IUCN SSC PRIMATES
SECTION ON
HUMAN-PRIMATE
INTERACTIONS

IUCN SSC Primate Specialist Group Position Statement on Primates in Agroecosystems

Non-human primates (hereafter primates) have shared landscapes with people and fed on crops cultivated by people for centuries (Fuentes 2006). As people rapidly and extensively convert natural habitats to agriculture, primate crop-feeding behaviour increases (Estrada *et al.* 2012). Negative interactions between people and primates due to crop damage and loss by primates have become a concern in almost all places where primates occur (Hill 2017; Tsuji and Ilham 2021; Abondano *et al*. 2023).

Primates often forage on crops because they are high-energy foods (Fehlmann *et al*. 2017a, 2020), or provide fallback food during periods of natural food scarcity (Hockings *et al*. 2009). However, crop-foraging can also occur after extensive habitat loss, when crops might be the main source of food for primate survival (McLennan and Hockings 2016; Hill 2017). Some wildlife tourism can contribute to an increase in primate crop-foraging (see Marechal, *et al*. 2023), as well as other behaviour such as trash-foraging by some primate species such as baboons and capuchins (Shulte *et al*. 2020; Mazué *et al*. 2023).

When crop-foraging, some primate species can substantially damage both private and public properties resulting in negative impacts on people that can include financial hardship, psychological stress, physical injury, exposure to pathogens, and, in extreme cases, loss of life (Barua *et al*. 2013; Gilardi *et al*. 2015; McLennan and Hockings 2016). Furthermore, hidden costs of crop foraging include people avoiding certain areas due to fear of encountering primates (McLennan and Hockings 2016), and children missing schooling opportunities because they are needed to assist in guarding the crops (MacKenzie *et al.* 2015).

Because of the numerous negative impacts on people resulting from primate crop-foraging, landowners and farmers often invest considerable time and energy trying to protect their crops from primates (Hill and Webber 2010; McGuinness and Taylor 2014). Farmers may abandon land when agricultural production is unsustainable due to crop foraging activities. However, methods for deterring primates from crops can have limited success because primate behaviour can be very flexible (Fehlmann *et al*. 2017a, 2017b). Deterrents can also pose a welfare risk to primates, especially where people attack primates in retaliation for crop-foraging (e.g., by shooting them), causing injury or death. The movements of primates when crop-foraging also bring them closer to other dangers such as road and railway traffic and power lines (Strum 2008; Fehlmann *et al*. 2020).

Human-wildlife coexistence is defined as a dynamic state in which humans and wildlife co-adapt to sharing landscapes (Carter and Linnell 2016). Low levels of conflict are integral to such situations, and the extent to which an acceptable balance can be achieved depends on the context in which the interactions take place (Hill 2021). How people respond to agricultural damage and loss caused by primates often depends on the extent of the damage, economic losses incurred, type of crop, and whether the crop is for subsistence or commercial use. Culture, values, and customs also play a part in the levels of damage and loss people can tolerate. Some societies or communities tolerate primate crop loss and damage or find ways to achieve an acceptable balance (Riley 2010; Baker *et al*. 2014; Saraswat *et al.* 2015; Waters *et al.* 2019; Abondano *et al.* 2023). However, some farmers or government officials have resorted to killing primates, sometimes in large numbers, because of crop damage and loss (Adeola *et al.* 2018; Kifle and Beehner 2022). State sponsored monkey culls, which aimed to reduce the impacts of primates on agroecosystems, were responsible for the killing of approximately 245,000 primates in Sierra Leone between 1947 and 1962 (Tappen 1964). Such high killing rates can locally extirpate some species, such as the Endangered Barbary macaque (*Macaca sylvanus*) in one area of the Rif Mountains in Morocco (El Harrad *et al*. 2022).

Chacma baboons in a South African vineyard @Amanda L. Ellwanger

The position of the IUCN SSC Primate Specialist Group regarding primate in agroecosystems is to:

- Recognise that mitigating and managing negative human-primate interactions due to crop damage is essential for human-primate coexistence in increasingly anthropogenic, mixed-use landscapes.

- Urge application of rigorous biosocial research approaches to identify the underlying causes of human-primate/conservation conflicts, including the social, political, cultural, and economic context, to develop appropriate and more socially equitable ways to promote coexistence.

- Recognise that some species of primate, in some circumstances, and in some regions, are viewed as "pests" regardless of threat status.

- Acknowledge that zero conflict may not be a realistic goal.

- Recognise that primates are sentient and have agency when considering methods of mitigating negative human-primate interactions.

- Support the use of "crop-foraging" or "crop-feeding" when communicating in English, rather than terms like "crop-raiding", which imply malicious intent on the part of wild primates.

- Support place-based, cost-effective, non-lethal, and non-invasive mitigation programmes co-developed with interested parties, where benefits to people outweigh potential or actual risks to primates and people.

- Recognise that crop-foraging mitigation measures need ongoing evaluation to assess their effectiveness, meaning that sufficient long-term management presence and investment are often required.

- Acknowledge that crop consumption by primates, both type and quantity, is dynamic especially where the natural habitats of primates have been lost.

- Recognise that within some agroforestry systems, trees are overharvested or represent just one or a few species and thus fail to provide adequate food for primates.

- Support the development of participatory land management and promote local governance to address the needs of primates and agroecosystems.

- Advocate for the involvement of relevant government agencies and policymakers in formulating and implementing policies that promote sustainable land-use practices and human-primate coexistence.

Moor macaques in a maize field in South Sulawesi, Indonesia @Erin P. Riley

Examples of primate species frequently reported to forage in agroecosystems

Chimpanzee (*Pan* spp.), Cameroon, Guinea Bissau, Uganda,

Orangutans (*Pongo* spp.), throughout their distribution

Baboons (*Papio* spp.), throughout their distribution

Vervet monkeys (*Chlorocebus* spp.), throughout their distribution

Langurs (*Semnopithecus* spp.), Bangladesh, India, Sri Lanka

Macaques (*Macaca* spp.), throughout their distribution

Capuchins (*Cebus* and *Sapajus* spp.), throughout their distribution

Howler monkeys (*Alouatta* spp.), Brazil, Costa Rica

References

Abondano, L. A., *et al*. 2023. Community-based strategies to promote primate conservation in agricultural landscapes: lessons learned from case studies in South America. In: *Primates in Anthropogenic Landscapes: Exploring Primate Behavioural Flexibility Across Human Contexts,* T. McKinney, S. Waters, and M. Rodrigues (eds), pp. 103–120. Springer, New York.

Adeola, A. J., *et al.* 2018. Primates associated with crop raiding around Borgu Sector of Kainji Lake National Park, Nigeria. *World News Nat. Sci.* 18: 223–231.

Baker, L. R., *et al.* 2014. Role of local culture, religion, and human attitudes in the conservation of sacred populations of a threatened 'pest' species. *Biodivers. Conserv*. 23: 1895–1909.

Barua, M., Bhagwat, S. A. and Jadhav, S. 2013. The hidden dimensions of human–wildlife conflict: Health impacts, opportunity and transaction costs. *Biol. Conserv*. 157: 309–316.

Carter, N. H. and Linnell, J. D. C. 2016. Co-adaptation is key to coexisting with large carnivores. *Trends Ecol. Evol.* 31: 575–578.

El Harrad, A., *et al*. 2022. Barbary macaque presence in the Rif Mountains, North Morocco. *Primate Conserv*. 36: 125–129.

Estrada, A., Raboy, B. E. and Oliveira, L. C. 2012. Agroecosystems and primate conservation in the tropics: a review. *Am. J. Primatol.* 74: 696–711.

Fehlmann, G., *et al*. 2017a. Adaptive space use by baboons (*Papio ursinus*) in response to management interventions in a human-changed landscape. *Anim. Conserv.* 20: 101–109.

Fehlmann, G., *et al.* 2017b. Extreme behavioural shifts by baboons exploiting risky, resource-rich, human-modified environments. *Sci. Rep.* 7: 15057.

Fehlmann, G., *et al*. 2020. Behavioural causes, ecological consequences, and management challenges associated with wildlife foraging in human-modified landscapes. *BioSci.* biaa129.

Fuentes A. 2006. Human-nonhuman primate interconnections and their relevance to anthropology. *Ecol. Environ. Anthropol.* 2: 1–11.

Gilardi, K. V., *et al*. 2015. *Best Practice Guidelines for Health Monitoring and Disease Control in Great Ape Populations*. Gland, Switzerland: IUCN SSC Primate Specialist Group. 56pp.

Hill, C. M. 2017. Primate crop feeding behavior, crop protection, and conservation. *Int. J. Primatol*. 38: 385–400.

Hill, C. M. 2021. Conflict is integral to human-wildlife coexistence. *Front. Conserv. Sci.* Doi: 10.3389/fcosc.2021.734314

Hill, C. M. and Webber, A. D. 2010. Perceptions of nonhuman primates in human–wildlife conflict scenarios. *Am. J. Primatol*. 72: 919–924.

Hockings, K. J., Anderson, J. R. and Matsuzawa, T. 2009. Use of wild and cultivated foods by chimpanzees at Bossou, Republic of Guinea: feeding dynamics in a human-influenced environment. *Am. J. Primatol.* 71: 636–646.

Kifle, Z. and Beehner, J. C. 2022. Distribution and diversity of primates and threats to their survival in the Awi Zone, northwestern Ethiopia. *Primates* 63: 637–645.

Mackenzie, C. A., Sengupta, R. R. and Kaoser, R. 2015. Chasing baboons or attending class: protected areas and childhood education in Uganda. *Environ. Conserv.* 42: 373–383.

Mazué, F., *et al.* 2023. Less bins, less baboons: reducing access to anthropogenic food effectively decreases the urban foraging behaviour of a troop of chacma baboons (*Papio hamadryas ursinus*) in a peri-urban area. *Primates* 64: 91–103.

Marechal. L*., et al*. In prep. Costs of primate tourism. In: S. Waters, M. Friis Hansen *et al.* *Responsible Primate-Watching for Tourism Professionals,* IUCN SSC Primate Specialist Group Section on Human-Primate Interactions.

McGuinness, S. and Taylor, D. 2014. Farmers' perceptions and actions to decrease crop raiding by forest-dwelling primates around a Rwandan forest fragment. *Hum. Dim. Wildl.* 19: 179–190.

McLennan, M. R., and Hockings, K. J. 2016. The aggressive apes? Causes and contexts of great ape attacks on local persons. In: *Problematic Wildlife*, F. M. Angelici (ed.), pp. 373–394. Springer.

Riley, E. P. and Prison, N. E. C. 2010. Macaques in farms and folklore: exploring the human-nonhuman primate interface in Sulawesi, Indonesia. *Am. J. Primatol.* 72: 848–854.

Saraswat, R., Sinha, A. and Radhakrishna, S. 2015. A god becomes a pest? Human-rhesus macaque interactions in Himachal Pradesh, northern India. *Eur. J. Wildl. Res*. 61: 435–443.

Shulte, M., Gutiérrez-Espeleta, G. and Lynch, J. W. 2020. Human-monkey interaction dynamics and their dietary impacts on Central American white-faced capuchin monkeys (*Cebus imitator*) at Manuel Antonio National Park, Costa Rica. *Neotrop. Primates* 26: 1–9.

Strum, S. C. 2010. The development of primate raiding: implications for management and conservation. *Int. J. Primatol.* 31: 133–156.

Tappen, N. C. 1964. Primate studies in Sierra Leone. *Curr. Anthropol*. 5: 339–340.

Tsuji, Y. and Ilham, K. 2021. Studies on primate crop feeding in Asian regions: a review. *Mamm. Study* 46: 97–113.

Waters, S., *et al.* 2019. Interpreting people's behavior toward primates using qualitative data: a case study from North Morocco. *Int. J. Primatol.* 40: 316–330.

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Chimpanzee in an orchard in Guinea Bissau @ Hellen Bersacola/Cantanhez Chimpanzee Project