

Human-macaque interactions: interface dynamics and attitudes to feeding at Angkor Wat, Cambodia

Context

The long-tailed macaque (*Macaca fascicularis*) is known for its behavioural and dietary flexibility (Gumert, 2011). The species is often found in human landscapes, yet co-existence between macaques and humans presents challenges, such as disease transmission and human-directed macaque aggression (Fuentes, 2006; Mallapur, 2013). This research investigated human perceptions of macaques and human-macaque interactions over 8 weeks (June-July 2018). Human-macaque interactions are frequent at the study site and often involve feeding or opportunistic snatching of visitors' food, which can lead to aggression and biting.



Figure 1: Macaque foraging in waste bin at the study site: author's own photograph

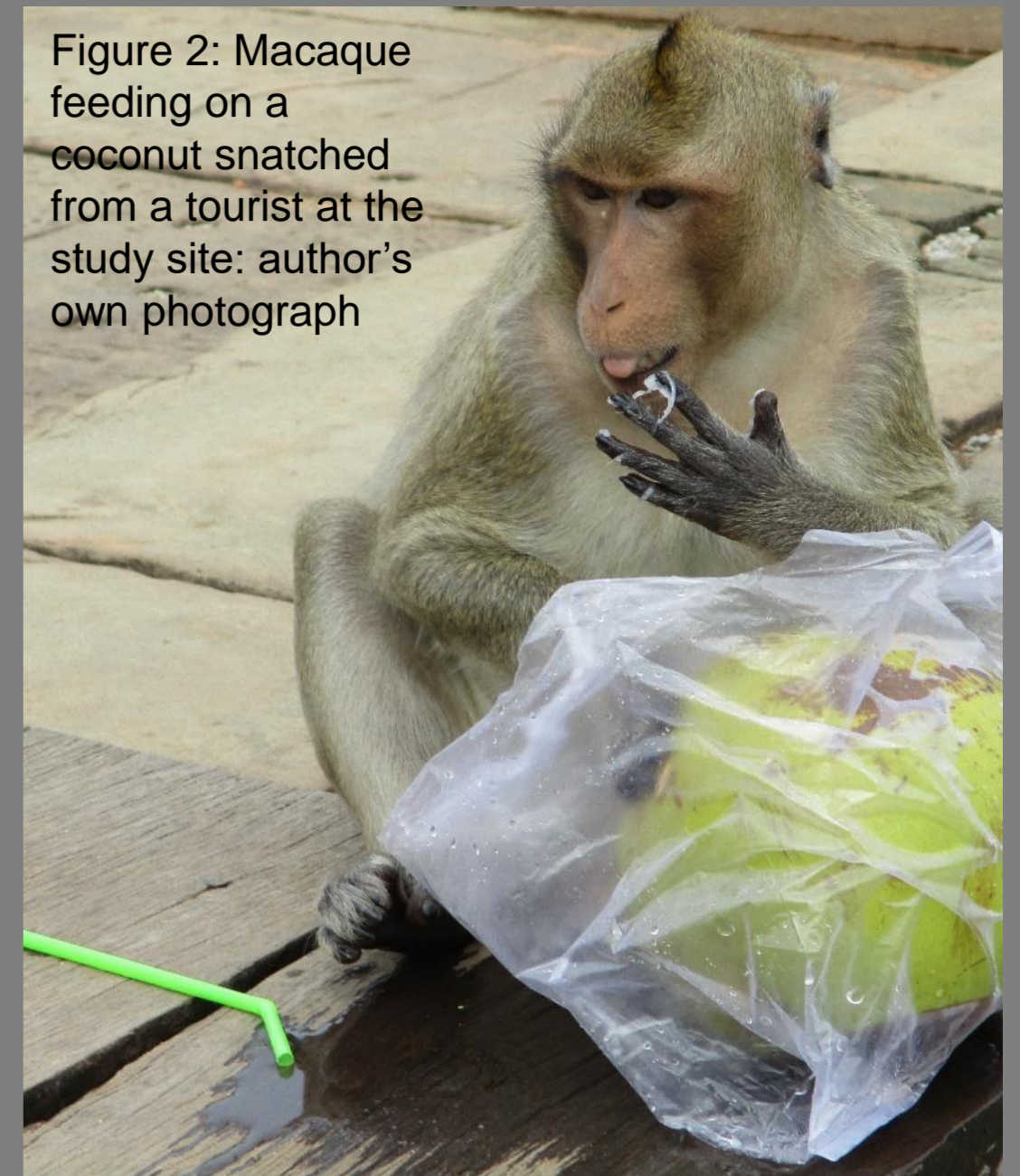


Figure 2: Macaque feeding on a coconut snatched from a tourist at the study site: author's own photograph

Methods

A mixed methods approach was used to combine in-depth analysis with rigorous, statistical verification (Newing, 2011).

Quantitative study: Observation of human-macaque interactions (n=80). Incidences of affiliative, aggressive and opportunistic behaviour towards humans were recorded to determine the impact of human food on these behaviours. Interaction initiator, tourist density/ proximity, human behaviour were also recorded. Data analysis: SPSS ver. 25

Qualitative study: Semi-structured interviews (n=41). Tourists from 10 countries and local people were interviewed to examine attitudes and perceptions of the macaques and views on feeding them. Data analysis: NVIVO 12

Recommendations

- Raise awareness of potential health risks of food sharing through improved signage and information panels
- Tourist guides and temple staff should be trained and briefed in how to manage visitors who wish to feed the macaques
- A review of food waste receptacles in the park is needed
- The complete banning of provisioning could be considered. However, this may not be effective and alternative means to gain karmic merit for Buddhist visitors need to be explored
- Tourists should be warned about carrying plastic bags as the macaques have learned that plastic bags carry food

Main Research Aims

- To identify the role played by the presence of human food in human-macaque interactions
- To examine whether cultural factors influenced attitudes to the macaques
- To present a set of recommendations that could mitigate negative effects of human-macaque interactions

Results

- Researcher observation reported a high incidence of foraging from waste bins with potential for aggressive encounters (Figure 1)
- Opportunistic behaviour often involved snatching food (Figure 2). Displays of aggression were commonly seen when humans tried to retrieve objects
- Frequencies of opportunistic and affiliative behaviours were higher when human food was involved (Figure 3). A chi-square test to determine overall association between presence of human food and macaque behaviours showed statistical significance: $p < .05$. χ^2 : 8.427; $n = 80$; $df = 3$; $p = .038$

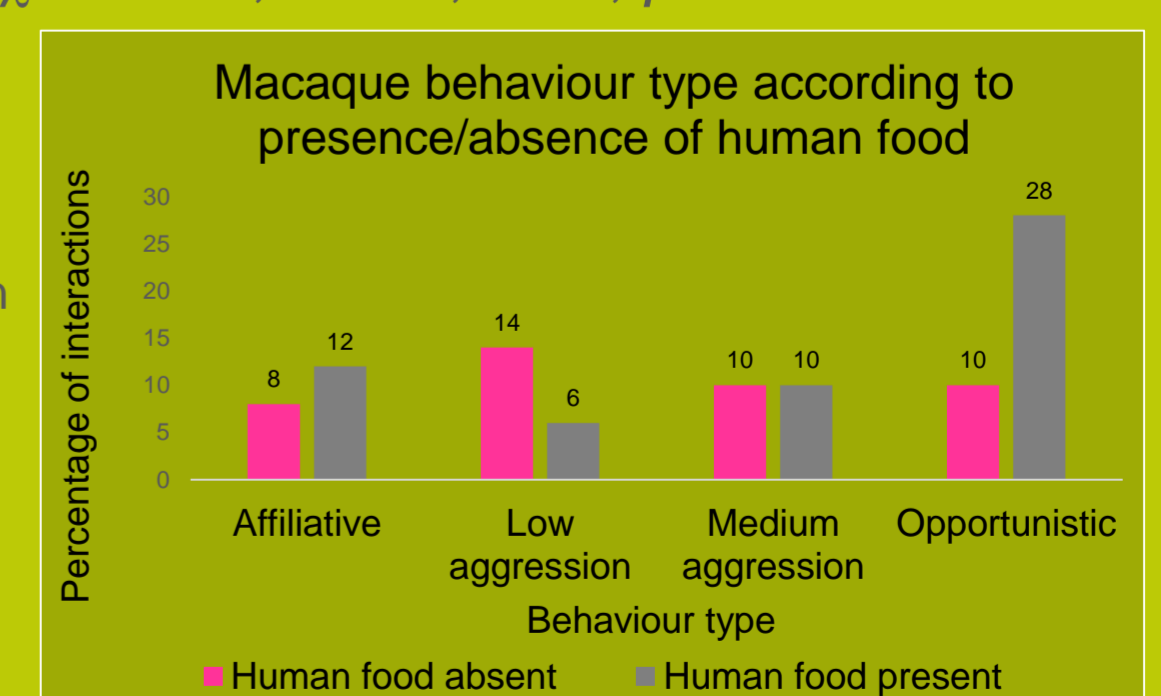


Figure 3: results showing the impact of the presence of human food on macaque behaviour: author's own image

- Cultural factors appeared to have a considerable influence on attitudes to feeding the macaques, with a high proportion of Cambodian respondents stating that sharing food with the monkeys was following Buddhist teachings
- International visitors regarded the macaques as wild animals that should not be fed, as this would affect natural behaviour

References

- Fuentes, A. (2006) Human culture and monkey behaviour: assessing the context of potential pathogen transmission between macaques and humans. *American Journal of Primatology*, 68, pp.880-896
- Gumert, M. D. (2011) The common monkey of Southeast Asia: long-tailed macaque populations, ethnophoresy, and their occurrence in human environments, in Gumert, M. D., Fuentes, A., Jones-Engel, L. (eds.), *Monkeys on the edge: ecology and management of long-tailed macaques and their interface with humans*. Cambridge: Cambridge University Press, pp. 3-44
- Mallapur, A. (2013) Macaque tourism: implications for their management and conservation, in Radhakrishna, S., Huffman, M. A., Sinha, A. (eds.), *The Macaque connection: Cooperation and conflict between humans and macaques*. New York: Springer, pp. 93-105
- Newing, H. (2011) *Conducting Research in Conservation: a social science perspective*. Routledge: London