

PRIMATES IN PERIL: THE TOP 25 MOST ENDANGERED



Tonkin snub-nosed monkey, *Rhinopithecus avunculus*
Vietnam (Indo-Burma hotspot)
Photo: Tilo Nadler

"As we enter the new millennium, we risk losing our closest living relatives in the Animal Kingdom."

-RUSSELL A. MITTERMEIER,
PRESIDENT, CONSERVATION INTERNATIONAL



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SNAPSHOTS OF THE WORLD'S TOP 25 MOST ENDANGERED PRIMATES

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1. Golden bamboo lemur
Hapalemur aureus
Russell A. Mittermeier



2. Lac Alaotra bamboo lemur
Hapalemur griseus alaotrensis
Russell A. Mittermeier



3. Perrier's sifaka
Propithecus diadema perrieri
Stephen Nash



4. Silky sifaka
Propithecus diadema candidus
Stephen Nash



5. Golden-crowned sifaka
Propithecus tattersalli
William R. Konstant



6. Golden lion tamarin
Leontopithecus rosalia
Russell A. Mittermeier



7. Black lion tamarin
Leontopithecus chrysopygus
Russell A. Mittermeier



8. Black-faced lion tamarin
Leontopithecus caissara
Stephen Nash



9. Buff-headed capuchin
Cebus xanthosternus
Russell A. Mittermeier



10. Yellow-tailed woolly monkey
Lagothrix flavicauda
Russell A. Mittermeier



11. Northern muriqui
Brachyteles hypoxanthus
Andrew Young



12. Miss Waldron's red colobus
Procolobus badius waldroni
F.W. Frohawk



13. Sclater's guenon
Cercopithecus sclateri
Noel Rowe



14. White-naped mangabey
Cercocebus atys lunulatus
Russell A. Mittermeier



15. Sanje mangabey
Cercocebus sanje
Jonathan Kingdon, *The Kingdon Field Guide to African Mammals*



16. Drill
Mandrillus leucophaeus
Art Wolfe/www.ArtWolfe.com



17. Delacour's langur
Trachypithecus delacouri
Tilo Nadler



18. Cat Ba Island golden-headed langur
Trachypithecus poliocephalus
Russell A. Mittermeier



19. Gray-shanked douc langur
Pygathrix cinerea
Tilo Nadler



20. Tonkin snub-nosed monkey
Rhinopithecus avunculus
Tilo Nadler



21. Javan gibbon
Hylobates moloch
Russell A. Mittermeier



22. Hainan gibbon
Hylobates concolor hainanus
Stephen Nash



23. Mountain gorilla
Gorilla gorilla beringei
Art Wolfe/www.ArtWolfe.com



24. Cross River gorilla
Gorilla gorilla diehli
Kelley McFarland



25. Sumatran orangutan
Pongo abelii
Art Wolfe/www.ArtWolfe.com



CONSERVATION
INTERNATIONAL

Conservation International applies innovations in science, economics, policy and community participation to protect the Earth's richest regions of plant and animal diversity in the hotspots, major tropical wilderness areas and key marine ecosystems. With headquarters in Washington, D.C., CI works in 27 countries on four continents. For more information about CI's programs, visit www.conservation.org.



Established in 1995, the Margot Marsh Biodiversity Foundation was created to help safeguard global biodiversity by providing strategically-targeted, catalytic support for the conservation of endangered non-human primates and their natural habitats. The foundation gives highest priority to those projects in areas of high biodiversity under the greatest threat, thereby benefiting other groups of wildlife and plants.



PRIMATE SPECIALIST
GROUP

The Species Survival Commission (SSC) is one of six volunteer commissions of IUCN-The World Conservation Union, a union of sovereign states, government agencies and non-governmental organizations. SSC's mission is to conserve biological diversity by developing and executing programs to save, restore and wisely manage species and their habitats. Survival of the world's living primate species and subspecies is the principal mission of the IUCN/SSC Primate Specialist Group, close to 400 volunteer professionals who represent the front line in international primate conservation.

THE WORLD'S TOP 25 MOST ENDANGERED PRIMATES

At the beginning of a new millennium, conservationists continue to warn of widespread extinctions and significant losses to Earth's plant and animal species. Among the many species that could be lost are mankind's closest living relatives, the non-human primates. Several kinds of apes, monkeys and lemurs have been reduced in number to only a few hundred or a few thousand individuals. Their survival hangs in the balance, and only strongly focused conservation efforts will prevent them from going extinct.

Amazingly, despite increasing rates of deforestation and hunting in tropical regions of the world where most primates are found, there have been no documented extinctions of any species or subspecies over the past century. This is in striking contrast to other groups of mammals with similar or greater numbers of taxa (e.g., marsupials, bats, rodents), all of which have lost one or more species over the past 100 years. Maintaining current primate diversity through the 21st century represents a major challenge.

In 1996, the Species Survival Commission (SSC) of IUCN-The World Conservation Union, published its most recent *Red List of Threatened Animals*, which identified 93 of the world's approximately 620 primate taxa as either critically endangered or endangered. According to the IUCN, a primate is

1. **Critically Endangered** if the extent of its occurrence is estimated to be less than 38.6 mi² (100 km²), if its population is estimated to be less than 250 individuals, and/or quantitative analysis indicates the probability of extinction in the wild is at least 50 percent within 10 years or three generations;
2. **Endangered** if the extent of its occurrence is estimated to be less than 1,930 mi² (5,000 km²), if its population is estimated to number less than 2,500 individuals, and/or if quantitative analysis shows the probability of extinction in the wild is at least 20 percent within 20 years or five generations.

This means that close to 15 percent of the world's different prosimians, monkeys and apes stand a reasonable chance of disappearing from the face of the Earth within the next 10 to 20 years unless something is done to counter the threats to their survival. A new analysis currently underway by the Primate Specialist Group of the Species Survival Commission increases the total of critically endangered or endangered to nearly 120, revealing that actually, close to 20 percent of the world's primates are at risk of extinction.

The two main causes for the decline of wild primates are tropical forest habitat destruction and hunting for food (i.e., bushmeat hunting). Live capture for the pet trade and for biomedical research has become a lesser concern in recent decades, but still plays a role for some species. In some regions as much as 90 to 97 percent of the original

habitat of certain primates species has already disappeared, and in such areas hunting sometimes still continues.

Not surprisingly, the majority of the most seriously endangered primates are found in regions of the world identified by Conservation International (CI) as *biodiversity hotspots*. These are areas that exhibit exceptionally high species diversity, endemism, and degree of threat (having already lost at least 75 percent of their original vegetative cover). Together, the 25 hotspots cover a mere 1.44 percent of Earth's land surface, but have as endemics 43.8 percent of all vascular plant species and 35.5 percent of all non-fish vertebrates. This means that they hold at least 62 percent of all plant and animal diversity. Ninety-six percent of what we consider the most threatened primates - 24 out of 25, are found in *only* seven of the hotspots.

Survival of the world's living primate species and subspecies is the principal mission of the IUCN/SSC Primate Specialist Group, close to 400 volunteer professionals who represent the front line in international primate conservation. The Primate Specialist Group helped to compile the 1996 IUCN Red List of Threatened Animals, produces regular reports on the conservation status of key species and geographic regions through a series of newsletters and journals, and periodically publishes action plans for primate conservation in specific regions of the world (Africa - 1986, 1996; Asia - 1987; Madagascar - 1993).

In recognition of the fact that the 20th century came to a close without a documented loss of a single primate taxon, but also to call attention to the precarious status of close to one-fifth of the entire primate order, this list presents the World's Top 25 Most Endangered Primates. The biodiversity hotspots which claim the threatened habitat for most of these primates include Brazil's Atlantic Forest Region, the Guinean Forests of West Africa, Madagascar and the Indian Ocean Islands, and Indo-Burma, as well as Sundaland, the Tropical Andes and the Eastern Arc Mountains and Coastal Forests of Kenya and Tanzania.

The World's 25 Top Most Endangered Primates list is not composed only of species with the fewest numbers and it does not indicate order of priority. The list also recognizes the importance of:

- **primate species recently discovered or rediscovered, whose populations are likely to be perilously small, but for which no estimates exist;**
- **species whose populations were stable only a few years ago but are now under serious threat of extinction.**
- **species that have only recently been recognized as distinct, and therefore have not been the specific focus of conservation measures.**

For example, five taxa on the Top 25 list - the golden bamboo lemur and golden-crowned sifaka of Madagascar, the black-faced lion tamarin of Brazil, the gray-shanked douc

langur of Vietnam, and the Sanje mangabey of Tanzania – were discovered only within the last two decades of the 20th Century. Brazil's black lion tamarin, Peru's yellow-tailed woolly monkey and Vietnam's Tonkin snub-nosed monkey each had not been seen for approximately 50 years during the present century, but were ultimately found to survive in remote, little-explored forest areas. The Cross River gorilla, originally described as a distinct species in 1904, was then grouped with the western lowland gorilla subspecies. Only recently new studies confirmed that it is a distinct and critically endangered taxon.

Several taxa that were not considered critically endangered by primate conservationists only a few years ago now appear to be in much worse shape than was previously thought. Brazil's northern muriqui is one, as is the Sumatran orangutan and Vietnam's golden-headed langur. During a recent trip to Vietnam, CI's president Russell Mittermeier and project director William Konstant saw this rare langur in the wild, where it is found only on the island of Cat Ba in Halong Bay and is believed to number perhaps as few as 100 individuals. Also, based on the results of recent surveys in West Africa, at least four different monkeys appear to be vanishing right before our eyes. The dire situation of Miss Waldron's red colobus was described in the 1996 IUCN Red List, and the last chance for its survival may be a small tract of swamp forest in the Ivory Coast. The white-naped mangabey, Sclater's guenon and drill, whose status only a few years ago apparently was not considered critical, are now targets of a burgeoning bushmeat trade in West Africa and entire populations are disappearing.

This list of the World's Top 25 Most Endangered Primates list focuses attention on the plight of some of our closest living relatives, and also those regions of the world where the vast majority of Earth's natural living heritage is most seriously threatened.

Although this is a representative list that actually includes the most endangered primates, it could easily have been expanded to 40 or perhaps 50 primate taxa whose conservation status is cause for concern. It is also important to note that a growing number of efforts to ensure the survival of these primates are receiving support from the Margot Marsh Biodiversity Foundation, which was established in 1995 and has quickly become one of the world's most important sources of support for primate conservation.

The following accounts provide more specific information about each of the species and subspecies included among the World's Top 25 Most Endangered Primates.

1. Golden bamboo lemur

Hapalemur aureus

Madagascar (Madagascar and Indian Ocean Islands Hotspot)

Discovered only in 1985, the golden bamboo lemur remained undetected by science for centuries in Madagascar's eastern rain forests, despite a profound international interest in the island's rich and unique primate fauna. The new species was found close to Ranomafana about 200 kilometers southeast of the capital city of Antananarivo, during an expedition in search of the greater bamboo lemur, which itself hadn't been seen in 20

years. One of three species of bamboo or gentle lemurs, *Hapalemur aureus* gets its name from its golden facial color. As its common English name suggests, this lemur feeds primarily on giant bamboo, mostly the new shoots. This food source contains incredibly high levels of cyanide, as do the blood and feces of the golden bamboo lemur, but apparently these primates suffer no ill effects from their selective diet. Instead, the thousand or so animals estimated to remain in the wild are much more threatened by increasing slash-and-burn agriculture in and around the 102,796-acre (41,600-hectare) Ranomafana National Park, a protected area established specifically to safeguard the golden bamboo lemur's future.

2. Lac Alaotra bamboo lemur

Hapalemur griseus alaotrensis

Madagascar (Madagascar and Indian Ocean Islands Hotspot)

This lemur, known by local people as *bandro*, occupies a unique niche for primates, inhabiting reed and papyrus beds surrounding Lac Alaotra, Madagascar's largest lake and the center of the country's largest rice-producing region. It does not eat much bamboo, as its common English name might suggest, but subsists largely on the papyrus, reed, grass and aquatic plant species that provide its habitat. Much of Lac Alaotra's margin has already been converted to agriculture. Irrigation projects continue to reduce water levels, and local people routinely cut the surrounding papyrus and reeds for the production of mats, fish traps, screens and fencing. In addition, the bamboo lemur itself is under heavy pressure from hunting both as a source of food and for pets. Although it historically inhabited some of the surrounding regions, the *bandro*'s range is now severely restricted and it does not occur in any protected areas. Jersey's Durrell Wildlife Conservation Trust has undertaken studies of this lemur in the wild, has helped establish captive breeding colonies as a safeguard against its extinction, and has promoted habitat protection measures among local communities.

3. Perrier's sifaka

Propithecus diadema perrieri

Madagascar (Madagascar and Indian Ocean Islands Hotspot)

The all-black Perrier's sifaka is known to inhabit a relatively small area of dry forests in extreme northern Madagascar, where it receives protection in only two special reserves, Analamera 85,745 acres (34,700 hectares) and Ankarana 45,022 acres (18,220 hectares), but its continued presence in the second is questionable. Very little is known about this lemur's habits in the wild, except that it occurs in small groups of from two to six individuals which range over an area of up to 74 acres (30 hectares), and it eats a variety of leaves, unripe fruit, stems and flowers. Like much of Madagascar's wildlife, Perrier's sifaka is threatened by slash-and-burn agriculture, timber cutting for charcoal production, fire to clear pasture for livestock and, most recently, small-scale mining for gemstones. In response to these threats, Conservation International recently supported a field study in

the Analamera Special Reserve to gain a better understanding of its status, ecology and behavior.

4. Silky sifaka

Propithecus diadema candidus

Madagascar (Madagascar and Indian Ocean Islands Hotspot)

This distinctive, completely white animal is one of the least known and critically endangered of Madagascar's sifakas, and one of the largest of the living lemurs. Known only from the rain forests of northeastern Madagascar, it is apparently found only in two protected areas, the 148,634-acre (60,150-hectare) Marojejy Nature Reserve and the 79,321-acre (32,100-hectare) Anjanaharibé-Sud Special Reserve. Like much of Madagascar's tropical forest wildlife, the silky sifaka is threatened primarily by habitat loss, but is also reported to be hunted for food in some parts of its range. While no population figures are available, a reasonable estimate would be 100 to 1,000. Conservation International will support a preliminary field study in the Marojejy Nature Reserve early in the year 2000, the first step in monitoring this seriously threatened primate.

5. Golden-crowned sifaka

Propithecus tattersalli

Madagascar (Madagascar and Indian Ocean Islands Hotspot)

This relatively small-bodied sifaka was first photographed in 1974 by Dr. Ian Tattersall of the American Museum of Natural History, depicted in 1984 in his book, *The Primates of Madagascar*, and was eventually described and named in his honor in 1988 by Dr. Elwyn Simons of the Duke University Primate Center. The little-known species is restricted in northeastern Madagascar to small patches of dry deciduous forest which are surrounded by agricultural lands. In addition to habitat that has been lost to the encroachment of permanent human settlements, the golden-crowned sifaka is also threatened by large numbers of itinerant gold miners drawn to the region surrounding the town of Daraina. Thousands of Malagasy have descended upon the forests there, excavating large craters and draining seasonal stream beds to pan for gold. Studies conducted with support from Conservation International, Margot Marsh Biodiversity Foundation and the San Francisco Zoological Society have helped gain a better understanding of this sifaka's ecology, as well as the effects of gold mining on its conservation status, and have led to a proposal to establish a special nature reserve to protect this species.

6. Golden lion tamarin

Leontopithecus rosalia

Brazil (Atlantic Forest Hotspot)

About the size of a squirrel, the golden lion tamarin is one of four lion tamarin species endemic to Brazil's Atlantic Forest Region. It is known only from the state of Rio de Janeiro, where for many years it was protected only in the Poço das Antas Biological Reserve. Because it was highly sought by zoos around the world, and because these institutions recognized the precarious fate of wild populations in the face of continuing habitat loss, the golden lion tamarin became the focus of an international captive breeding effort in the 1970s led by the Smithsonian Institution. The program succeeded to the point that the world captive population now stands at close to 500, and a number of captive-bred tamarins have been taken from United States and European zoos and reintroduced to their natural habitat at Poço das Antas. This effort has been coupled with research on remaining wild populations and the translocation of isolated small groups of wild tamarins to forests where they could be better protected and monitored. The golden lion tamarin is believed to number about 800 in the wild, with perhaps 40 percent of the population found in Poço das Antas. An international management committee has identified additional forest tracts that are critical to its survival, and is working to ensure that recommendations of an action plan for the conservation of all four lion tamarin species are carried out.

7. Black lion tamarin

Leontopithecus chrysopygus

Brazil (Atlantic Forest Hotspot)

Like its close relative, the golden lion tamarin, this species is also endemic to Brazil's Atlantic Forest, being found in a number of isolated populations in the interior of the state of São Paulo. At one point, because the black lion tamarin had not been seen for several decades, some believed it had gone extinct. However, in 1970, the renowned Brazilian primatologist Ademar F. Coimbra-Filho discovered a viable population in the forests of the 84,401-acre (34,156-hectare) Morro do Diabo State Park, and soon thereafter another in the Caitetus State Ecological Station. Subsequent field studies by primatologist Claudio Padua have estimated the Morro do Diabo population at more than 800 animals, and have identified a number of other populations on privately-held forested lands, bringing the total wild population to more than 900. Intensive management of these wild populations and the captive population of 100 animals will be necessary to ensure the survival of the black lion tamarin.

8. Black-faced lion tamarin

Leontopithecus caissara

Brazil (Atlantic Forest Hotspot)

The black-faced lion tamarin was discovered in 1990 in fragments of forest in the 52,881-acre (21,400-hectare) Superagüi National Park in the Brazilian state of Paraná, and has subsequently been found to occur inland in the same state, as well as the state of São Paulo. Its discovery is considered one of the most significant and surprising primatological events of the 20th century, largely because this diminutive species had remained undetected for so long in such an intensely developed and highly populated region of Brazil. The most recent population estimate is about 400 animals, approximately 300 from Superaqui and the rest from the much larger Jacupiranga State Park in the state of São Paulo. Ongoing field studies by Brazilian primatologists continue to identify new populations and extend the black-faced lion tamarin's range inland, but we still know relatively little about this species' ecology and conservation status. Unlike the three other *Leontopithecus* species, there is no captive population of the black-faced lion tamarin.

9. Buff-headed capuchin

Cebus xanthosternos

Brazil (Atlantic Forest Hotspot)

Unlike most other capuchin monkeys of the New World tropics, which are relatively common and abundant, this endemic of Brazil's Atlantic Forest region is considered seriously threatened with extinction. While firm estimates of remaining populations are unavailable, the buff-headed capuchin is known to be declining throughout its restricted range due to loss of its forest habitat, the primary cause, but also due to hunting and live capture as pets. Adult animals are relatively large-bodied (about 6 pounds) and provide sufficient meat to warrant the cost of a shotgun shell, and young animals are popular as pets. Surveys conducted earlier this decade confirmed this species' restricted distribution in the eastern Brazilian state of Bahia (and possibly northern Minas Gerais), its occurrence in the Una Biological Reserve and at least two biological stations. The species has, however, been extirpated over a large part of its former range.

10. Yellow-tailed woolly monkey

Lagothrix flavicauda

Peru (Tropical Andes Hotspot)

The yellow-tailed woolly monkey is the largest mammal endemic to Peru, found in a small area on the eastern slopes of the Andes in the northern part of the country. It was discovered in 1802 by the renowned German explorer Alexander von Humboldt, who described it not based upon seeing a living animal but on examining skins used by Peruvian muleteers as saddle covers. In 1925 and 1926 a total of five skins were

collected for the American Museum of Natural History in New York and the British Museum of Natural History in London, but then the species “disappeared” for more than four decades. Then, in 1974 and 1978, Dr. Russell Mittermeier and Dr. Hernando de Macedo-Ruiz (Museum of Natural History, University of San Marcos) led two expeditions that verified the yellow-tailed woolly monkey’s continued existence, collecting skins, skulls and a couple of living animals. The rediscovery stimulated a national conservation awareness campaign, exploratory field studies and the creation of several protected areas for this species. Until about 30 years ago, this species’ cloud forest habitat was fairly isolated and had not suffered greatly from habitat conversion or hunting pressure. However, increased levels of both now pose serious threats to the yellow-tailed woolly’s survival.

11. Northern muriqui

Brachyteles hypoxanthus

Brazil (Atlantic Forest Hotspot)

Primatologists now recognize two species of muriqui, a relatively more abundant southern form and a much less numerous northern form. The latter numbers about 300 animals and is known to exist in less than a dozen isolated populations of questionable viability. The northern muriqui, *Brachyteles hypoxanthus*, and its southern relative, *Brachyteles arachnoides*, are the largest monkeys in all of South America and the largest mammals endemic to Brazil. Along with the golden lion tamarin, the muriqui is one of the best known flagships for conservation of Brazil’s Atlantic Forest. The most significant population of northern muriquis is found in the forests of Fazenda Montes Claros in the state of Minas Gerais. This population of more than 100 animals has been protected for the last 50 years by Sr. Feliciano Miguel Abdala, a private landowner, and has been the principal subject of more than 17 years of field research by Dr. Karen Strier and Brazilian collaborators at the Caratinga Biological Station. As part of its *Campaign to Save the Hotspots*, Conservation International intends to guarantee the long-term protection of Fazenda Montes Claros, helping to ensure the survival of between one-half and one-third of the remaining northern muriquis.

12. Miss Waldron’s red colobus

Procolobus badius waldroni

Ghana and Ivory Coast (Guinean Forests of West Africa Hotspot)

Of all the living primates, Miss Waldron’s red colobus may be the closest to extinction, if it still survives. The type specimen was collected by Willoughby Lowe in western Ghana in 1933 and subsequently named after his traveling companion. Although believed to have occurred historically in both Ivory Coast and Ghana, recent surveys in this region have failed to turn up any surviving populations, while at the same time reporting evidence of significant hunting. Some primatologists believe that the last hope for finding a population of Miss Waldron’s red colobus will be in forests surrounding the Ehi Lagune in southeastern Ivory Coast. Conservation International will support an

expedition to this region early in the year 2000, when the forests can best be surveyed during the dry season. If no evidence of the red colobus is found, it may be the only primate taxon to have become extinct during the 20th century.

13. Sclater's guenon

Cercopithecus sclateri

Nigeria (Guinean Forests of West Africa Hotspot)

This little-known primate is one of the smallest African monkeys and possibly the rarest primate species in Africa. Sclater's guenon occurs only in forest remnants between the Niger and Cross Rivers in eastern Nigeria, a region with one of the continent's most dense human populations. Although the species was first described from a zoo specimen in 1904, it was only in 1988 that primatologists first located a wild population on the eastern floodplain of the Niger. Since then several additional populations have been discovered in scattered forest patches and in strips of swamp forest fringing coastal creeks and rivers. Except in two villages where people regard the monkey as sacred, Sclater's guenons are hunted for their meat, and throughout their very small geographic range their habitat is under threat from farmers, loggers, firewood collectors and oil industry activities. No reliable estimate of population size has yet been made, but probably only a few thousand individuals still survive, and there is no national park or strictly protected area anywhere in the species' range.

14. White-naped mangabey

Cercocebus atys lunulatus

Ghana and Ivory Coast (Guinean Forests of West Africa Hotspot)

The white-naped mangabey was at one time widely distributed in forests from the Sassandra River in Ivory Coast into western Ghana, perhaps as far east as the Volta River. In the 1950s it seemed to be relatively common and was considered a crop pest. In the early 1970s it was seen during systematic surveys carried out in the Bia and Ankasa forests of western Ghana. However, surveys and systematic censuses carried out in the 1990s indicate that this subspecies is now very rare. It was neither seen nor heard in Bia, and detected in only four of 14 forests surveyed in western Ghana. None were found in surveys of five forests in Ivory Coast near its border with Ghana, and only a single group was seen in Marahoue National Park of central Ivory Coast. No reliable estimates of the white-naped mangabey population can be made, but its distribution now seems to be highly fragmented. It has declined precipitously in the last 30 years and it is likely that only a few thousand remain, if not fewer. Hunting seems to be the greatest threat to its survival, although habitat destruction has seriously fragmented its population.

15. Sanje mangabey

Cercocebus galeritus sanjei

Tanzania (Eastern Arc and Coastal Mountains of Tanzania and Kenya Hotspot)

The Sanje mangabey, endemic to the Udzungwa Mountains of Tanzania, is a relatively recent arrival on the list of East African mammals, discovered in 1981. It differs from other closely related mangabeys in fur coloration (being a smokey brown or fawn color with a lighter, almost buffy orange underbelly), facial coloration (beige with white eyelids), and appearance of hair on the crest of the head (long and parted down the middle, with short erect hairs above the brow). Found only in the fragmented relict forests of the Udzungwas, it may prefer riverine habitat at altitudes ranging from 400-1,600 meters, although it is probably more common above 1,000 meters. At least one subpopulation resides within the recently established Udzungwa Mountains National Park, but it is also known to occur in low densities outside the protective boundaries of the park in the Ndundulu and Udzungwa Scarp Forest Reserves, where animals are at risk from hunting pressures and habitat loss. Overall, fewer than 1,500 of these primates may exist.

16. Drill

Mandrillus leucophaeus

Cameroon, Equatorial Guinea and Nigeria (Guinean Forests of West Africa Hotspot)

The drill is a large-bodied primate endemic to West African tropical forests and is considered by some authorities to represent the highest primate conservation priority in this region. Drills typically live in large, male-dominated groups that can sometimes number more than 100 individuals. However, because they are so large in size and conspicuous, drills are a favorite target of hunters. There are at least two subspecies, one which occurs on mainland Africa in Nigeria and Cameroon, and another on the island of Bioko, Equatorial Guinea. Reliable estimates of the drill's overall numbers do not currently exist, but it still occurs in several protected areas in Cameroon and Nigeria, and the population on Bioko is the subject of ongoing field research. However, due to the fact that it is one of the first species to be hunted out in a region, and because bushmeat hunting has become rampant throughout this species' range, it should be considered critically endangered.

17. Delacour's langur

Trachypithecus delacouri

Vietnam (Indo-Burma Hotspot)

Delacour's langur is one of the most endangered of a group of largely black Southeast Asian leaf-eating monkeys. It is distinguished from the others by its white cheek bands, a large white saddle on its outer thighs and lower back, and its thickly-furred tail. The

species, which is endemic to Vietnam, was first described in 1932. Based on recent surveys, the best estimates are that less than 200 Delacour's langurs survive, including a population in Cuc Phuong National Park, the first national park created by the government of Vietnam in 1962. Like most of Vietnam's primates, this species is threatened not only by habitat loss, but also by hunting, which is often done not primarily for meat, but for bones, organs and tissues that are used in the preparation of traditional medicines. The Endangered Primate Rescue Center at Cuc Phuong National Park was established earlier this decade primarily to safeguard the future of this species and other Vietnamese primates.

18. Cat Ba Island golden-headed langur

Trachypithecus poliocephalus

Vietnam (Indo-Burma Hotspot)

This rare leaf-eating monkey is presently known only from a single 24,216-acre (9,800-hectare) national park on Cat Ba, the largest of more than 3,000 islands located in northeastern Vietnam's Halong Bay. Cat Ba is a series of karst outcroppings largely covered by forest, with a terrain too rocky for agriculture. Island inhabitants make their living traditionally from the sea and more recently from a growing tourism industry. The langurs of Cat Ba appear to number only in the low hundreds and can occasionally be seen in early morning or late afternoon amidst low vegetation that grows on nearly vertical rock cliffs emerging from the sea. The number and status of remaining groups remains unclear, since no systematic survey has been attempted of Cat Ba's contorted coastline and nearby uninhabited islets. Anecdotal evidence points to a declining population overall, with ongoing human encroachment and hunting identified as the major threats. Indeed, it was even being reported as possibly extinct a couple of years ago. This monkey is sometimes sought for the cooking pot, and its bones and organs are also reputed to have medicinal properties. However, it has enormous potential as a tourist attraction in this heavily visited area and this could help secure its future.

19. Gray-shanked douc langur

Pygathrix nemaeus cinerea

Vietnam (Indo-Burma Hotspot)

Douc langurs of the genus *Pygathrix* are native to Southeast Asia. Up until only a few years ago, two distinct taxa were recognized, the red-shanked douc langur, which was named by Linnaeus in 1771, and the black-shanked douc langur which was described a century later. From August 1995 through January 1998, however, six male specimens of a new and distinctive *Pygathrix* were confiscated by Vietnamese wildlife authorities or donated by private individuals and placed at the Endangered Primate Rescue Center of Cuc Phuong National Park. The animals had evidently originated in the southeastern part of Vietnam's Central Highlands, where field primatologists had also identified wild populations of the same description in a region occupied by red- and black-shanked monkeys. Questions of hybridization between the earlier recognized forms helped to

complicate the taxonomic debate, but the prevailing scientific opinion now seems to be that this new animal is distinct and that all three are either subspecies or even full species. Wild populations of the three doucs are in serious trouble, reduced to small numbers by habitat loss and hunting. While Laos and Cambodia *may* have more sizeable populations of the red-shanked and black-shanked doucs, the newly-discovered *Pygathrix cinereus* is known only from Vietnam and is currently considered the most critically endangered member of this threatened genus.

20. Tonkin Snub-nosed monkey

Rhinopithecus avunculus

Vietnam (Indo-Burma Hotspot)

The Tonkin snub-nosed monkey is one of four unusual, large-bodied Asian monkeys of the genus *Rhinopithecus* that possess a characteristic turned-up nose. The three other species are endemic to China and the Tonkin snub-nosed monkey to northern Vietnam. This species was discovered in 1910, collected on perhaps no more than two occasions over the course of the next 50 to 60 years, and subsequently thought to be possibly extinct by a number of primatologists until its rediscovery in 1989. It has apparently never been widespread or numerous, and today is believed to number about 200 animals in forests overlying karst formations in a small area adjoining Vietnam's Bac Thai and Tuyen Quang provinces. Based on surveys conducted a decade ago, the government of Vietnam created the Na Hang Nature Reserve specifically to protect this species. Conservation International, with support from the Margot Marsh Biodiversity Foundation and in collaboration with Germany's Zoological Society for the Conservation of Species and Populations, is working with communities surrounding this reserve to monitor this species and discourage poachers who hunt it for its meat and its presumed medicinal properties.

21. Javan gibbon

Hylobates moloch

Indonesia (Sundaland Hotspot)

The Javan or silvery gibbon, as its name implies, is found only on the Indonesian island of Java, which is one of the world's most densely populated islands. Only fragmented pockets of rain forest remain in western and central Java, where this species is confined. The best estimates are that somewhere between 300 and 400 Javan gibbons survive in a handful of national parks, nature reserves and other conservation units that cover approximately 197,684 acres (80,000 hectares) of forest. In response to the threats of continued habitat destruction, as well as the capture of young gibbons to supply an illegal pet trade, Conservation International, with support from the Margot Marsh Biodiversity Fund, has established a tropical forest conservation education program focused on the Javan gibbon. The program is based at Gunung Gede National Park, one of the most important remaining habitats for the species, located only an hour's drive from Jakarta.

22. Hainan gibbon

Hylobates concolor hainanus

China (Indo-Burma Hotspot)

This subspecies of the black or crested gibbon is currently known only from the Chinese island of Hainan, although recent field surveys in northeastern Vietnam may have identified a new mainland population. Primatologists consider this the rarest of the world's gibbons, with perhaps no more than a few dozen individuals remaining in the 5,189-acre (2,100-hectare) Bawanglin Nature Reserve. The males are entirely black, the females brownish-yellow with black patches on the crown of the head. Despite efforts by Chinese and American biologists, the impact of Hainan's ongoing economic development and the ever-present threat of wildlife smuggling may have proven too much for this critically endangered gibbon. Its survival will depend on increased protection for the only protected area in which it is currently found, and could possibly be enhanced by the discovery of new populations on the Asian mainland.

23. Mountain gorilla

Gorilla gorilla beringei

Democratic Republic of Congo, Rwanda, Uganda

The mountain gorilla is the world's largest living primate, one of the best studied, and unfortunately, one of the most endangered. Approximately 320 mountain gorillas survive in the montane tropical forests that cover the Virunga volcanoes in east-central Africa. The Virungas are shared by three countries: Democratic Republic of Congo (formerly Zaire), Rwanda and Uganda. The gorillas and their habitat are protected to some degree within three national parks. But they are also entirely surrounded by dense human settlements and agricultural lands. The volcanic soils of this region are among the richest in the world. The region itself has been the site of devastating human conflicts in recent decades. Despite these threats, an international primate conservation effort by organizations such as the African Wildlife Fund and the Dian Fossey Gorilla Fund has maintained long-term studies of the mountain gorilla, sustained anti-poaching efforts against relentless pressure, and has established this magnificent primate as one of the premier tourism attractions on the African continent.

24. Cross River gorilla

Gorilla gorilla diehli

Nigeria and Cameroon (Guinean Forests of West Africa Hotspot)

This is the most neglected and endangered subspecies of gorilla. It was originally named in 1904 as a distinct species, *Gorilla diehli*, based on a few specimens collected in what was then the German colony of Kamerun, close to the Nigerian border at the headwaters of the Cross River. In subsequent years it was relegated to the status of a subspecies, *Gorilla gorilla diehli*, which in 1929 was merged with other western gorillas into the

subspecies *Gorilla gorilla gorilla*. Two recent independent studies of skull and tooth dimensions, soon to be published in *American Museum Novitates* by John F. Oates and Esteban Sarmiento, have shown that Cross River gorillas are as different from other western gorillas as the famous Virunga mountain gorillas are from other eastern gorillas, and that the Cross River animals deserve subspecific status. Their populations are restricted to densely forested hills on the Nigeria-Cameroon border more than 155 mi. (250 km) from the nearest population of western lowland gorillas. The total remaining population of Cross River gorillas is estimated between 150 and 200 individuals fragmented into five or more clusters which have little or no contact with each other. In a part of the world that has a very long-standing bushmeat trade, each sub-population still suffers from hunting. Only one of the sub-populations occurs in an area that is theoretically fully protected, Nigeria's Cross River National Park, but efforts are underway to bring greater protection to all the remaining animals and to establish a cross-border conservation program.

25. Sumatran orangutan

Pongo abelii

Indonesia (Sundaland Hotspot)

Although fossil orangutan remains are known from mainland Asia, today these threatened red apes are restricted to the islands of Borneo and Sumatra. The orangutan was once considered to represent a single species, but notable differences in appearance and skeletal structure between Bornean and Sumatran animals now lead scientists to believe that each island harbors a distinct species. This view is also supported by analysis of recent molecular data, which suggests that the two populations have been separated for 1.5 million years or more. On Sumatra, orangutans are known only from three of the northern provinces – Aceh, Sumatra Utara and Sumatra Barat – and are roughly divided into two populations. Loss and fragmentation of tropical forest habitat are the principal threats to orangutans throughout their range, but illegal hunting for food or sport, or to obtain infants for pets, also contributes to their decline. Recently, fire and droughts have become serious dangers as well on Sumatra, though not yet as severe as on Borneo. Several thousand orangutans continue to survive in northern Sumatra where they are officially protected in Gunung Leuser National Park and the Sekundur and Singkil Barat Reserves. However, illegal logging within protected areas is rapidly increasing and seriously jeopardizing this species' future.

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Glossary

Bushmeat hunting: The killing of primates and other wildlife for food; a threat to wild primate populations, particularly in Central and West Africa, even in existing parks and reserves.

Endemic: Restricted to a certain region, not occurring anywhere else.

Family: A group of closely related genera; the 13 primate families include more than 60 genera.

Genus (Genera): A group of related species (and perhaps subspecies); *genera* refers to more than one *genus*.

Great apes: Chimpanzees, gorillas and orangutans; the primates most closely related to man.

Hectare: A measurement of area equal to 2.47 acres; 100 hectares equals one square kilometer (km²).

Hotspot: An area that includes at least 1,500 species of vascular plants (0.5 percent of Earth's total plant diversity) as endemics and has lost 75 percent or more of its original vegetative cover.

Lemurs: General name for primates endemic to Madagascar; also includes the avahis, indris, sifakas and the aye-aye.

Lesser apes: Tailless primates known as gibbons that are native to Asia and more closely related to chimpanzees, gorillas and orangutans than they are to other primates.

Monkeys: The "typical" primates; Central and South American species include the marmosets, tamarins, night monkeys, titi monkeys, squirrel monkeys, capuchins, sakis, bearded sakis, uacaris, howling monkeys, spider monkeys, woolly monkeys and the muriqui; African and Asian species include the baboons, macaques, mangabeys, patas, guenons, vervets, colobus, leaf monkeys, langurs, proboscis and snub-nosed monkeys.

Order: A group of closely related families; the Order Primates is composed of 13 families (including that of man).

Primates: The order of mammals that includes man, the lesser and greater apes, monkeys, prosimians and tarsiers.

Prosimians: The group of primates that includes lemurs, lorises, pottos and galagos.

Sifaka: A long-tailed, large-bodied lemur from Madagascar that moves through the trees by clinging and leaping.

Taxon (Taxa): A taxon is a level of scientific classification, the ones most commonly used being *species* and *subspecies*, but the word can also refer to a *genus*, *order* or *family*; taxa refers to more than one taxon.