The new IUCN Red List assessment of the long-tailed macaque and all subspecies

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Summary for press release

The long-tailed macaque (Macaca fascicularis), a primate species distributed across Southeast Asia is now listed as an Endangered species on the IUCN Red List of Threatened Species. This assessment is based on the levels of exploitation, driven in particular by trade for research (biomedical and toxicology), pets and entertainment, and culling, and the decline of native habitats, which is suspected to result in a ≥50% decline in population size over the coming three macaque generations (36-39 years), if not mitigated. The long-tailed macaque, with its flexible and adaptable nature, is a crucial species for conservation in an ever-changing world. We can learn much from the long-tailed macaque and its ability to adapt to climate change, utilize degraded landscapes, and regenerate primary and secondary habitats through seed dispersal. The long-tailed macaque is important for the health of nature, other wildlife species and us, and it is important for our cultural ceremonies. To secure the survival of the species and its many ecological and cultural roles, we need to help the long-tailed macaque remain in its native habitats. The IUCN Red List 2022 assessments call for better management and protection of the long-tailed macaque and all its subspecies.

The International Union for Conservation of Nature (IUCN) Red List (https://www.iucnredlist.org/) has just published the latest conservation status assessments of the long-tailed macaque (*Macaca fascicularis*) species and subspecies (table 1).

The current levels of exploitation (the legal and illegal international and domestic trade for experimental research, for pets, entertainment, human consumption, and culling) and the ongoing habitat destruction and conversion are decimating wild populations of long-tailed macaques leading to the most recent assessment of the species as Endangered A3cd. This means that unless these threats are urgently mitigated, current best available data projects a global decline in the wild population of long-tailed macaques of 50% or more over the coming three generations (36-39 years). Although long-tailed macaques exist in the wild, many persist as isolated, fragmented populations in human-modified habitats outside the protected area network, leaving them vulnerable to inbreeding, diseases, capturing and other natural and human-facilitated threats.

The long-tailed macaque is the most traded primate species in the world, however, the crucial role it plays in its native habitats ecologically and culturally is often overlooked or misunderstood (Figure 1-3). We must mitigate the exploitation levels and initiate evidence-based conservation plans for the species to allow it to fulfil its ecological roles in its native ecosystems and ensure that population-specific ecologies, cultures and centuries old human-macaque relations are preserved.

The long-tailed macaque is a highly intelligent, adaptable and social primate with unique behaviors and cultures. For example, long-tailed macaques inhabiting the same coastal area (<15km apart), but living in different troops, show distinctive tool-use behaviors. Materials utilized as tools include stone hammers and shell picks for breaking open bivalves, and human hair for flossing. These behaviors are rare, even amongst primates, and demonstrate high social and ecological intelligence within this species. We need to value and conserve the species as a whole with whom we share the earth, but we

also need to conserve each subpopulation, who have very distinct and locally adapted traditions and cultures.

The long-tailed macaque is adept at utilizing and co-inhabiting human-influenced landscapes with humans (they are synanthropic) and has done so for centuries, and this has, in some cases, led to competition over resources with humans. However, as a highly developed synanthrope, the long-tailed macaque could actually hold some of the answers to conservation challenges in the Anthropocene. Coexistence between wildlife, nature and people is an integral part of the vision of the United Nations 2030 Agenda for Sustainable Development, and the behavior and ecology of the long-tailed macaque can help us better understand human-wildlife coexistence. Such knowledge can help us reach international and communal goals of mitigating climate change, conserving environments and reducing disease transmission, as expressed in the Sustainable Development Goals, especcially Goal 11 (Sustainable Cities and Communities), Goal 13 (Climate Action), Goal 14 (Life Below Water) and Goal 15 (Life on Land), and contribute to an effective OneHealth approach.

In the figures below, we outline the importance of the long-tailed macaque, how we can help it survive as a free-living species and how the species can help us reach our goals (Figure 1-3). See also the recommended reading list at the end of this document.

Figure 1: The long-tailed macaque and the Sustainable Development Goals no. 11, 13 and 14.

Figure 2: The long-tailed macaque and the Sustainable Development Goal no. 15

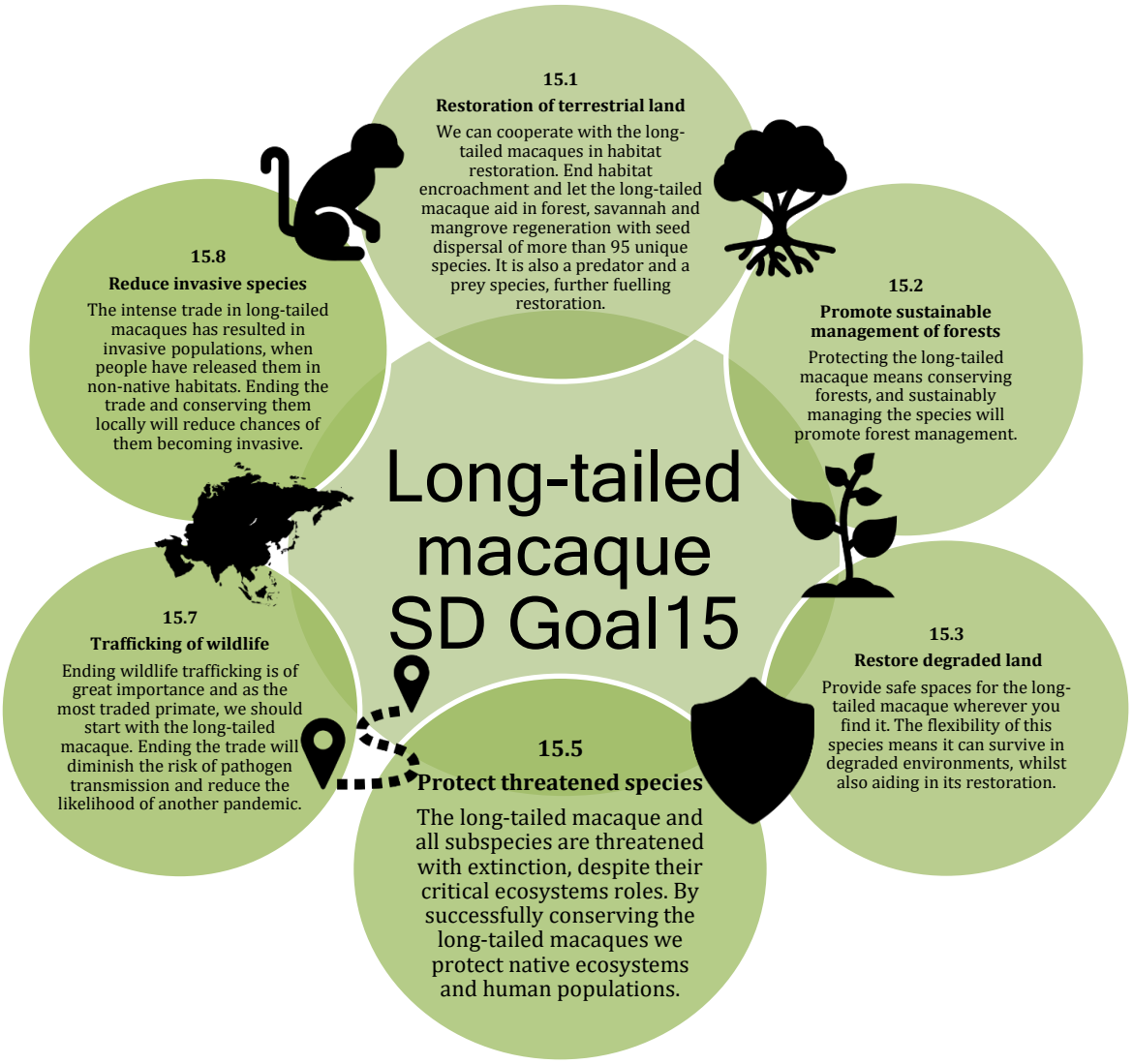
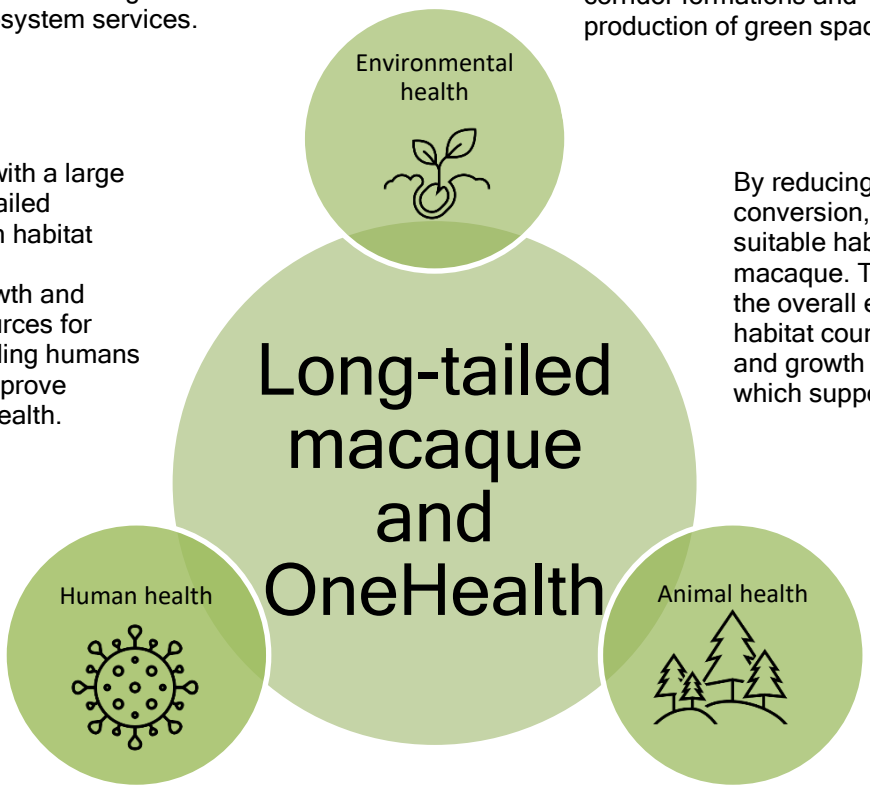


Figure 3: The long-tailed macaque and the OneHealth concept

The long-tailed macaque promotes environmental health, clean air and less pollution through its ecosystem services.

Long-tailed macaques are important **seed dispersers** within their habitat. This promotes environmental health as this directly aids in habitat restoration, corridor formations and production of green spaces.



As seed dispersers with a large **seed shadow**, long-tailed macaques also aid in habitat formation, as well as encouraging the growth and presence of food sources for many species, including humans that will ultimately improve overall biodiversity health.

By reducing habitat loss and conversion, we can help conserve suitable habitat for the long-tailed macaque. This can further support the overall environmental health of habitat countries by the dispersal and growth of important plants, which support many more species.

Long-tailed macaques are considered vector-borne **parasite reservoirs**. Buffering humans from malaria, dengue and other pathogens.
By maintaining wild populations of the species, we reduce the potential for pathogen spillover to humans.

Due to increased urbanization and human migration, the long-tailed macaque is at risk of being exposed to and/or infected with novel human pathogens through exposure to contaminated water, food-sources and direct contact. It is crucial that we maintain our distance and support the growth of healthy ecosystems for the long-tailed macaque to inhabit

Table 1: The 2022 IUCN Red List updates for Macaca fascicularis ssp.

Scientific name and range	Previous Category	2022 Category	Justification for 2022 category (https://www.iucnredlist.org/resources/categories-and-criteria)
Macaca fascicularis	**VU**	**EN A3cd**	**Suspected population decline of ≥50% over the coming three generations (36-39 years) due to habitat decline and exploitation levels**
Subspecies			
Macaca fascicularis fascicularis Brunei, Cambodia, Indonesia (Kalimantan, Sumatra, Java, Bali, and some offshore islands), southern Lao PDR, Malaysia (Peninsular Malaysia, Sabah and Sarawak), Philippines, Singapore, eastern and southern Thailand (and offshore islands), and southern Viet Nam	VU	EN A3cd	Suspected population decline of ≥50% over the coming three generations (36-39 years) due to habitat decline and exploitation levels
Macaca fascicularis aurea Myanmar, Thailand	DD	VU A4cde	Population decline of ≥30% in the past and for the coming three generations (36-39 years) due to habitat decline and exploitation levels
Macaca fascicularis atriceps Khram Yai island	DD	VU D2	Population very restricted in area of occupancy and therefore vulnerable to stochastic events
Macaca fascicularis condorensis Con son, Hon Ba, Bay Canh and Hon Troc islands	VU	EN B1ab(i,ii,iii) +2ab(i,ii,iii)	Extent of occurrence under 5000km^2 and area of occupancy under 500km^2, fragmented and in continuous decline
Macaca fascicularis fusca Simeulue island and surrounding islands	DD	CR A2ac	Observed population reduction of ≥80% over the past three generations (36-39 years) that has not ceased due to habitat decline
Macaca fascicularis karimondjawae Karimondjawa and Kemujan island	DD	CR B1ab(iii)	Extent of occurrence under 100km^2 with severely fragmented habitat in continuous decline
Macaca fascicularis lasiae Lasia island	DD	CR B1ab(iii)	Extent of occurrence under 100km^2 and know to only occur in one location with continuous habitat decline
Macaca fascicularis tua Maratua island	DD	CR C2a(i)	Population size under 250 mature individuals in continuous decline with no subpopulation with over 50 mature individuals
Macaca fascicularis umbrosa Nicobar islands	VU	VU D2	Population very restricted in number of locations and therefore vulnerable to stochastic events

Recommended readings:

Campbell, S., Timoshyna, A., Sant, G., Biggs, D., Braczkowski, A., Caceres-Escobar, H., Indraswari, K., Compton, J., and Cheung, H. (2022). Options For Managing And Tracing Wild Animal Trade Chains To Reduce Zoonotic Disease Risk. TRAFFIC, Cambridge UK.

Fooden, J. (1995). Systematic review of Southeast Asian longtail macaques, *Macaca fascicularis* (Raffles, 1821). Fieldiana Zool. 81: 206pp.

Gumert, M. D., Fuentes, A. and Jones-Engel, L. (eds.). (2011). Monkeys on the Edge: Ecology and Management of Long-Tailed Macaques and their Interface withHumans. Cambridge University Press, Cambridge, UK.

Hansen, M. F., Gill, M., Briefer, E. F., Nielsen, D. R. K. and Nijman, V. (2022). Monetary Value of Live Trade in a Commonly Traded Primate, the Long-Tailed Macaque, Based on Global Trade Statistics. Front. Conserv. Sci. 3:839131. doi: 10.3389/fcosc.2022.839131

Hansen, M. F., Gill, M., Nawangsari, V. A., Sanchez, K. L., Cheyne, S. M., Nijman, V.,et al. (2021). Conservation of Long-tailed Macaques: Implications of the Updated IUCN Status and the CoVID-19 Pandemic. Prim. Conserv. 35, 1–11.

Hansen, M. F., V. A. Nawangsari, F. M. van Beest, N. M. Schmidt, A. Fuentes, C. Traeholt, M. Stelvig and T. Dabelsteen. (2019). Estimating densities and spatial distribution of a commensal primate species, the long-tailed macaque (*Macaca fascicularis*). Conserv. Sci. Pract. 1(9): e88.

Knauf, S. and Jones-Engel, L. (2020). Neglected Diseases in Monkeys: From theMonkey-Human Interface to One Health. Springer Nature, Switzerland. 386pp.

Luncz, L., Gill, M., Proffitt, T., Svensson, M., Kulik, L. & Malaivijitnond, S. (2019) Group-specific archaeological signatures of stone tool use in wild macaques. eLife.e46961