

The Negative Implications of Habituating Great Apes

Introduction: Habituation operates on the premise that with sufficient exposure, animals will stop reacting to the presence of human observers and will view them as a neutral element of their environment^{1,2}. Behavioural ecology studies are largely reliant on the process of habituation³, as is wildlife tourism, which has the potential to raise both revenue and awareness for conservation issues⁴. Although habituation is an important factor in conservation, the negative impacts associated with it are worthy of consideration.



Predator-Prey Dynamics
Habituated chimpanzees (*Pan troglodytes schweinfurthii*) have used human presence to their advantage by capitalising on frantic red colobus monkeys (*Procolobus badius tephrosceles*) who fled from human observers^{10,11}.

Stress
Studies of wild western lowland gorillas (*Gorilla gorilla gorilla*)⁴ and north-eastern Bornean orangutans (*Pongo pygmaeus morio*)¹² found that individuals that had been followed for several days had higher levels of stress than those not followed (see Figure 1). In other primate species this has been the case even after 20 years of observations¹³. Physical signs of stress observed in other studies include:

- Aggression towards observers^{14,15}; largely correlated with closeness to individuals^{16,17}
- Fear of observers and increased levels of vocalisations¹⁵
- Altered activity budgets and increased levels of group aggression¹⁸

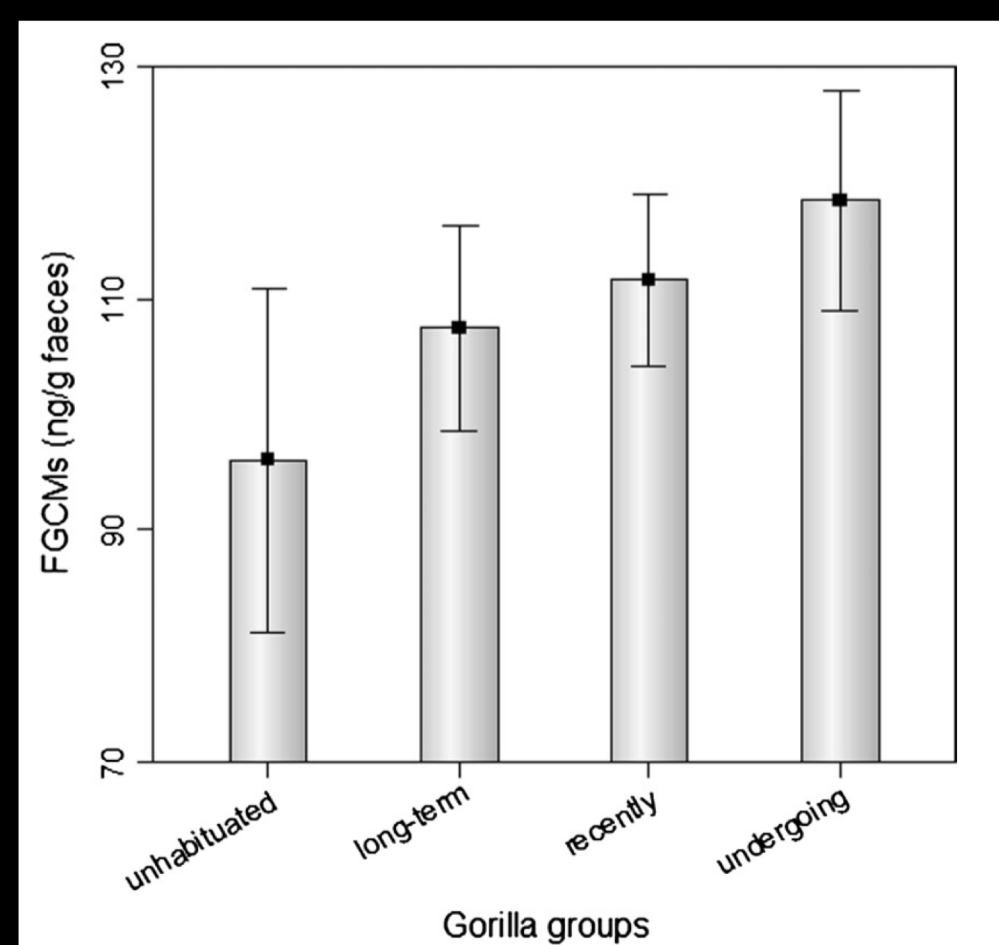


Figure 1: Levels of faecal glucocorticoid metabolites (FGCMs), a proxy that indicates physiological stress levels, during habituation of western lowland gorillas where higher readings indicate amplified levels of stress⁴.

Poaching
Former poachers described habituated mountain gorillas (*Gorilla gorilla beringei*) as unlikely to defend themselves, slower to flee, and tolerant of them. Therefore they were more likely to be persecuted⁹.

Effects on Local Livelihoods
Habituated gorillas have a tendency to break into vehicles or lodgings for food⁷, attack and steal from villagers⁵, and have been recorded leaving national parks to feed on agricultural lands^{5,8}.

Behaviour
During the process of habituation, great apes may modify their behaviours in reaction to human presence⁵. Furthermore, humans who occupy the boundary of habituated great ape territories may experience crop foraging from great apes⁵. Others may get closer than recommended on wildlife tours and therefore increase the risk of zoonoses occurring⁶. Habituation can induce stress responses in great apes and possibly lead to immunosuppression, therefore increasing susceptibility of disease transmission⁷.

Locomotion
Western gorillas (*Gorilla gorilla*) have been observed to travel distinctively longer distances than usual to avoid observers^{14,15}; which were positively correlated with displays of aggression¹⁵.

Disease Transmission
Habituation leads to increased proximity between great apes and humans. Zoonoses can occur, through two primary routes; respiratory and faecal-oral¹⁹. The loss of individuals to both human and great ape families can be incredibly traumatic and lead to a behavioural change²⁰.

Anthropozoonotic Disease Transmission
Great apes are susceptible to many human diseases. The introduction of such diseases could be catastrophic to great ape populations²¹. Observed instances include:

- *E. coli* (*Escherichia coli*) in chimpanzees²² and mountain gorillas²³
- *Giardia* (*Girardia duodenalis*) in mountain gorillas²⁴
- The Ebola virus in western gorillas and chimpanzees²⁵

Zoonotic Disease Transmission
Due to the phylogenetic relatedness of humans and great apes, humans can contract diseases zoonotically which can be fatal^{19,21}. For example:

- Malaria (*Plasmodium knowlesi*)²⁶
- Cercopithecine herpesvirus 1 (B virus)²⁷

Recommendations

- Improved regulation management^{5,19,21}
- Manage human waste in great ape habitats; avoid excreting⁵, eating, and smoking⁷
- Provide information to tourists regarding disease transmission⁷
- Do not work or participate in wildlife tours if unwell⁵

Discussion: The presence of humans in great ape habitats poses enormous threats to great apes and humans alike. Habituation specifically has led to degradation and disruption of the biological environment, especially through wildlife tourists^{16,28}. Although there are already regulations in place to prevent disease transmission, studies indicate that these should be revised factoring in the degree of stress that proximity can have; as does group size and viewing times^{16,17}. Primatologists have the responsibility to raise awareness regarding the potential negative implications of habituation to all stakeholders; including tourists, wildlife-tour staff, and local inhabitants⁷.

