



Joking with Jane: Chimps, Coliforms and Communities in Budongo Forest, Uganda

Rachel Gates¹; Allison Killea¹; Caroline Asimwe² and Peter Apell³

¹Cornell University; ²Budongo Conservation Field Station; and ³The Jane Goodall Institute-Uganda



Abstract

The project, a collaboration between Engaged Cornell and the Jane Goodall Institute was intended to identify the health risks associated with close contact between humans, chimpanzees, *Pan troglodytes schweinfurthii*, and other non-human primates. Water testing and a survey of water use was used to assess the possibility of disease transfer both from chimp to human and vice versa in Uganda's Budongo Forest Reserve. Results are preliminary; there is a great deal more research needed to assess the risk of pathogen transfer.



A blue monkey drinks from and later defecates in a rain barrel used for drinking water, cooking, and bathing.

Introduction

Sociological, ecological, and environmental drivers are known to influence the transmission and/or emergence of disease. Specifically, we explored the human-chimpanzee interactions at shared water sources. By understanding the behavior of animals and humans at these points we will be able to identify the ecological and anthropogenic factors that affect sharing of common resources in order to model the potential health risks stemming from these interactions. Data was collected to characterize interactions and disease transmission risk factors using surveys and water analysis.

The key program objectives included:

1. Increase capacity to monitor chimpanzee health and to carry out interventions in wild populations.
2. Establish mechanisms to advance disease detection, control and prevention in wild chimpanzee populations.
3. Improve public health for frontline human communities around chimpanzee habitat.

Methods

Study area

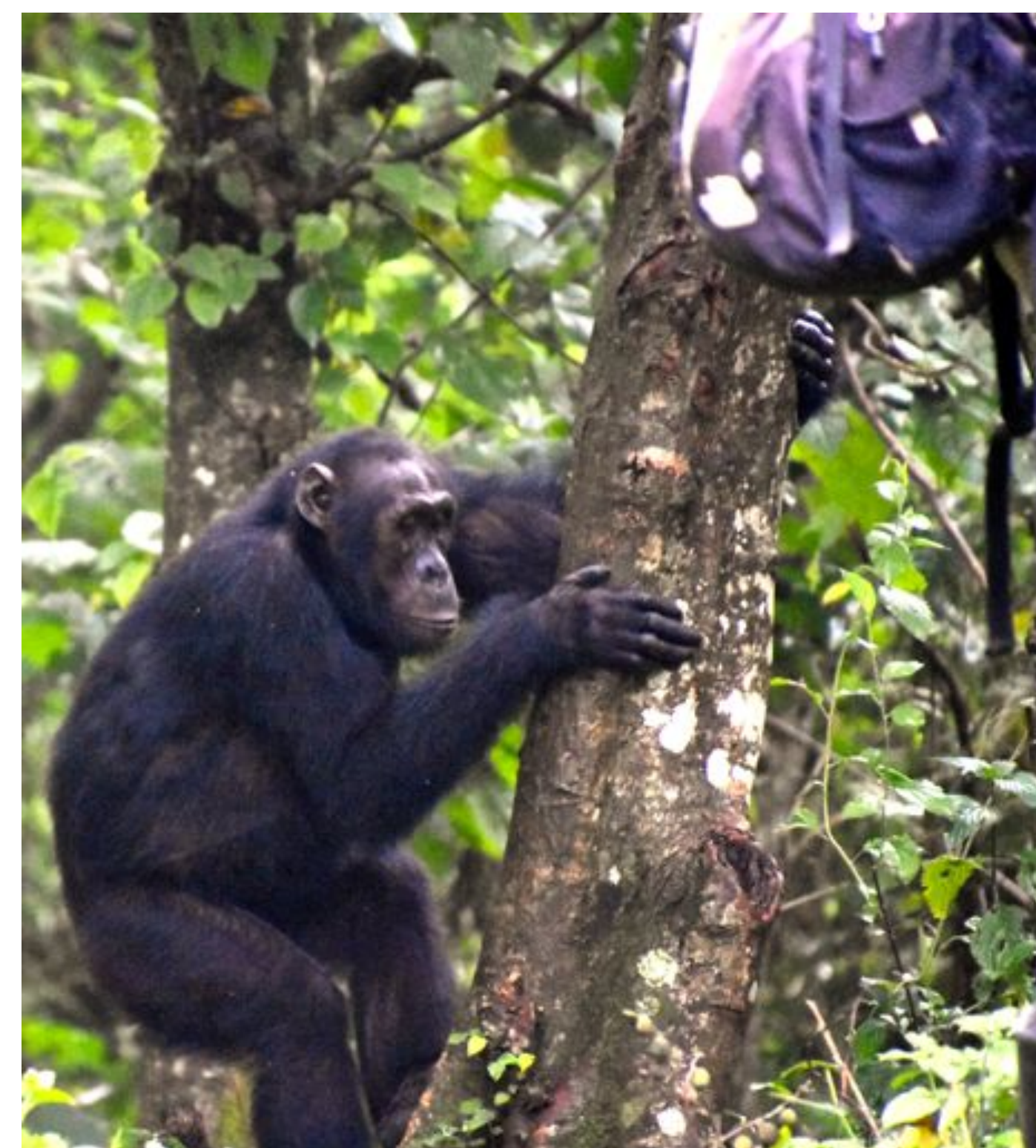
Masindi District is located in the midwest part of Uganda. It is estimated that 52.2 per cent of the total population has access to safe drinking water. (Masindi District Council, 2009). The specific study area comprises a mosaic of riverine forest fragments intermixed with farmland and village areas. These riverine forests act as corridors for wildlife. The most commonly shared water sources are i) protected springs and, ii) open water sources located in the forest. A sample of each source type was used for the study.

Assessment of Contamination Risk

A survey of community members was conducted to identify associated health risks of shared water sources. The survey assessed water use, treatment and the potential for disease transfer from humans to chimps.

Assessment of Water Quality

Water testing was performed to identify risks for water contamination with bacteria indicator organisms and/or fertilizers from adjacent industrial croplands. The parameters analyzed included total coliforms, fecal coliforms, nitrates, phosphates, turbidity, and pH.



A chimp climbs a tree behind a man's backpack. Due to increased deforestation, humans and chimps interact frequently.

Results and Outcomes

Survey

The survey served as a guide in the field to identify which water sources should be prioritized for analysis. Higher priority was given to sources frequented by both humans and chimpanzees as well as sources at risk of fertilizer runoff from a nearby sugar cane plantation. Furthermore, the survey responses are currently being compiled and combined with a parallel Gender Analysis conducted by JGI to inform strategy and project implementation for JGI's WASH (Water, Sanitation, and Hygiene) program in 2017. This program will increase education efforts focused on safe water collection, treatment, and use.

Water Testing

The original water samples collected and analyzed were deemed unreliable due to flawed protocols and corruption. A subsequent round of sampling was conducted and highlighted that there was a high level of contamination of water sources being used by communities living adjacent to the Budongo Forest. These results were one of the main criteria used by JGI to install 5 new rain water tanks and build 4 protected springs. The improved water sources will have the following direct impacts:

Five rain water tanks were installed in five schools reaching out to 2,450 school children and at least 1,500 community members. These tanks were installed to act as alternative water sources and reduce the level of dependence by communities on contaminated sources.

Four protected water springs developed in four villages serving clean water to a community of about 2,800 people.

More water sources are being planned for 2017.

In addition, after the Cornell team spoke with the Uganda Ministry of Water and Environment, the government is taking steps to ensure data quality in the future.



Children collect water from newly installed rain barrel in the Budongo sub-County.

The new water sources will improve the health of communities living close to the forest, which will in turn ensure a healthier wildlife population through reduced prevalence of diarrheal diseases arising from poor water sanitation. In addition, and more importantly, the alternative water sources (rain water tanks) will reduce the level of human-wildlife interaction at the forest water sources, thus reducing the risks for disease transmission.

The Nyabyeya open well source was found to have an upward surge in the concentration of phosphates (1.9mg/l), an indication of agricultural chemical pollution from the surrounding sugar cane plantations. This is a significant finding because this water source is used by chimpanzees, humans, and wildlife.

Conclusion

The results of this project are preliminary; further water testing and observation of human and non-human primate behavior will need to be conducted. However, this project indicates that further research is not unwarranted. JGI-Uganda and Cornell will continue to investigate and implement strategies to help prevent disease transfer between humans and non-human primates.