D.E.T.E.R-ring Wildlife Crime

From a conservation problem to a criminal one, illegal wildlife crime and trade has increased both in severity and frequency since 2010, with values rising from < USD 1 billion to c. USD 20 billion per year (*World Wildlife Crime Report 2020: Trafficking in Protected Species*. United Nations Office on Drugs and Crime). Smaller animals such as pangolins, turtles and geckos now comprise significant value in illegal trade along with high-value wildlife species. In India, 2.4% of the land cover is home to the largest wild populations of the one-horned rhinoceros *Rhinoceros unicornis*, Asian elephant *Elephas maximus* and Bengal tiger *Panthera tigris*, and India is one of the main sources of illegal wildlife products in Asia. North-east India, a part of the Indo-Burma Biodiversity Hotspot, is susceptible to illegal wildlife trafficking as it is often used as a transit hub from elsewhere in India, Nepal and Bhutan to Myanmar, Thailand, Viet Nam and China.

This region has also witnessed periodical armed rebellions. Arms and ammunition are smuggled through the international borders in exchange for wildlife products. Rhino horns, elephant ivory, pangolin scales, snake venom and tiger parts are exchanged for arms and drugs. A multidimensional stakeholder approach is needed to deter wildlife crime in this region: officials from the forest, police and law-enforcement agencies such as the Wildlife Crime Control Bureau and border police, and transportation, security and judiciary agencies need to work together. To focus on deterring illegal wildlife crime and trade, the conservation NGO Aaranyak launched an initiative in 2021 called D.E.T.E.R.S. (Disrupt and End Trade of Endangered and Rare Species). Among the various target audiences for D.E.T.E.R.S., we focused on holding awareness, sensitization and training workshops for the border police forces; i.e. the Assam Rifles, Sashashtra Seema Bal, Border Security Force and others. Their role in checking the influx and outflux of illegal arms, drugs and wildlife items across north-east India's international borders has proven crucial for the deterrence of wildlife crime and illegal wildlife smuggling.

During October 2021–September 2022 we provided wildlife crime awareness workshops and training for wildlife product identification for > 760 border police staff, 40 police officials and 100 officials working in airport and railway security. We were operational in 10 districts of the states of Assam and Arunachal Pradesh. As a result of this training, seizures and detention of offenders followed within 3 months of sensitization. Eight people were apprehended in ivory trade and elephant electrocution cases, and six were detained in cases of pangolin and tokay gecko *Gekko gecko* trade. Four vials of Agar oil were seized at an airport, along with wild boar teeth ornaments and camel bone artifacts. Two people were apprehended in cases of hunting the great hornbill *Buceros bicornis* and four in wildmeat smuggling. Seven suspected armed poachers were detained for questioning.

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The Endangered long-tailed macaque is considered a pest in North Sumatra, Indonesia

In 2013, the long-tailed macaque *Macaca fascicularis* was categorized as one of the 100 worst invasive alien species (Luque et al., 2013, *Nature*, 498, 37). However, its population has declined as a result of conflicts with people, trade for pets and for the medical industry (Hansen et al., 2019, *Conservation Science and Practice*, 1, e88). In addition, the Covid-19 pandemic increased the demand for this species because of its use in vaccine development (Hansen et al., 2021, *Primate Conservation*, 35, 1–11).

In March 2022, *M. fascicularis* was recategorized from Vulnerable to Endangered on the IUCN Red List (Hansen et al., 2022). However, the fact that *M. fascicularis* is recognized as a pest in some regions of Indonesia has raised concerns regarding the conservation of this species, especially in North Sumatra Province.

The subspecies in North Sumatra Province is *M. fascicularis fascicularis* (Liedigk et al., 2015, *BMC Genomics*, 16, 1–11); it is considered a destructive feeder on crops in this area (Marchal & Hill, 2009, *Primate Conservation*, 24, 107–116). One of the areas where *M. f. fascicularis* is considered a pest is Parapat, Lake Toba, Simalungun Regency. On the journey from Medan (the capital city of North Sumatra Province) to Parapat one can observe large numbers of *M. f. fascicularis* gathering along the road, waiting for travellers to hand them food. From a conservation point of view this is inappropriate because of potential negative effects on the species. Foraging along the road also increases the likelihood of individuals colliding with vehicles.

In early 2022, we received reports of *M. f. fascicularis* feeding on crops in villages near Parapat, and the local communities consider the species a pest. Although there are as yet no records of the hunting or killing of *M. f. fascicularis* in this area, any increase in conflict with the species could potentially encourage local communities to persecute it.

Studies are required to assess the population of the long-tailed macaque in several regions of Indonesia, notably on Sumatra. In particular, given the species' Endangered status, studies are required to determine the causes of the species' exploration for food near roads and crop use in community gardens.

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A partnership for better knowledge and conservation of two endemic bats in New Caledonia

Of the 213 threatened bat species, 18% (38 species) are in Oceania, as were four of the five most recent bat extinctions. The threats to this bat fauna are directly related to increasing human populations.

Bats are the only native terrestrial mammals of New Caledonia in the South Pacific, with nine species, six of which are endemic and five categorized as Vulnerable, Endangered or Critically Endangered on the IUCN Red List. Two large *Pteropus* species are known to be overhunted for food and two further fruit and/or blossom species are not hunted, but little is known of the ecology of the five species of microchiroptera.

To address the poor knowledge of this bat fauna, the Institut Agronomique néo-Calédonien and the Lubee Bat Conservancy, USA, with support from the Woodtiger Fund, launched a new partnership in 2021 to conserve two of New Caledonia's most threatened bats. The Endangered New Caledonia blossom bat *Notopteris neocaledonica* is one of only two species in its genus and has only two known roosts. The Critically Endangered New Caledonia long-eared bat *Nyctophilus nebulosus* was previously known from only one location and had not been detected since 2002 despite intensive acoustic monitoring during 2016–2017. Both species are at risk of extinction because they are poorly known, are not monitored, and no one is working on their conservation.

Our survey of one of the historic roosting sites of *N. neocaledonica* in June 2022 showed that 12 years after the previous scientific visit the colony was still occupying its cave, and the population is estimated to be larger than previously known, with several hundreds of bats (from 200 to up to 710 from a direct roost count and an evening dispersal count, respectively). Attempts to identify other roosts, to enhance our knowledge of the species' distribution and any threats, are in progress.

In intensive acoustic surveys for *N. nebulosus* we are attempting to locate roosts and determine any threats to the species. On 18 nights during September 2021–June 2022, we identified likely *Nyctophilus* calls, using automatic ultrasound detectors, in the species historical location. These surveys continue.

Improvement of our knowledge of these species, and assessment of their conservation status, will be used to develop species conservation action plans, a crucial action needed to convince local managers to implement conservation strategies to protect the bats of New Caledonia.

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The future of African rhinos

Rhinos provide ecosystem services and contribute to sustainable development goals. During March–April 2022, the African Rhino Specialist Group met over several virtual sessions to examine a number of issues. One of the key aims was to update the 19th Conference of the Parties to CITES on the status of rhinos (cites.org/sites/default/files/documents/E-CoP19-75.pdf). Range states reported 6,195 black rhinos *Diceros bicornis* as of the end of 2021, increasing at 3.0% per year. The 15,942 white rhinos *Ceratotherium simum* are declining at 3.1% per year despite poaching rates having declined from 5.1% in 2015 to 2.3% in 2021. Globally, 218 black and 1,077 white rhinos are kept ex situ.

Sessions on conducting Red List assessments, prioritizing populations, understanding dispersal, sharing management experiences and securing land identified ways to improve rhino status. Congested and declining habitat requires managing ecological units across borders. Although range states imported 162 and exported 369 rhinos, 60 beyond their historical ranges and 81 beyond Africa during 2018–2021, a metapopulation framework could enhance conservation outcomes for rhinos.

Sessions on law enforcement, crime networks, trade, rhino horn stockpiles and markets focused on poaching and trafficking risks. Rhinos in large areas are often most at risk from illegal killing as it is hard to maintain patrols cost-effectively, retain staff commitment and integrity, and collect detailed information on the rhinos. Rhinos fare best when government, private, non-government, and local people partner to manage them. Covid-19 travel restrictions, stricter laws and increased law enforcement most likely resulted in a reduced number of horns entering the illegal market in 2020 (1,531–1,729, down from 2,378 in 2017). There are currently 87.3 t of stockpiled horns.

Sessions on understanding socio-economic matters and the multiple values of rhinos helped to identify information