

Primate conservation—new reports from the field

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The September 2020 tally of the IUCN Species Survival Commission Primate Specialist Group lists 507 species, 716 subspecies and 80 genera of primates. Ninety-five primates—13% of the primate taxa known today—were first described just in this millennium. The majority, 52 of them, are lemurs, along with seven primates from Africa, 15 from Asia, and 21 from the Neotropics. That so many new species can be discovered in this developed age is astonishing.

As has been repeatedly documented, hunting—mostly illegal—and the devastation of habitats, unabated through the 1980s and 1990s and into the 21st century, have resulted in widespread population declines. The 2008 IUCN Red List assessment for primates included 634 species and subspecies: 303 (48%) were ranked as threatened. Forty-three (45%) of 96 lemurs, however, were categorized as Data Deficient. A follow-up workshop for the lemurs in 2012 addressed the data gaps, and the result was a new total of 358 threatened primates, 56% of 643 then assessed. Following Red-Listing workshops from 2015 onward, including a second for lemurs in 2018, the latest update of the Red List (2020-2, July 2020) now has 709 primates assessed, with 440 (62%) categorized as threatened.

The 2012 lemur Red List assessment listed 94 species and subspecies as threatened: 23 Critically Endangered (22% of the 103 assessed) and 52 as Endangered (51%). The 2018 re-assessment determined that 105 lemurs were threatened, with 34 Critically Endangered (31% of the 111 assessed) and 45 Endangered (40.5%). The number categorized as Vulnerable increased from 19 in 2012 to 26 in 2018. Currently only two lemurs are categorized as Least Concern! With nearly all lemurs threatened, we are seeing their gradual progression from Vulnerable to Critically Endangered. The change in numbers for the African primates from the 2008 to the 2020 Red Lists also reflects increasing endangerment. Sixty-three (37%) African primates were categorized as threatened in 2008, and 99 (51%) in 2020. New assessments of 96 Neotropical primates and 89 Asian primates have yet to be posted on the Red List website. Sixty-two per cent of all primates are threatened. . . and counting!

So what is being done about this? The Red List assessment process provides a framework for what we need to

understand—information on demographics, populations, habitat requirements and loss, extent of occurrence, area of occupancy, threats, and conservation measures in place. Once compiled for a species, the question is: what approaches are needed for its conservation? The obvious strategy is to deal with the threats, be they pernicious processes (hunting, illegal wildlife trade, emerging infectious diseases and epidemics, forest loss, degradation and fragmentation, and negative interactions with people) or catastrophic events (resource extraction such as logging and mining, and infrastructure development, including roads and dams, which spark the colonization of once remote forests). The other strategy is remedial, with mitigatory measures dealing with the safety and growth of the remaining populations, or population, as the case may be. The key tools are protected areas and community conservation areas. Others target conservation management: population surveys and monitoring (now benefitting from satellite imagery, camera traps, drones and genetic studies), law enforcement, disease prevention, reforestation, enrichment of degraded forests, wildlife corridors and bridges, land-use planning, captive breeding, population genetics, rewilding, translocation and the control of invasive species.

The Primate Specialist Group focuses on its mission of zero extinctions for the primate order. This has included a wide range of activities, from Red-Listing, conservation action plans, the establishment of best practices, funding for numerous conservation projects, and the maintenance of communications networks, especially through its five journals. The first action plan was a global strategy (Mittermeier, 1977), which was followed by regional plans for Asia, Africa, Madagascar and Mesoamerica, and many species-specific plans, including, since 2003, for the great apes.

The eight articles in this issue of *Oryx* present an array of research initiatives encompassing 11 primates, all threatened. They focus on field surveys, but with objectives and methods suited to the particularities of the status, distribution and habitats of each species. Using the traditional survey technique of line transects with distance sampling, Yanuar et al. (2020) estimated densities of the north-west Bornean orangutan *Pongo pongo pygmaeus*, counting nests in the peat swamps between two protected areas. They documented a decline in numbers and ascertained that densities were lower than in the nearby protected areas.

Twenty-three of the 26 gibbon species and subspecies are now ranked as Endangered or Critically Endangered. Syxaiyakhmthor et al. (2020) surveyed the northern white-cheeked gibbon *Nomascus leucogenys* in the Nam Et-Phou

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Louey National Protected Area in northern Lao, using an auditory sampling technique. This 5,950 km² protected area is an important stronghold for the species. They recorded, however, a population density that was low compared to other populations, which they attributed to human disturbance and poor habitat quality.

Once widespread, by the 1960s the cao vit gibbon *Nomascus nasutus* was thought to be extinct. It was, however, rediscovered in 2002 on the border of China and Viet Nam. Ma et al. (2020) report on auditory surveys in 2007 and 2016 in the two protected areas where it occurs: the Bangliang Gibbon Nature Reserve in China and the Trung Khanh Cao Vit Gibbon Conservation Area in Viet Nam. The population had evidently slightly increased but is still only 20–22 groups and 107–136 individuals.

Johnson et al. (2020) report on a range-wide survey for the Critically Endangered Celebes crested macaque *Macaca nigra* on Sulawesi. Resource extraction and agriculture have resulted in the almost entire loss of its lowland habitat. The authors used camera traps in 111 localities to model the species' occupancy in the remaining habitats, also mapping the environmental and anthropogenic factors that may correlate with absence or presence. They estimate the area of occupancy and extent of occurrence, provide an assessment of the species' baseline status for future monitoring, and document previously unknown populations.

Freire Filho et al. (2020) used prior surveys of the depleted and patchy populations of the Maranhão red-handed howler *Alouatta ululata* in the dry forest of north-east Brazil to map potential habitat (a surrogate for occurrence) and anthropogenic variables, and identify areas where surveys are needed and where conservation measures would be most appropriate. Also in Brazil, Moraes et al. (2020) report on a similar exercise over a large swathe of the centre and north-east, examining the ranges of the bearded capuchin *Sapajus libidinosus*, blonde capuchin *Sapajus flavius*, and red-handed howler *Alouatta belzebul*. Their aim was to estimate the potential area of occupancy within their extent of occurrence. They clearly show the considerable disparity of these two measures in extensive distributions over areas with widespread loss and wreckage of the natural vegetation of the tropical savannah—the Cerrado—of central Brazil, the Atlantic Forest, and the south-east of the Amazon basin, which is suffering as the so-called Arc of Deforestation moves relentlessly north.

Also in the Neotropics, McHugh et al. (2020) report on their discovery of the yellow-tailed woolly monkey *Lagothrix flavicauda* in the Región Junín in the Peruvian Andes, extending the known range of this Critically Endangered atelid by more than 200 km to the south. The authors emphasize the urgency of expanding the search for this species to previously neglected regions.

Tinsman et al. (2020) intended to map a purported hybrid zone between the black lemur *Eulemur macaco* and blue-eyed black lemur *Eulemur flavifrons* in northern Madagascar. There was no evidence of a hybrid zone, but they discovered that *E. macaco*'s range was smaller, and that of *E. flavifrons* larger, than previously thought. They evaluated threats from hunting and habitat loss, and the effectiveness of the protected areas, and highlighted the need to update population estimates and expand initiatives with local communities.

These eight field studies illustrate the immense value of range-wide surveys. They facilitate the collection of data fundamental for assessing a species' conservation status and understanding the threats it is facing, and are vital for well-informed conservation strategies, in addition to their essential role in assessing and monitoring demographics and population trends (Rylands et al., 2008).

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