females and black backs). The juveniles on the other hand were euphoric and very playfull. The groups started the go apart after a while and from this meeting 3 transfers occurred: Kamara and Nderema from Rushegura stayed in Nkuringo group, while Kizza (the juvenile female I saw on the first day with Kalembezi) stayed in Rushegura. However, this last one was not a permanent transfer. After a few days of mating with Kalembezi, Kizza disappeared, possibly returned to her natal group. My last observation of Kizza was on February, 8th. Although I cannot include this individual in my study (and maybe the individuals who transfer) I learnt quite a lot from the time I had with Kizza, particularly on gorilla mating and courtship behavior.

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In sum, both of these events provided me new insights on gorilla’s life and I am very happy I was able to witness and to experience such observations.

Currently, I continue to input the data. I am also performing a preliminary analysis in the data set input so far for a poster presentation in the forthcoming International Primatological Society Conference, which will take place in August, 19th, Nairobi, Kenya.



Figure 1. Kabukojo, the silverback of Rushegura Family, approximately, 18 years old.



Figure 2. Buzinza, adult female, unknown age.



Figure 3. Social interactions between Buzinza, Kabunga and Kamara, Rushegura Family.

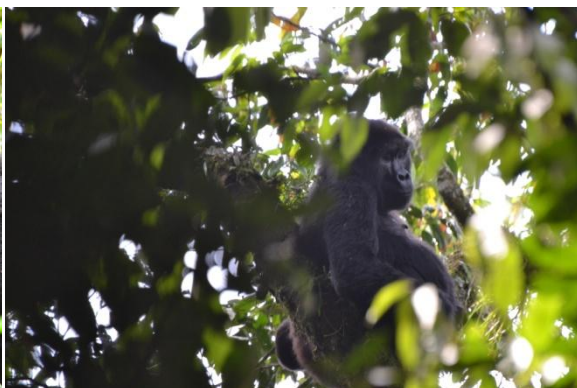


Figure 4. Muyana, adult female, unknown age.

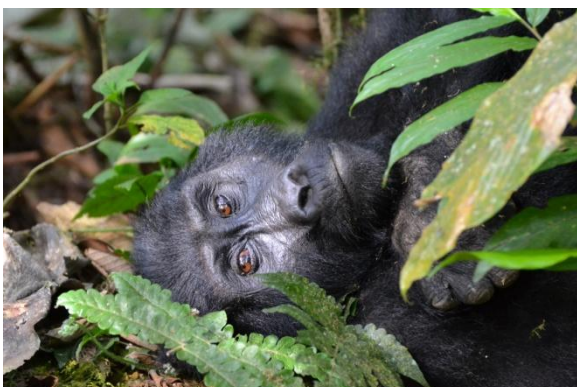


Figure 5. Ruterana, adult female, unknown age.



Figure 6. L’Hoest monkey (*Cercopithecus lhoesti*) in Bwindi NP, Uganda.

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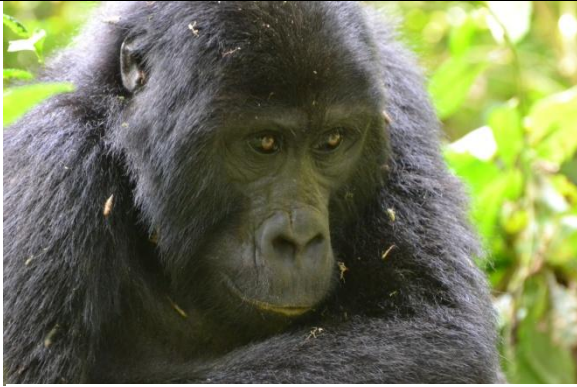


Figure 7. Kanyindo, a juvenile male, 5 years old.



Figure 8. Ruterana’ baby, male, 1 year old.

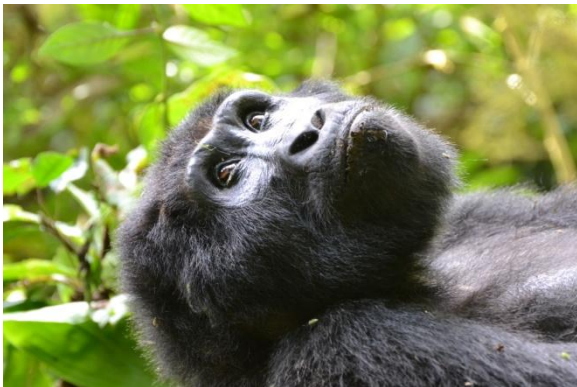


Figure 9. Buzinza, adult female, unknown age.



Figure 10. Ruterana’ baby, male, 1 year old.



Figure 11. Kibande’ baby, male, 1 year old.

6. Others

I wish to express my gratitude to my academic supervisors Prof. Misato Hayashi, Prof. Michael A. Huffman and Prof. Masaki Tomonaga and to my supervisor in the field, Dr. Gladys Kalema Zikusoka. To my colleague and friend, Ryoma Otsuka for helping me adjusting to Ugandan life and Prof. Gen Yamakoshi for his support and encouragement. I also would like to thank Prof. Fred Bercovitch and Dr. Lilly Arajova for their support and helpful comments. I am also grateful to

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CTPH staff and volunteers, the UWA staff for their continuous support. I am forever in debt to UWA trackers for their patience and help during the field work. I am also thankful to the Buhoma and Mukuno local community for their hospitality. A special thank you to PWS program and, especially to Prof. Matsuzawa, for believing and supporting this field work.