

Primates in Peril: The World's 25 Most Endangered Primates, 2004–2006

Authors: Mittermeier, Russell A., Valladares-Pádua, Cláudio, Rylands, Anthony B., Eudey, Ardith A., Butynski, Thomas M., et al.

Source: Primate Conservation, 2006(20) : 1-28

Published By: Conservation International

URL: <https://doi.org/10.1896/0898-6207.20.1.1>

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Primates in Peril: The World's 25 Most Endangered Primates, 2004–2006

Russell A. Mittermeier¹, Cláudio Valladares-Pádua², Anthony B. Rylands³, Ardith A. Eudey⁴,
Thomas M. Butynski⁵, Jörg U. Ganzhorn⁶, Rebecca Kormos³, John M. Aguiar³ and Sally Walker⁷

¹Conservation International, Washington, DC, USA

²IPÊ – Instituto de Pesquisas Ecológicas, Nazaré Paulista, São Paulo, Brazil

³Center for Applied Biodiversity Science, Conservation International, Washington, DC, USA

⁴164 Dayton Street, Upland, California 91786-3120, USA

⁵Conservation International, Nairobi, Kenya

⁶Institute of Zoology, Ecology and Conservation, Hamburg, Germany

⁷Zoo Outreach Organisation, Coimbatore, Tamil Nadu, India

Introduction

To promote the public awareness of the critical situation of numerous primate species around the world, in 2000 the IUCN/SSC Primate Specialist Group, together with Conservation International, drew up a list of the 25 primates they considered were most endangered and most in need of attention for conservation and research. The year 2000 marked the end of a century that had witnessed no primate extinctions — and yet had ushered in the wholesale destruction of enormous numbers of primate populations around the world.

The 2000 list received exceptional coverage in a media environment already saturated with millennial news, and in some cases a primate's listing on the Top 25 led to real improvements in its conservation status. In view of this, an updated Top 25 list was released in 2002, following a special open discussion-meeting at the 19th Congress of the International Primatological Society (IPS) in Beijing, China, in which primatologists contributed information fresh from the field. Their revisions culminated in the official endorse-

ment by the IPS of the Top 25, which is now a joint endeavor of the Primate Specialist Group, the IPS, and Conservation International. In August 2004, at the 20th Congress of the IPS in Torino, Italy, nearly 200 primatologists attended a second open session, which developed this most recent list of the Top 25 most endangered primates (Table 1). So, from its origins as a stand-alone warning, the list of the Top 25 has evolved into a periodic survey of those primates that researchers and conservationists feel would most benefit from — and most desperately need — the widest possible awareness of their rarity and peril. The species and subspecies that appear in the 2004–2006 list have been chosen not only for the degree of threat to their populations, but also as representatives of a region, ecosystem, or taxonomic group (Fig. 1). In each review of the list, primates may be added or removed to allow for exposure of new species, but their departure does not necessarily mean that they are no longer extremely threatened. Protecting these primates requires prolonged research and lasting conservation measures.

Of the 25 primates in the 2004–2006 most-endangered list, four are from Madagascar, seven from Africa, 10 from Asia, and four from the neotropics (Table 1). They are distributed through 17 countries: four are endemic to Madagascar and four occur in Vietnam, without doubt the two countries most in need of major efforts for the protection of their forests and wildlife (Table 2).

Seven of the 25 primates are listed for the first time: the white-collared lemur (*Eulemur albocollaris*), the Mt. Rungwe galago (as yet undescribed), the Bioko red colobus (*Procolobus pennantii pennantii*), the Horton Plains slender loris (*Loris tardigradus nycticeboides*), Miller's grizzled surili (*Presbytis hosei canicrus*), the western purple-faced langur (*Semnopithecus vetulus nestor*), and the Colombian brown spider monkey

With contributions from: Alexandre T. Amaral, Simon K. Bearder, Jean Philippe Boubli, Douglas Brandon-Jones, Gustavo Canale, Camila Cassano, Tim R. B. Davenport, Thomas R. Defler, Jinie Dela, Luiz Gustavo Dias, Carolyn L. Ehardt, Susie Ellis, Agustin Fuentes, Carlos Eduardo Guidorizzi, Frank Hawkins, Steig Johnson, Maria Cecilia M. Kierulff, William R. Konstant, Annette Lanjouw, Mark Leighton, Jean-Marc Lernoould, Lindsay Magnuson, W. Scott McGraw, Sérgio Lucena Mendes, David Meyers, Alan R. Mootnick, Alba Lucia Morales-Jiménez, Tilo Nadler, K. Anna I. Nekaris, John F. Oates, Lisa Paciulli, Andrew Perkin, Fabiana Prado, Martina Raffel, José Vicente Rodríguez-Mahecha, Noel Rowe, Gabriel Rodrigues dos Santos, Ian Singleton, Roswitha Stenke, Jacqui L. Sunderland-Groves, Karen B. Strier, Thomas T. Struhsaker, Roland Wirth and Zhaoyuan Li.

Table 1. The world's 25 most endangered primates, 2004–2006.

Madagascar		
1.	<i>Prolemur simus</i> (Gray, 1871)	Greater bamboo lemur
2.	<i>Eulemur albocollaris</i> (Rumpler, 1975)	White-collared lemur
3.	<i>Propithecus candidus</i> Grandidier, 1871	Silky sifaka
4.	<i>Propithecus perrieri</i> Lavauden, 1931	Perrier's sifaka
Africa		
5.	<i>Galagoides</i> sp. (undescribed)	Mt. Rungwe galago
6.	<i>Procolobus pennantii pennantii</i> (Waterhouse, 1838)	Pennant's red colobus
7.	<i>Procolobus rufomitratus</i> (Peters, 1879)	Tana River red colobus
8.	<i>Cercocebus atys lunulatus</i> (Temminck, 1853)	White-naped mangabey
9.	<i>Cercocebus sanjei</i> Mittermeier, 1986	Sanje River mangabey
10.	<i>Gorilla beringei</i> Matschie, 1903	Eastern gorillas
11.	<i>Gorilla gorilla diehli</i> Matschie, 1904	Cross River gorilla
Asia		
12.	<i>Loris tardigradus nycticeboides</i> Hill, 1942 *	Horton Plains slender loris, Ceylon Mountain slender loris
13.	<i>Simias concolor</i> Miller, 1903	Pagai pig-tailed snub-nosed monkey, Simakobu
14.	<i>Presbytis hosei canicrus</i> Miller, 1934	Miller's grizzled surili
15.	<i>Trachypithecus delacouri</i> (Osgood, 1932)	Delacour's langur, white-rumped black leaf monkey
16.	<i>Trachypithecus poliocephalus poliocephalus</i> (Trouessart, 1911)	Golden-headed langur, Cat Ba langur
17.	<i>Semnopithecus vetulus nestor</i> Bennett, 1833	Western purple-faced langur
18.	<i>Pygathrix cinerea</i> Nadler, 1997	Grey-shanked douc
19.	<i>Rhinopithecus avunculus</i> Dollman, 1912	Tonkin snub-nosed monkey
20.	<i>Nomascus nasutus hainanus</i> (Thomas, 1892)	Hainan black-crested gibbon
21.	<i>Pongo abelii</i> Lesson, 1827	Sumatran orangutan
Neotropics		
22.	<i>Leontopithecus caissara</i> Lorini & Persson, 1990	Black-faced lion tamarin
23.	<i>Cebus xanthosternus</i> Wied-Neuwied, 1826	Buff-headed tufted capuchin
24.	<i>Ateles hybridus brunneus</i> Gray, 1872	Brown spider monkey
25.	<i>Brachyteles hypoxanthus</i> (Kuhl, 1820)	Northern muriqui

* *Loris tardigradus nycticeboides* in Nekaris, K. A. I. 2003. Rediscovery of the Ceylon mountain slender loris in the Horton Plains National Park, Sri Lanka, *Asian Primates* 8(3/4): 1–7, and Nekaris, K. A. I. and Jayewardene, J. 2003. Pilot study and conservation status of the slender loris (*Loris tardigradus* and *L. lydekkerianus*). *Primate Conserv.* (19): 83–90.

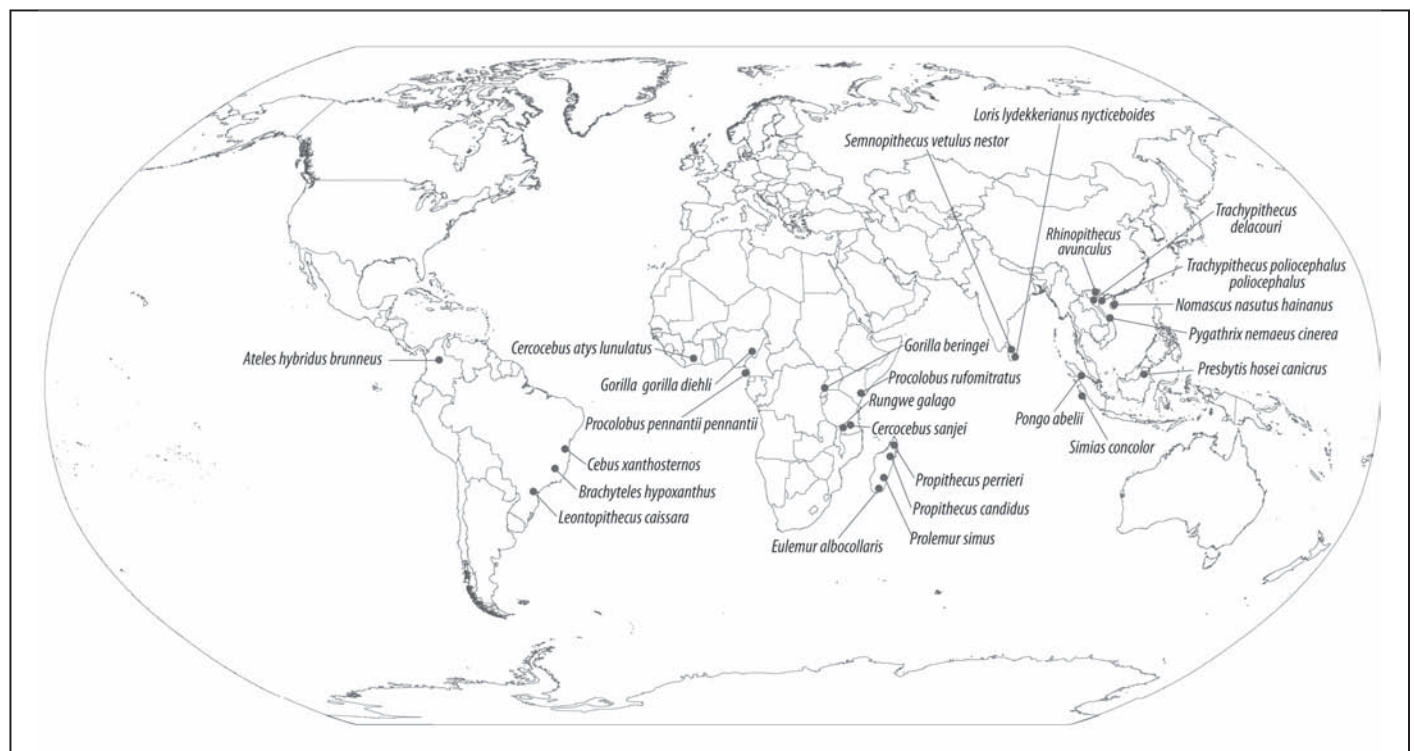
**Figure 1.** The world's 25 most endangered primates, 2004–2006.

Table 2. Distribution of the world's 25 most endangered primates – countries.

Madagascar	<i>Prolemur simus</i> , <i>Eulemur albocollaris</i> , <i>Propithecus candidus</i> , <i>Propithecus perrieri</i>	4
Vietnam	<i>Trachypithecus delacouri</i> , <i>Trachypithecus p. poliocephalus</i> , <i>Pygathrix cinerea</i> , <i>Rhinopithecus avunculus</i>	4
Brazil	<i>Leontopithecus caissara</i> , <i>Cebus xanthosternus</i> , <i>Brachyteles hypoxanthus</i>	3
Indonesia	<i>Simias concolor</i> , <i>Presbytis hosei canicrus</i> , <i>Pongo abelii</i>	3
Sri Lanka	<i>Loris tardigradus nycticeboides</i> , <i>Semnopithecus vetulus nestor</i>	2
Tanzania	Mt. Rungwe galago, <i>Cercocebus sanjei</i>	2
Colombia	<i>Ateles hybridus brunneus</i>	1
Cameroon	<i>Gorilla gorilla diehli</i>	1
China	<i>Nomascus nasutus hainanus</i>	1
Côte d'Ivoire	<i>Cercocebus atys lunulatus</i>	1
DRC	<i>Gorilla beringei</i>	1
Equatorial Guinea	<i>Procolobus pennantii pennantii</i>	1
Ghana	<i>Cercocebus atys lunulatus</i>	1
Kenya	<i>Procolobus rufomitratus</i>	1
Nigeria	<i>Gorilla gorilla diehli</i>	1
Rwanda	<i>Gorilla beringei</i>	1
Uganda	<i>Gorilla beringei</i>	1

(*Ateles hybridus brunneus*). Fifteen of the primates have been members of this list since the first edition in 2000 (Table 3).

Madagascar

Greater Bamboo Lemur

Prolemur simus (Gray, 1871)

Madagascar

(2002, 2004)

Formerly in the genus *Hapalemur*, the greater bamboo lemur was placed in the genus *Prolemur* by Groves (2001), based on a suite of distinctive dental and chromosomal characteristics (Vuillaume-Randriamanantena *et al.* 1985; Macedonia and Stanger 1994; Stanger-Hall 1997). As its common name implies, the greater bamboo lemur is the largest of Madagascar's bamboo-eating lemurs (Albrecht *et al.* 1990). Genetic studies further support its separation from the other bamboo lemurs and suggest that *Hapalemur* may, in fact, be more closely related to the genus *Lemur* (Rumpler *et al.* 1989; Macedonia and Stanger 1994; Stanger-Hall 1997). Historical records (Schwarz 1931) and sub-fossil remains confirm that it was once widespread throughout the island (Godfrey and Vuillaume-Randriamanantena 1986; Wilson *et al.* 1988; Godfrey *et al.* 1999). Documented populations are very patchily distributed and restricted to the south-central portion of the country's eastern rain forests, including those of Kianjavato, Ranomafana, and Andringitra national parks (and the corridor between them), Evendra (near Ivato, southeast of Andringitra), Karianga (near Vondrozo), and possibly the forest fragments south of Ifanadiana (Meier and Rumpler 1987; Wright *et al.* 1987; Sterling and Ramarason 1996; Goodman *et al.* 2001; Irwin *et al.* 2005). Recent unpublished reports also indicate its presence in the forests of Karianga, northwest of

Manombo (E. E. Louis Jr. pers. comm.) and north up to the region of Moramanga (Dolch *et al.* 2004; Rakotosamimanana *et al.* 2004). Shoots, young and mature leaves, and pith of the bamboo *Cathariostachys madagascariensis* can account for as much as 95% of the diet (Tan 1999, 2000). Other food items include flowers of the traveler's palm (*Ravenala madagascariensis*), and fruits of *Artocarpus integrifolia*, *Ficus* spp. and *Dyopsis* spp., and leaves of *Pennisetum clandestinum* (Meier and Rumpler 1987). Observations of animals in the wild and captivity suggest that *P. simus* is cathemeral (Santini-Palka 1994; Tan 1999, 2000). They live in polygynous groups of seven to 11 animals occupying home ranges of 60 ha or more (Sterling and Ramarason 1996; Tan 1999, 2000). The greater bamboo lemur is threatened by slash-and-burn agriculture, illegal logging, the cutting of bamboo and hunting with slingshots (Meier 1987; Meier and Rumpler 1987). It has vanished from most of its former range and only a few relatively small populations have been documented thus far in the southeast. Hunting and habitat destruction are the presumed causes. It occurs in the national parks of Ranomafana and Andringitra (although limited by suitable micro-habitat within these protected areas), and perhaps a thousand or more individuals inhabit the Ranomafana region, but not all within the national park. Opportunities exist to extend protection to lemur populations in neighboring forests, as well as to develop a fairly long corridor of protected forests between Ranomafana and Andringitra, within which it is presumed other greater bamboo lemur populations will be found.

William R. Konstant, Jörg U. Ganzhorn & Steig Johnson

White-collared Lemur

Eulemur albocollaris (Rumpler, 1975)

Madagascar

(2004)

Genetic analyses support full species status for *Eulemur albocollaris*, as do field studies in apparent hybrid zones with *Eulemur fulvus rufus* (Sterling and Ramarason 1996; Johnson and Wyner 2000; Wyner *et al.* 2002), even though it is very similar in appearance to *E. collaris* (Djletati *et al.* 1997; Wyner *et al.* 1999). The white-collared lemur has the most restricted range of any species of the genus, occurring only in southeastern Madagascar in a thin strip of forest that runs from just north of the Manampatrana River south to the Mananara River (Petter and Petter-Rousseaux 1979; Tattersall 1982; Irwin *et al.* 2005). A hybrid zone with *E. fulvus rufus* appears to lie within the headwaters region of the Manampatrana River in Andringitra National Park. An isolated population occurs in the Manombo Special Reserve near Farafangana. Recent analyses combining ground surveys and Landsat imagery indicate that the total habitat remaining within this species' range is approximately 700 km², with an estimated remaining population of 7,265 ± 2,268 individuals (Irwin *et al.* 2005). Information regarding the natural history of this lemur comes largely from recent studies conducted in the forests of Vevembe. According to Johnson (2002), it is largely frugivorous, its diet supplemented with flowers, leaves, and fungi. Flowers are an

Table 3. The world's 25 most endangered primates: 2000, 2002, and 2004.

2000	2002	2004
Madagascar		
<i>Haplemur aureus</i>		
<i>Haplemur griseus alaotrensis</i>		
	<i>Haplemur simus</i>	<i>Prolemur simus</i>
		<i>Eulemur albocollaris</i>
<i>Propithecus perrieri</i>	<i>Propithecus perrieri</i>	<i>Propithecus perrieri</i>
<i>Propithecus candidus</i>	<i>Propithecus candidus</i>	<i>Propithecus candidus</i>
<i>Propithecus tattersalli</i>		
Africa		
		Mt. Rungwe galago (undescribed)
	<i>Cercopithecus diana rolaway</i>	
<i>Cercopithecus sclateri</i>		
<i>Mandrillus leucophaeus</i>		
	<i>Cercocebus galeritus galeritus</i>	
<i>Cercocebus galeritus sanjei</i>	<i>Cercocebus galeritus sanjei</i>	<i>Cercocebus sanjei</i>
<i>Cercocebus atys lunulatus</i>	<i>Cercocebus atys lunulatus</i>	<i>Cercocebus atys lunulatus</i>
<i>Procolobus badius waldroni</i>	<i>Procolobus badius waldronae</i>	
		<i>Procolobus pennantii pennantii</i>
	<i>Procolobus rufomitatus</i>	<i>Procolobus rufomitatus</i>
<i>Gorilla gorilla beringei</i>	<i>Gorilla beringei beringei</i>	<i>Gorilla beringei</i>
<i>Gorilla gorilla diehli</i>	<i>Gorilla gorilla diehli</i>	<i>Gorilla gorilla diehli</i>
Asia		
		<i>Loris tardigradus nycticeboides</i>
	<i>Simias concolor</i>	<i>Simias concolor</i>
	<i>Presbytis natunae</i>	
<i>Trachypithecus delacouri</i>	<i>Trachypithecus delacouri</i>	<i>Trachypithecus delacouri</i>
<i>Trachypithecus poliocephalus</i>	<i>Trachypithecus poliocephalus</i>	<i>Trachypithecus poliocephalus poliocephalus</i>
	<i>Trachypithecus leucocephalus</i>	
		<i>Presbytis hosei canicrus</i>
<i>Pygathrix nemaeus cinerea</i>	<i>Pygathrix nemaeus cinerea</i>	<i>Pygathrix cinerea</i>
<i>Rhinopithecus avunculus</i>	<i>Rhinopithecus avunculus</i>	<i>Rhinopithecus avunculus</i>
	<i>Rhinopithecus bieti</i>	
	<i>Rhinopithecus brelichi</i>	
		<i>Semnopithecus vetulus nestor</i>
<i>Hylobates moloch</i>		
<i>Hylobates concolor hainanus</i>	<i>Nomascus nasutus</i>	<i>Nomascus sp. cf. nasutus hainanus</i>
<i>Pongo abelii</i>	<i>Pongo abelii</i>	<i>Pongo abelii</i>
Neotropical region		
<i>Leontopithecus rosalia</i>		
<i>Leontopithecus chrysopygus</i>		
<i>Leontopithecus caissara</i>	<i>Leontopithecus caissara</i>	<i>Leontopithecus caissara</i>
<i>Cebus xanthosternus</i>	<i>Cebus xanthosternus</i>	<i>Cebus xanthosternus</i>
		<i>Ateles hybridus brunneus</i>
<i>Brachyteles hypoxanthus</i>	<i>Brachyteles hypoxanthus</i>	<i>Brachyteles hypoxanthus</i>
<i>Lagothrix flavicauda</i>		

especially important food late in the dry season. The species is cathemeral (active both day and night throughout the year). Social groups tend to be multi-male/multi-female, relatively large, and regularly exhibit fission-fusion. Selective logging, hunting, and the continued conversion of its rain forest habitat to agricultural land are the greatest threats to the survival of the white-collared lemur. It is found in only two protected areas, the Andringitra National Park and Manombo Special Reserve, but the Andringitra population hybridizes with *E. fulvus rufus* (CBSG 2002). Recent surveys have identified populations in unprotected forests (Vevembe, for example) that could be added to existing parks and reserves (Johnson and Overdorff 1999).

William R. Konstant & Steig Johnson

Silky Sifaka

Propithecus candidus Grandidier, 1871
Madagascar
(2000, 2002, 2004)

Propithecus candidus is a large white sifaka from north-eastern Madagascar. Its extremely restricted range includes the humid forest belt extending from Maroantsetra to the Andapa Basin and the Marojejy Massif, although the precise limits are unknown (Tattersall 1982). It is believed to have occurred as far north as Sambava, but its range appears never to have included the Masoala Peninsula. What we know about the ecology and behavior of the silky sifaka has come from short-term research conducted in the montane forests of Marojejy National Park (Duckworth *et al.* 1995; Kelley and Mayor

2002; Patel 2002; Patel *et al.* 2003). Population surveys have been carried out in Marojejy National Park by Sterling and McFadden (2000), and in Anjanaharibe-Sud Special Reserve by Schmid and Smolker (1998). The species has a patchy distribution and is absent from large parts of both reserves as well as areas to the south. Groups are most commonly encountered at altitudes above 1,000 m. Group sizes range from three to seven animals. The diet is highly folivorous, including mature and young leaves, but they also eat fruit, seeds, bark, soil, and roots. Marojejy and the Anjanaharibe-Sud Special Reserve are the only officially protected areas where the silky sifaka occurs, and their forests are not immune from disturbance and the hunting that accompanies encroaching human settlements (Garbutt 1999). The remaining population could be as low as several hundred, and is unlikely to be more than 5,000. A small number of unexplored forest reserves and classified forests in northeastern Madagascar are within the presumed range of this species and should be surveyed (Mittermeier *et al.* 1994). The silky sifaka has been spotted in the proposed Makira conservation site but population density appears extremely low and distribution very patchy.

William R. Konstant, Frank Hawkins & David Meyers

Perrier's Sifaka

Propithecus perrieri Lavauden, 1931

Madagascar

(2000, 2002, 2004)

The striking black Perrier's sifaka inhabits a small area of dry forests in extreme northern Madagascar, including the Analamera Special Reserve and Andrafiarana hills, and the northeastern limits of the Ankarana Special Reserve (Petter *et al.* 1977; Tattersall 1982; Hawkins *et al.* 1990). Very little is known of its habits in the wild. It occurs in small groups of two to six individuals that range over an area of up to 30 ha, and it eats a variety of leaves, unripe fruit, stems, and flowers (Meyers and Ratsirarson 1988, 1989; Mayor and Lehman 1999). Like much of Madagascar's wildlife, Perrier's sifaka is threatened by hunting, clearing land for agriculture, timber-cutting for charcoal and construction, fire to clear pasture for livestock and, most recently, small-scale mining for gemstones. It is the rarest, least-studied, and most endangered of all Madagascar's sifakas. The only two protected areas in which Perrier's sifaka is found are the Analamera and Ankarana special reserves, the former apparently harboring the largest remaining populations (Ganzhorn *et al.* 1996/97). It has recently been seen in the area between Analamera and Ankarana special reserves, and these forests should be annexed to the existing protected areas to increase the chances of this species' survival (D. Meyers pers. obs.). The only other site where the species occurs (in small numbers) is in Andavakoera Classified Forest (ZICOMA 1999), and conservation efforts are urgently required there. Total numbers are unknown, but could be as low as a thousand or as high as 8,000. Comprehensive density estimates are urgently needed.

William R. Konstant, Frank Hawkins & David Meyers

Africa

Mt. Rungwe Galago

Galagoides sp. nov.

Tanzania

(2004)

Recent surveys for galagos on Mt. Rungwe in the southwest highlands of Tanzania confirm the presence of an as-yet-unnamed galago species. This may be the same form that Groves (2001) referred to as the Ukinga galago from the Ukinga Mountains, part of the Livingstone Mountains, off the northeast shore of Lake Malawi, and adjacent to and east of Mt. Rungwe. The Livingstone Forest Reserve, now included within the proposed Kitulo National Park, is linked with Mt. Rungwe by a 2-km-long corridor of degraded montane forest near Bujingijila. Judging by its size and vocal repertoire, the Rungwe galago belongs to the genus *Galagoides*. Tape recordings of vocalizations, photographs, and preliminary comparisons with museum specimens reveal characters that distinguish the Mt. Rungwe galago from other known dwarf galagos (*Galagoides*). To date we have recorded it on Mt. Rungwe and in low densities in Mporoto Ridge Forest Reserve and Livingstone Forest Reserve. The species-specific advertisement call of the Mt. Rungwe galago, which is of the "incremental" type, and at least two alarm calls are distinct from those of other galagos that have an incremental advertisement call. These include *Galagoides orinus*, a highland forest galago from the nearby Eastern Arc Mountains. Other distinguishing features are the dark brownish-green pelage, very bushy tail, and face markings.

Preliminary ecological evidence indicates that the Mt. Rungwe galago prefers areas of forest with large numbers of wild bananas, although it is also found in the *Hagenia*-dominant montane forest in the north of Mt. Rungwe where there is little, if any, wild banana. Animals have been seen entering the large, cone-shaped banana flowers and eating the nectar. Large amounts of pollen stick to the fur of the feeding animals. This might indicate a significant role as a pollinator.

The forests of Mt. Rungwe and the surrounding highlands are affected by widespread logging, charcoal manufacture, and hunting as a result of a long-term lack of effective management. Pressure on the Rungwe area forests is high due to agricultural expansion because the high rainfall, and the fertile volcanic soils make this one of the most productive areas in Tanzania. The Mt. Rungwe galago is known to only a few local hunters and is rarely hunted. Systematic surveys to estimate population densities have yet to be carried out. The conservation status of this species no doubt depends on the conservation of remaining habitat. The total area of the remaining forest patches on Mt. Rungwe, the Mporoto Ridge Forest Reserve, and the Livingstone Mountains is believed to be less than 300 km². Further surveys are underway in the region to gather more data.

Andrew Perkin, Simon Bearder,

Tim R. B. Davenport & Thomas M. Butynski

Pennant's Red Colobus

Procolobus pennantii pennantii (Waterhouse, 1838)
Bioko Island, Equatorial Guinea
(2004)

The endangered Pennant's red colobus monkey *Procolobus pennantii* (Waterhouse, 1838) is presently regarded by the IUCN/SSC Primate Specialist Group as comprised of four subspecies, but their relationships within *P. pennantii*, and with other taxa of red colobus, need clarification (Groves 2001; Grubb *et al.* 2003). Future research may reveal that these four "subspecies" are better referred to as full species. *Procolobus pennantii* takes its name from the form restricted to Bioko Island, Equatorial Guinea, *P. pennantii pennantii*. This endangered subspecies probably has the most restricted range of all of Bioko's unique primates, and is now found only in the southwest of the island where it is threatened by commercial bushmeat hunting (Butynski and Koster 1994). The other three subspecies are the critically endangered Bouvier's red colobus *P. p. bouvieri* (Rochebrune, 1887) of east-central Republic of Congo; the endangered Niger Delta red colobus *P. p. epieni* Grubb and Powell, 1999, of Nigeria; and the endangered Preuss's red colobus *P. p. preussi* (Matschie 1900) of southeastern Nigeria and western Cameroon (Oates 1994, 2000; Struhsaker 2005). *Procolobus p. pennantii* and *P. p. preussi* are particularly distinct taxa in terms of their vocalizations, while the vocal repertoire of *P. p. epieni* most closely resembles those of the red colobus in Central and eastern Africa (T. T. Struhsaker unpublished data).

To the northwest of the *P. pennantii* complex of subspecies occurs the critically endangered Miss Waldron's red colobus, *P. badius waldroni* (Hayman, 1936) of southwestern Ghana and southeastern Côte d'Ivoire (Struhsaker 1999; Oates *et al.* 2000; Groves 2001; Grubb *et al.* 2003). All five of these subspecies are today close to extinction, with very restricted ranges and small numbers as a result of intensive hunting and extensive habitat degradation and loss (Wolfheim 1983; Oates 1994, 1996; Oates *et al.* 2000; Struhsaker 2005). Neither *P. p. bouvieri* nor *P. b. waldroni* have been observed alive by scientists for at least 25 years, raising concerns that they may be extinct. However, a single skin of *P. b. waldroni* in the possession of a hunter in southeastern Côte d'Ivoire in early 2002, and recent reports of red colobus in nearby Isles Ehotiles National Park (Kone 2004), give hope that at least one population of this subspecies remains (McGraw and Oates 2002; McGraw 2005).

The red colobus monkeys of West Africa and west Central Africa are probably more threatened than any other taxonomic group of primates in Africa. This is partly due to the fact that red colobus are especially sensitive to habitat degradation and vulnerable to hunters (Oates 1996; Oates *et al.* 2000; Waltert *et al.* 2002; Struhsaker 2005). None of the few protected areas in which any of these five subspecies of red colobus occur is well protected (e.g., McGraw 1998). It is a priority for the conservation of primate biodiversity in Africa to (1) immediately undertake field surveys to determine the current distributions and abundance of these five subspecies

of red colobus while, at the same time, (2) rigorously protect all of those populations that are known to still exist.

Providing adequate protection to viable populations of these five subspecies of red colobus would greatly assist the conservation of numerous sympatric threatened taxa. Among primates, these include: the mainland Preuss's monkey *Cercoptes preussi preussi*; Bioko Preuss's monkey *C. p. insularis*; Bioko red-eared monkey *C. erythrotis erythrotis*; golden-bellied crowned monkey *C. pogonias pogonias*; Rolo-way monkey *C. diana roloway*; Bioko black colobus *Colobus satanas satanas*; white-naped mangabey *Cercocebus atys lunulatus*; mainland drill *Mandrillus leucophaeus leucophaeus*; Bioko drill *M. l. poensis*; western chimpanzee *Pan troglodytes verus*; and Nigeria chimpanzee *P. t. vellerosus*.

If a concerted effort is to be made to save all of the diversity present within red colobus, then the major international conservation NGOs will need to focus their efforts on this taxonomic group and work closely with national conservation NGOs and national protected area authorities. For *P. p. bouvieri* and *P. b. waldroni*, however, it may already be too late.

Thomas M. Butynski, John F. Oates,
W. Scott McGraw & Thomas T. Struhsaker

Tana River Red Colobus

*Procolobus rufomitratu*s (Peters, 1879)
Kenya
(2002, 2004)

The gallery forests of Kenya's lower Tana River are home to two Critically Endangered primates, the Tana River red colobus and the Tana River mangabey, *Cercocebus galeritus* Peters, 1879. Along with six other species of primates, they inhabit small patches of forest along a 60-km stretch of river, from Nkanjonja to Mitapani. While the other species of monkeys have geographically larger distributions, the red colobus and mangabey are found nowhere else. These two species are offered some protection in approximately 13 km² of forest within the 169 km² Tana River Primate National Reserve. Forest loss to agriculture has increased greatly over the last 15 years or so, resulting in a loss of roughly 50% of the original vegetation. Local communities continue to degrade the remaining forest for products used in the construction of homes and canoes, the collection of wild honey, and the topping of palms to make palm wine. One result of this widespread loss and degradation of habitat is that the populations of the red colobus and the mangabey are believed to have each declined to fewer than 1,000 individuals. A 5-year World Bank/GEF project begun in 1996 was originally designed to relocate several hundred families that presently live within the reserve, but financial support was withdrawn well before completion of the project due to poor project management. This left responsibility for the protection of the Tana River's remaining forests and primates entirely to the Kenya Wildlife Service. Further losses have resulted from the failure of the Tana Delta Irrigation Project's (TDIP) rice-growing scheme (under the administration of the Tana and Athi Rivers Development Authority – TARDA) to protect either the habitat or

the primates in the 14 Tana River forest patches under its management. This rice-growing scheme was financed by the Japan International Cooperation Agency (JICA). Additional new threats are now on the horizon with a proposal to establish a large sugar cane plantation in the Tana Delta. This new plantation will not only result in a large influx of people to the area, it may directly destroy natural forest. On the positive side, (1) more than 250 families cultivating within the Tana River Primate National Reserve were, in 2005, voluntarily relocated to Kipini (about 90 km away), (2) there appears to be an increasing concern for forest and biodiversity conservation among the people of the Lower Tana River, and (3) a major focus of action among community-based organizations over the next few decades is likely to be tree planting. Given the current level of threat, however, it will likely take many years before there is sufficient change on the ground to reverse the long-standing decline of the Tana River red colobus and the Tana River mangabey populations.

Thomas M. Butynski

White-naped Mangabey

Cercocebus atys lunulatus (Temminck, 1853)

Ghana and Côte d'Ivoire

(2000, 2002, 2004)

The Upper Guinean forests of West Africa have been reduced to less than 10% of their original size, drastically limiting and fragmenting the habitat available for West Africa's forest primates, including the white-naped mangabey, *Cercocebus atys lunulatus*. Terrestrial mangabeys (genus *Cercocebus*) are close relatives of mandrills; both live in multi-male societies and forage predominantly for hard-object foods on the forest floor (Fleagle and McGraw 2002). This species is distinguished by its gray-brown coat, white inner limbs and underside, long black stripe on its back, and the white patch on the back of the head. Found east of Côte d'Ivoire's Sassandra River and west of Ghana's Volta River, the white-naped mangabey spends the majority of its time on the forest floor but uses the canopy as well. Their ability to use the ground allows them to live in a broad range of habitats including swamp and agricultural areas. Nevertheless, the most recent surveys have confirmed their presence in only a few of the remaining forest patches in the Guinean forest zone; these include Ankasa Resource Reserve, Dadieso Forest Reserve, and Yoyo Forest Reserve in Ghana (Magnuson 2002); and Marahoué National Park, Dassioke Forest Reserve, Niegre Forest Reserve, and forest east of the Ehi Lagoon in Côte d'Ivoire (McGraw 1998; McGraw and Oates 2002; Kone 2004). While the forests have become smaller and more fragmented, hunting pressure has increased. Oates *et al.* (1996/1997) and McGraw (1998) suggest that one of the greatest barriers to their conservation is lack of local support. Recent civil conflict in Côte d'Ivoire has also made this a challenging area in which to work.

White-naped mangabeys have a geographic distribution similar to that of the Critically Endangered Roloway guenon, *Cercopithecus diana roloway* (Schreber, 1774), and conser-

vation efforts for both should be coordinated. The Roloway monkey occupies forested areas between Côte d'Ivoire's Sassandra River and Ghana's Pra River. Surveys in the tropical forests of Ghana and Côte d'Ivoire have documented its steady decline. In 2001 they were still found in Ghana's Ankasa Resource Reserve, Dadieso Forest Reserve, Krokosua Hills Forest Reserve, and Yoyo Forest Reserve. However, their presence could not be confirmed in a number of forests where they were found in 1995/6 (Oates *et al.* 1996/1997; Abedi-Lartey and Amponsah 1999), including Bia National Park—where they were abundant 25 years ago (Asibey 1978). In Côte d'Ivoire they are now known to occur in only one of the protected areas: the Yaya Forest Reserve on the western bank of the Comoe River (McGraw 1998). With the mangabeys, Roloways have also been reported in the swamp forest east of the Ehi Lagoon, but they are quite scarce there (McGraw and Oates 2002). The establishment of systematic hunting patrols, and elevating the status of forests containing mangabeys and Roloway monkeys to that of national park, are measures that could help secure their future as well as that of a number of other threatened primates and wildlife in the region (McGraw 1998). The initiation of conservation trust funds for these last remaining forests would also be an important step to ensure the survival of their dwindling populations of primates (Oates *et al.* 1996/1997). Since 2001 a group of European zoos involved in the breeding programs (EEPs) of the white-naped mangabey and the Roloway monkey decided to collaborate under the name of WAPCA (West African Primate Conservation Action), together with CEPA (Conservation des Espèces et des Populations Animales, France) and ZGAP (Zoologische Gesellschaft für arten- und Populationschutz, Germany) for the conservation of these primates in Côte d'Ivoire and Ghana. First steps were taken in Ghana in 2001, and the first survey was carried out in Côte d'Ivoire in 2004.

W. Scott McGraw, Lindsay Magnuson,
Rebecca Kormos & William R. Konstant

Sanje River Mangabey

Cercocebus sanjei Mittermeier, 1986

Tanzania

(2000, 2002, 2004)

The Sanje mangabey, discovered in 1979 (Homewood and Rodgers 1981; Groves 1996), is endemic to the Udzungwa Mountains of Tanzania, the southern-most and largest forest block of the Eastern Arc Mountains. The fragmented relict forests of the Udzungwas (*c.* 1,017 km² of forest) hold 11 species of primates. In addition to the Endangered Sanje mangabey, there are two other threatened endemic or near-endemic species of monkey, making these mountains arguably the most important single site in Africa for the conservation of primate diversity. There are likely fewer than 1,300 Sanje mangabeys, in two populations that are located about 85 km apart (Ehardt *et al.* 1999, 2005; Ehardt 2001). The largest population (~60%) occurs within the recently established Udzungwa Mountains National Park (UMNP), while the

second is confined to Udzungwa Scarp Forest Reserve. This forest reserve, separated from UMNP by fire-maintained grassland, is significantly impacted by hunting, and by habitat degradation and loss. Until recently, a third population was believed to exist in Ndundulu Forest Reserve, but surveys in 2004 confirmed that the earlier reports by ornithologists (Dinesen *et al.* 2001) were based on misidentification of the primates present there. This has led to scaling down of the already low combined population estimate and to increased efforts promoting the expansion of the boundaries of UMNP to include the inadequately protected forest reserves to the west and south of the UMNP. Additional activities directed toward conservation of the Sanje mangabey include ecological and demographic research (Ehardt *et al.* 2005) to assess its habitat requirements and conservation status. These data indicate that the Sanje mangabey feeds on seeds, nuts, and invertebrates on the forest floor, in addition to fruit, a diet characteristic of other species of *Cercocebus*, as well as of the closely related *Man-drillus* spp. The characteristic of spending ~50% of its time on the forest floor, however, subjects the mangabey to risk from snares set for hunting of other animals such as duikers, a concern justified in finding an adult Sanje mangabey trapped by a snare in 2004. Continued research documenting the conservation ecology and habitat of the Sanje mangabey should contribute to improved management of the two remaining populations, and will support efforts to expand the park and reduce forest fragmentation through the establishment of effective corridors.

Carolyn L. Ehardt & Thomas M. Butynski

The Eastern Gorillas

Gorilla beringei Matschie, 1903

Democratic Republic of Congo, Rwanda, Uganda
(2000, 2002, 2004)

The eastern gorilla is the world's largest living primate, one of the best studied, and unfortunately, one of the most threatened. Approximately 385 eastern gorillas, well-known as the mountain gorilla, survive in the Virunga Volcanoes (375 km², 700–4,000 m a.s.l.) where they are protected in three national parks—Virunga National Park (Democratic Republic of Congo—DRC), Parc National des Volcans (Rwanda), and Mgahinga Gorilla National Park (Uganda). Another 320 or so gorillas live in the Bwindi Impenetrable National Park, Uganda (320 km², 1,500–2,300 m a.s.l.). The Virunga Volcanoes and Bwindi Impenetrable Forest are surrounded by dense human settlements and agricultural lands on some of the most fertile volcanic soils in the world. Nonetheless, these two sites are among the best-protected in Africa. As such, both populations have increased in recent years. The vast majority of eastern gorillas, however, live over an area of roughly 15,000 km² in eastern DRC. These belong to a distinct subspecies; Grauer's gorilla, *G. beringei graueri* Matschie, 1914. The number of eastern gorillas in DRC was estimated at 8,660–25,500 individuals (in at least 11 populations) in 1995, with about two-thirds living in the Kahuzi-Biega and Maiko national parks. There has been considerable

insecurity and civil strife in eastern DRC in recent years, with the result that gorillas in this region have likely declined in number — perhaps dramatically. The entire region over which eastern gorillas live has experienced devastating human conflicts in recent decades, with an estimated human mortality of almost 5 million people. Despite these problems, a number of NGOs (including Dian Fossey Gorilla Fund International [DFGFI], the International Gorilla Conservation Program [IGCP], and the Wildlife Conservation Society [WCS], and others) in concert with the national parks authorities of the three habitat countries and local communities have worked to maintain long-term support for the conservation of the eastern gorilla and successfully establish this species as the premier tropical forest tourism attraction in Africa.

Annette Lanjouw, Thomas M. Butynski &
William R. Konstant

Cross River Gorilla

Gorilla gorilla diehli Matschie, 1904

Nigeria and Cameroon

(2000, 2002, 2004)

Until very recently, the Cross River gorilla (*Gorilla gorilla diehli*) had been the most neglected of the four subspecies of gorilla presently recognized. 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. The Cross River gorilla was subsequently reclassified as a local population of western lowland gorilla (*Gorilla gorilla gorilla*), until its distinctive features were recognized again by Sarmiento and Oates (2000). Present populations are restricted to densely forested hills and mountains across the Nigeria-Cameroon border, of which some are surrounded by sizeable human communities. The most northern and western gorilla, the Cross River gorilla is separated by about 300 km from western lowland gorillas (and around 200 km from the recently discovered Ebo gorilla population). Current surveys suggest that there are between 250–300 Cross River gorillas remaining, with the population fragmented across 10 or more hill areas, most of them not legally protected. The only exceptions are the subpopulations in Afi Mountain Wildlife Sanctuary and in the Boshi Extension Section of Cross River National Park, Okwangwo Division in Nigeria. The conservation status of the habitat in other areas, especially the Mbe Mountains (Nigeria) and the Takamanda and Mone River Forest Reserves (Cameroon), needs to be improved.

A number of important conservation efforts on behalf of the Cross River gorilla have been launched over the past few years. Notable is the recent commitment from host governments to protect Cross River gorilla habitat. In collaboration with local governments, the Wildlife Conservation Society supports Cross River gorilla conservation and research programs in both Cameroon and Nigeria. In Cameroon, field studies confirmed the gorilla's presence in the Mone River Forest Reserve and the Mbulu Forest, areas contiguous with

the Takamanda Forest Reserve. A number of other recent surveys are investigating their presence in areas east of Mone and Mbulu. As part of an overall land-use plan, the government of Cameroon has proposed upgrading the protected status of Takamanda to a national park, and creating a Gorilla Sanctuary on Kagwene Mountain in eastern Mbulu. Objectives of the Nigerian program include determining the extent of the gorilla's distribution within national park boundaries and assessing potential population links with the Takamanda gorillas, examining options for establishing formal conservation management of the community-controlled Mbe Mountains, and working with other organizations to improve the protection of the Afi Mountain Wildlife Sanctuary. Further conservation priorities for Cross River gorillas include developing land-use plans for the Takamanda-Mone-Mbulu area in Cameroon, and the Afi-Mbe-Okwangwo area in Nigeria. More general actions needed include a review and evaluation of the impact of a road development program in Cameroon, and the maintenance and expansion of basic research into the ecology, distribution, and population biology of these gorillas, as well as the strengthening and expansion of conservation education and awareness programs at all levels. It is also necessary to build the capacity of relevant institutions in Nigeria and Cameroon, and to ensure that local community needs are incorporated into the development of management strategies, including the study of options for alternative livelihoods.

Jacqui Sunderland-Groves & John F. Oates

Neotropical Region

Black-faced Lion Tamarin

Leontopithecus caissara Lorini and Persson, 1990

Brazil

(2000, 2002, 2004)

For more than a century and a half, biologists heard rumors of an unknown primate living in seaside forests on the far southeastern coast of Brazil. Despite expeditions throughout the 20th century, nothing conclusive was found—until in 1990, two Brazilian researchers, Maria Lorini and Vanessa Persson, surveyed the island of Superagüi in the state of Paraná and discovered the black-faced lion tamarin, the fourth and least-known species of the genus *Leontopithecus*. Named *Leontopithecus caissara* after the *caiçaras*, the local people of the island, the black-faced lion tamarin survives only in low-lying coastal forests, including the specialized dune forests known as *restingas* and the swamp forests called *caxetal* on the island and mainland. Probably never common or widespread, today there are fewer than 400 black-faced lion tamarins, surviving in less than 300 km² of remnant forests. Recent surveys by IPÊ – Instituto de Pesquisas Ecológicas indicate a population of about 180 individuals on the island of Superagüi (11,000 ha) in the Superagüi National Park (33,928 ha), the most representative population. The researchers also found that its geographic range on the mainland is much more restricted than was previously thought. Like other lion tamarins, *Leontopithecus caissara* feeds

mainly on small fruits and invertebrates, including insects, spiders, and snails. They also drink the nectar of certain flowers, and will eat the leaf bases of young bromeliads, as well as certain seasonally available mushrooms. In addition to sometimes sheltering in clumps of bromeliads, the lion tamarins depend on these sturdy plants to provide habitat for their invertebrate prey, which they feel out and catch with nimble, grasping fingers. Bromeliads are thus a vital part of lion tamarin habitat, and their dense presence in untouched primary forest—such as the coastal forests and *restingas* of Superagüi—is one reason why this rare habitat is crucial to the survival of *L. caissara* and the other lion tamarins.

John M. Aguiar, Alexandre T. Amaral,

Cláudio B. Valladares-Padua & Fabiana Prado

Buff-headed Capuchin or Yellow-breasted Capuchin

Cebus xanthosternos Wied-Neuwied, 1826

Brazil

(2000, 2002, 2004)

Unlike the majority of the highly adaptable capuchin monkeys, the buff-headed capuchin, endemic to Brazil's Atlantic Forest region, is seriously threatened with extinction. There are no reliable estimates of remaining populations, but the forests of its natural range in northeast Brazil (Bahia and extreme northern Minas Gerais) have been largely devastated, and it is hunted as well. Adults are relatively large (about 6 pounds) and provide sufficient meat to warrant the cost of a shotgun shell, while the young are popular as pets. It has been extirpated over a large part of its former range. Surveys begun in 2002 and, supported by Conservation International, the Instituto de Estudos Sócioambientais do Sul da Bahia—IESB (Ilhéus, Brasil), the European zoos involved in the breeding program (*C. xanthosternos* EEP), Conservation des Espèces et des Populations Animales—CEPA (Schlierbach, France), the Zoological Society for Conservation of Species and Populations (Zoologische Gesellschaft für art- und Populationsschutz, Germany—ZGAP) (München, Germany), and the Disney Conservation Fund, are providing a clearer understanding of its status. Although more widespread than previously believed, the remaining populations are extremely small and isolated and still subject to hunting, and there is no forest large enough to support a viable population. The largest single block of forest in their known range, the Una Biological Reserve in Bahia, is estimated to protect a population of 185 individuals. In 1992, the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA) set up an International Committee for the Conservation and Management of the species, which is promoting conservation action *in situ*, besides a captive breeding program based on the numerous individuals that are kept as pets in Brazil. At the beginning of 2004, there were 85 animals being maintained in 13 zoos and breeding facilities in Europe and Brazil.

Maria Cecilia M. Kierulff, Jean-Marc Lernoould,

William R. Konstant, Gustavo Canale, Gabriel Rodrigues dos Santos, Carlos Eduardo Guidorizzi & Camila Cassano

Brown Spider Monkey*Ateles hybridus brunneus* Gray, 1872

Colombia

(2004)

There are two recognized subspecies of the variegated or brown spider monkey, *Ateles hybridus* (I. Geoffroy, 1829). *A. hybridus brunneus* is restricted to Colombia, occurring between the lower Ríos Cauca and Magdalena in the Departments of Bolívar, Antioquia, and Caldas, and the nominate form, which occurs east from the right bank of the Río Magdalena extending into western Venezuela. Both are Critically Endangered due to loss of habitat (conversion to agricultural land, fragmentation) and hunting. The large size, slow reproductive rate (single offspring at 3- to 4-year intervals) and generally low population densities of spider monkeys make them especially vulnerable to hunting. *Ateles h. brunneus* has a small geographic range in a region where forest loss, degradation, and fragmentation is widespread. A refuge remains, however, in the Serranía San Lucas in southern Bolívar, identified as an important site for the establishment of a national park. There is also a population in northern Antioquia that has yet to be investigated. A park in the Serranía San Lucas would protect a number of species endemic to the Nechi center (or refugium), including two other threatened endemic primates, the white-footed tamarin, *Saguinus leucopus*, and the woolly monkey, *Lagothrix lagothricha lugens*. However, the region has been a center of civil unrest for years, and census work there would be hazardous, because guerilla groups have placed antipersonnel mines in some parts of the mountain range. Although civil unrest is limiting opportunities for surveys and conservation action, it is probably the reason why there is still forest remaining, considering the rapacious destruction of the forests elsewhere in the brown spider monkey's range.

Thomas R. Defler, Alba Lucia Morales-Jiménez, &

José Vicente Rodríguez-Mahecha

Northern Muriqui*Brachyteles hypoxanthus* (Kuhl, 1820)

Brazil

(2000, 2002, 2004)

The two muriqui species (*Brachyteles hypoxanthus* and the southern muriqui, *B. arachnoides*) are the largest primates in South America and both are endemic to Brazil's Atlantic Forest region. They live in multi-male groups that can reach more than 50 animals, and were once widespread through the forests of southeast Brazil, from the northern part of the state of Paraná, through São Paulo, Rio de Janeiro, and Espírito Santo to coastal Bahia. Both have suffered from hunting and the destruction of their forests since the 16th century. The northern muriqui, occurring in Minas Gerais, Espírito Santo, and Bahia, is the more threatened of the two, its numbers being lower and its populations smaller and more fragmented than those of the southern muriqui which, although also endangered, has benefited from refuge in the relatively intact and inaccessible forests of the Serra do Mar in Rio de Janeiro and São Paulo. The largest known population of the northern

muriqui today is in the forests of the Caratinga Biological Station, an 890-ha private reserve in the state of Minas Gerais (in 2004 numbering approximately 225 individuals). Karen Strier (University of Wisconsin–Madison) has led a research program there since 1983, which has provided invaluable insights into their demography, ecology, and behavior. A second major field site is now being set up in Santa Maria de Jetibá, Espírito Santo, by Sérgio Mendes and his colleagues from the state's federal university. Recent surveys in the Rio Doce State Park (Minas Gerais) and the Caparaó National Park (on the border of Minas Gerais and Espírito Santo) are indicating the occurrence of populations which may be as large as, or even larger than, those at Caratinga. Besides the Caparaó National Park and the Augusto Ruschi Biological Reserve, surveys over the last few years have located northern muriquis in 12 localities in the municipality of Santa Maria de Jetibá in Espírito Santo. The Serra do Brigadeiro State Park (Minas Gerais) also protects a significant population, estimated at more than 100 animals. Groups have also been found in two forests in northeastern Minas Gerais by teams from the Minas Gerais State Forestry Institute. One was rapidly turned into a large federal protected area, the Mata Escura Biological Reserve, and the other, extending across the border into Bahia (Alto Cariri), is currently under study for the creation of a protected area as well. These are the northernmost localities where the species is known to survive today. In 2001, a survey by a team from the Federal University of Minas Gerais also confirmed the survival of a small population of at least 13 in the Fazenda Córrego de Areia, municipality of Peçanha, eastern Minas Gerais, and they also occur in the Ibitipoca State Park in the south. The total known population today is estimated at between 700 and 1,000 animals.

Karen B. Strier, Sérgio L. Mendes,

Jean Philippe Boubli & Luiz G. Dias

Asia**Horton Plains Slender Loris,****Ceylon Mountain Slender Loris***Loris tardigradus nycticeboides* (Hill, 1942)

Sri Lanka

(2004)

Four taxa of slender loris, spindly nocturnal primates characterized by short soft fur, no tails, long limbs, and woe-ful and enormous eyes, are endemic to the critically endangered rainforests of Sri Lanka. Although all taxa have been classified as Endangered, those found in the island's Wet Zone, where only 3% of rainforest remains, are the most imperiled. Restricted to a potential range of no more than 250 km², or, more realistically, 30 km², the Ceylon Mountain (or Horton Plains) slender loris (*Loris tardigradus nycticeboides*) is the most extraordinary of the already specialized slender loris taxa. This cold-adapted slender loris' pelage is so thick, it obscures its ears and thickly clothes the animals' otherwise pencil-thin limbs, adapting it to its life in the montane rainforests, where temperatures may drop to -4°C. In 1980, the

meticulous expert on Sri Lanka's mammals, W. W. Phillips, wrote that the Ceylon Mountain slender loris "would appear to be the rarest of all mammals in Sri Lanka (p. 127)." In fact only four confirmed sightings have been made since 1937, despite several recent systematic surveys in its restricted range by researchers from the Nocturnal Primate Research Group, Oxford Brookes University, and Wildlife Heritage Trust of Sri Lanka. Although the Horton Plains National Park is officially protected, gem mining, collection of fuelwood, agricultural encroachment, the pet trade, forest diebacks in the park, and stochastic effects on the small isolated forest patches to which it clings, continue to threaten this rarest of Sri Lankan primates.

K. Anna I. Nekaris

Pagai Pig-tailed Snub-nosed Monkey or Simakobu

Simias concolor Miller, 1903

Indonesia

(2002, 2004)

The genus *Simias* is known only from Indonesia's Mentawai Islands, a small archipelago situated off the west coast of central Sumatra. Until humans arrived approximately two millennia ago, its only predators were probably large constricting snakes and birds of prey. Today, however, hunting and forest conversion are two substantial threats to the four indigenous Mentawai primates, all of which are endemic to these islands. *Simias concolor* was originally considered monotypic, but is now believed to include two subspecies, *S. c. concolor* from the Pagai islands and Sipora, and *S. c. siberu* Chasen and Kloss, 1927 from the island of Siberut. The common English name of this large monkey is derived from its short pig-like tail and its shortened nose, which very much resembles that of the Tonkin snub-nosed monkey (*Rhinopithecus avunculus*) of Vietnam, another Critically Endangered species. *S. concolor* lives in relatively small social groups with usually one male and one or more females and offspring. *S. concolor* occurs in the few small remaining forest patches on the islands of North and South Pagai and Sipora, and in the large national park on Siberut. It may still occur in a few forest patches on small islets off southern South Pagai Island. However, of the four Mentawai primates, *Simias* is the most sensitive to deforestation, having significantly lower densities in logged forests than in unlogged. Thus, while *Simias* still survives in spite of human encroachment, hunting, and habitat disturbance, the vast majority of its remaining natural habitat lies outside of officially protected areas. These areas are in logging concessions and could very well be lost in the near future.

Lisa Paciulli, Agustin Fuentes & William R. Konstant

Miller's Grizzled Surili

Presbytis hosei canicrus Miller, 1934

Indonesia (E. Central Kalimantan)

(2004)

All four subspecies of the Asian colobine monkey *Presbytis hosei* are endemic to north Borneo. The high forehead and crest linking it with the white-fronted surili (*P. frontata*)

from the southern part of the island, mark the crested grizzled surili, *P. h. sabana* (Thomas, 1893) from eastern Sabah (East Malaysia) as the most divergent subspecies. Its western neighbor, Everett's grizzled surili, *P. h. everetti* (Thomas, 1893), is unique to the genus in being sexually dichromatic. The bandanna-like white tract of hair across the forehead of juveniles and male adults is reduced to a white spot in female adults. In the southeastern subspecies, Miller's grizzled surili (*P. h. canicrus*), all adults and juveniles much resemble adult female *P. h. everetti*, but have no frontal white spot. *P. h. canicrus* is known only from the northeast Indonesian part of Borneo as far south as the Kutai National Park, the only protected part of its recorded range (Brandon-Jones 1997). Only an estimated 5% of the forest in this national park has escaped timber concessions, illegal settling, industrial development, and fire (Meijard and Nijman 2000). This leaves *P. h. canicrus* probably critically endangered or even extinct, although no surveys have been undertaken. The western subspecies, Hose's grizzled surili, *P. h. hosei* (Thomas, 1889), is even more likely to be extinct as most of its distribution coincides with that of the oilfields that straddle the frontier between Sarawak (East Malaysia) and Brunei. *Presbytis h. hosei* resembles *P. h. everetti*, but the female retains her juvenile color at maturity (Brandon-Jones 1997). There is a slim chance that *P. h. hosei* survives in the northern part of the Similajau National Park in central coastal Sarawak (Duckworth 1995, 1998). Populations may also exist in Brunei, which have been much less subject to hunting and deforestation, but they are likely to be intermediate with *P. h. everetti*. The reputed medicinal value of the bezoar stones sometimes formed in the gut makes this species a target even for hunters uninterested in its meat.

Douglas Brandon-Jones

Delacour's Langur

Trachypithecus delacouri (Osgood, 1932)

Vietnam

(2000, 2002, 2004)

Delacour's langur is one of the most highly endangered of Southeast Asia's colobine monkeys. The species is endemic to Vietnam. During the decades following the discovery of the species in 1930 there was only scanty information on its existence and distribution. The first sightings of living Delacour's langurs were reported in 1987. The most important, and for some subpopulations the only, factor for the decline in numbers is poaching, which is not primarily for meat, but for bones, organs, and tissues that are used in the preparation of traditional medicines. Nineteen isolated wild populations of Delacour's langur have been confirmed over 10 years of surveys and monitoring by the Frankfurt Zoological Society. The total population comprises 280 to 320 individuals. The recorded numbers of animals hunted over the 10 years totaled 320, an annual loss of more than 30 individuals, but the real number is undoubtedly higher. Sixty percent of all existing Delacour's langurs occur in isolated populations with less than 20 animals. The loss of these subpopulations, and consequently 60% of the whole population, is

foreseeable without management, strict regulations, and law enforcement. Four areas where Delacour's langurs are protected are Cuc Phuong National Park, Pu Luong Nature Reserve, Hoa Lu Cultural and Historical Site, and the newly established Van Long Nature Reserve, which is believed to harbor the largest remaining population of about 50 to 60 animals. This population is well protected due to patrols and close cooperation between the provincial forest protection authorities and Frankfurt Zoological Society. Monitoring surveys in 2003 and 2004 in Cuc Phuong National Park and in Pu Luong Nature Reserve show declines in numbers. Efforts to save this species are being led by Tilo Nadler, manager of the Vietnam Primate Conservation program of Frankfurt Zoological Society and director of the Endangered Primate Rescue Center at Cuc Phuong National Park, established in the 1990s primarily to safeguard the future of this and other endangered Vietnamese primates.

William R. Konstant & Tilo Nadler

Golden-headed Langur or Cat Ba Langur

Trachypithecus poliocephalus poliocephalus (Trouessart, 1911)

Vietnam

(2000, 2002, 2004)

This rare Asian colobine monkey is known only from Cat Ba, the largest of more than 3,000 islands located in northeastern Vietnam's Halong Bay. The greatest part of the islands' mountain range, like most of the smaller offshore islands, is covered by tropical moist limestone forest. Local livelihoods are built upon subsistence agriculture and more recently on a growing tourism industry, supplemented by hunting of wildlife and the collection of firewood, medicinal plants, honey, and other forest products. Poaching has been the major threat to the golden-headed langur and has resulted in a population decline from an estimated 2,500–2,800 langurs in the 1960s to a mere 53 individuals by 2000 — a 98% decline in 40 years. Langurs were poached mainly for the preparation of traditional medicines. After the implementation of strict protection measures, for the first time in decades the population of the golden-headed langur increased to a minimum of 59 individuals at present. However, population fragmentation and low reproductive output also threaten them. The remaining population is subdivided into seven isolated subpopulations. Some of these are all-female groups. Allwetter Zoo, Münster, and the Zoological Society for the Conservation of Species and Populations (ZGAP), München, have been carrying out a conservation program for the golden-headed langur on Cat Ba since November 2000. The aim is to provide for protection, reduce population fragmentation, and increase public awareness in collaboration with Vietnamese authorities with support from Conservation International, among other NGOs. Protection of the golden-headed langur has been designated a priority project of Fauna and Flora International's newly created Flagship Species Fund. The closely related white-headed langur, *T. poliocephalus leucocephalus* Tan, 1957, is also Critically Endangered due to hunting and habitat destruction

(expansion of sugarcane plantations). It inhabits seven isolated karst regions that cover 60–80 km² (in a total distribution of approximately 400 km²) in Guangxi Province, China. The karst formations are found in three separate and isolated protected areas: the Fusui and Chongzuo rare and precious animal reserves, and the Longgang National Nature Reserve. Estimated total population is about 600–800 animals. In 1998, populations in Longgang and Fusui were found to be in decline. A more recent survey (January 2003) in Fusui, financed by the Asian Development Bank, however, has indicated some recovery since then. Numbers in Chongzuo have risen from less than 100 to more than 200 individuals since Professor Pan Wenshi of Peking University established a biological research program there in 1996. Chongzuo currently has the second largest population after Fusui and represents an example of how scientific presence can contribute significantly to wildlife conservation strategies. Dr. Chia Tan, a research fellow for the Zoological Society of San Diego, is working with the Peking University team to conduct ecological and behavioral studies and education campaigns at Chongzuo.

William R. Konstant, Roswitha Stenke, Tilo Nadler, Roland Wirth, Zhaoyuan Li & Martina Raffel

Western Purple-faced Langur

Semnopithecus vetulus nestor Bennett, 1833

Sri Lanka

(2004)

Endemic to Sri Lanka, this langur is restricted to a small area of the wet zone in the west of the country, most of which is threatened due to human activities (crops, infrastructure and industry, settlements, deforestation and forest fragmentation, and hunting). Colombo, the capital city of Sri Lanka, is in the center of its very limited range. Hill (1934) indicated that it was common around the capital, but this is no longer the case. Forest cover in Sri Lanka has declined drastically since the late 1950s, and the area of occupancy of this langur has been reduced to a highly fragmented 1,900 km² (Molur *et al.* 2003). Although still quite numerous (>10,000), the declines in numbers are expected to have been precipitous — estimated at more 80% in three generations due to urbanization and development. They are highly arboreal and need good canopy cover, and there are possibly less than three forests that can support viable populations, none of which are protected areas set aside for conservation. The human-modified areas that sustain much of the langur population, such as gardens and rubber plantations, are under private ownership and changing rapidly due to human population expansion and development; large trees are cut down and entire forest patches are destroyed for housing and development. This severely restricts home ranges, isolating the groups, and resulting in escalated conflict with humans and low juvenile recruitment rates (Dela 1998). Long-term studies by Dela (1998) have shown that this taxon is unique in having subpopulations adapted to a diet high in mature/ripe fruit, a feature as yet unrecorded for any other colobine, and are dependent on fruits cultivated by humans. Its geographical range has a very high human

population density, and home ranges are being compressed due to loss of tree cover. Censuses are urgently needed to identify forest areas for conservation and to better quantify the decline of subpopulations in space and time, and to provide a better understanding of their demographics (especially reproductive rates, population turnover, and dispersal) in the extremely disturbed habitats where they survive today.

Jinie Dela & Noel Rowe

Grey-shanked Douc

Pygathrix cinerea Nadler, 1997

Vietnam

(2000, 2002, 2004)

Colobine monkeys of the genus *Pygathrix* are native to Southeast Asia. Until only a few years ago, just two distinct taxa were recognized: the red-shanked douc, *Pygathrix nemaeus*, named by Linnaeus in 1771, in the northern part of central Vietnam; and the black-shanked douc, *P. nigripes*, from southern Vietnam and eastern Cambodia, described exactly a century later by Milne-Edwards. From August 1995 through January 1998, however, six male specimens of a new and distinctive *Pygathrix* were confiscated by Vietnamese forest protection authorities and placed at the Endangered Primate Rescue Center at Cuc Phuong National Park. The animals had evidently originated in central Vietnam. The grey-shanked douc appears to be restricted to mountainous regions of Vietnam's Quang Nam, Quang Ngai, Kon Tum, Gia Lai, and Binh Dinh provinces, where it is threatened throughout by hunting and habitat loss. Hunting is with guns as well as baited traps. Forest loss within at least part of its range is attributable to the expansion of fruit tree plantations, illegal logging, and firewood collection. Surveys and research on this recently discovered primate were conducted by the Frankfurt Zoological Society, led by Tilo Nadler, manager of the Vietnam Primate Conservation program of Frankfurt Zoological Society and director of the Endangered Primate Rescue Center at Cuc Phuong National Park. The continuation of this work should provide recommendations for the establishment of special "Species Protection Areas," with links between protected areas. Most of the grey-shanked doucs occur in two large areas in central Vietnam, each comprising four protected areas of differing status. The population is highly fragmented and estimated at 600–700 individuals.

William R. Konstant & Tilo Nadler

Tonkin Snub-nosed Monkey

Rhinopithecus avunculus Dollman, 1912

Vietnam

(2000, 2002, 2004)

The Tonkin snub-nosed monkey is one of four unusual, large Asian colobine monkeys of the genus *Rhinopithecus*, all of which possess a characteristic turned-up nose. The three other species are endemic to China, while the Tonkin snub-nosed monkey is found only in 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 presumed to be extinct by a number of primatologists until it was rediscovered in 1989. Currently, there are only three known locations with recent evidence where Tonkin snub-nosed monkeys occur. In 1992, a population was found in Na Hang District. As a result of the discovery, a nature reserve was established in 1994. Since the creation of the protected area at Na Hang, the existence of two additional Tonkin snub-nosed monkey populations has been confirmed, one in the forests of Cham Chu and another in Du Gia Nature Reserve. The total population is estimated not to exceed 300 individuals. For the largest subpopulation of Na Hang Nature Reserve, the most serious threat is posed by a hydropower and flood prevention dam project. Construction began in 2002. Some 10,000 workers will move into the area for dam construction. This will lead to increased demand for wildlife products, firewood, and increased human activities due to improved accessibility by roads and the future lake. Conservation activities carried out by several organizations have been unsuccessful, and a dramatic reduction of this subpopulation is foreseeable. The forests of Cham Chu have no protected status and are under increasing pressure due to resettlement from the Na Hang area. The only population without immediate threat is in the Du Gia Nature Reserve. There, public awareness and community participatory activities are being linked to increased protection efforts under the supervision of Fauna and Flora International (FFI).

William R. Konstant & Tilo Nadler

Hainan Black-crested Gibbon

Nomascus nasutus hainanus (Thomas, 1892)

China (Island of Hainan)

(2000, 2002, 2004)

The black-crested gibbons of Vietnam and China are among the rarest primates in the world. Their taxonomy is currently in debate, but experts now believe that there are two species — the western black-crested gibbon, *Nomascus concolor*, with up to four subspecies in China, Laos, and Vietnam, and the eastern black-crested gibbon, *Nomascus nasutus*, with two subspecies that are considered the most threatened of all the gibbon taxa (Geissmann 2003). The Hainan gibbon, *Nomascus nasutus hainanus* (Thomas, 1892) is restricted to the Island of Hainan, and the Cao Vit black-crested gibbon, *N. nasutus nasutus* (Kunckel d'Herculais, 1884), occurs on the continent in northeastern Vietnam and China. The correct scientific names of eastern black-crested gibbons are still under debate (Geissmann *et al.* 2000; Groves 2004; Brandon-Jones *et al.* 2004). They differ in their territorial calls and hair color (La Quang Trung and Trinh Dinh Hoang 2004). Further comparisons are needed besides genetic research, however, to determine whether they should be classified as separate species (Nadler 2003).

Adult male *N. n. nasutus* are black with a slight tinge of brown hair on their chest, and adult male *N. n. hainanus* are entirely black (Geissmann *et al.* 2000; Mootnick in press). The adult females on the mainland and Hainan Island vary from a buffish to a beige brown and have a black cap (Geissmann

et al. 2000; Mootnick in press). Adult female *N. n. hainanus* have a thin white face ring that is thicker above the mouth and below the orbital ridge. Depending on the amount of humidity, female *Nomascus* can obtain a more orangey color resulting from their sweat (Mootnick, in press). There was an adult female, "Patzi," in the Berlin Zoo whose vocalizations were similar to that of *N. n. nasutus*, but her pelage differed in that she had a very long and broad black crown streak that went past the nape, and extended to the brow, tapering to a thin face ring and becoming thicker at the chin (Geissmann *et al.* 2000; Mootnick in press). This female had a narrow blackish brown chest plate slightly wider than the face, beginning at the throat and tapering at the top of the abdomen.

The Cao Vit black-crested gibbon formerly occurred east of the Red River in northern Guangdong and southwestern Guangxi provinces. It disappeared from southeastern China in the 1950s, and today it is restricted to the forests of the Phong Nam-Ngoc Khe Mountains, Trung Khanh District, northern Cao Bang Province in Vietnam (bordering China). Last seen in Vietnam in the 1960s, it was also feared extinct there, but was found again, after intensive searches in January 2002 by Fauna and Flora International (FFI) biologists La Quang Trung and Trinh Dinh Hoang (2004). They found five groups totaling at least 26 individuals in the remaining forest of 3,000 ha. Further surveys by the Vietnam Primate Conservation Programme of FFI and Trung Khanh District rangers in November 2004 indicated 37 individuals (VNA 2004). In the 1950s there were estimates of >2,000 gibbons on the island of Hainan in 866,000 ha of forests across 12 counties (Wang and Quan 1986). By 1989 the *N. n. hainanus* population was reduced to only 21 gibbons in four groups in 1,200 ha of the Bawangling Nature Reserve (Liu *et al.* 1989). William Bleisch and Yingyi Zhang found 16 individuals in three groups on Hainan Island in November 2003 (pers. comm. to La Quang Trung and Trinh Dinh Hoang 2004). Further recent surveys estimated between 12–19 individuals in three groups in the Bawangling Nature Reserve, and a fourth group sighted outside the preserve could have had between two and seven individuals (Wu *et al.* 2004). Another survey found two groups, and two lone males, comprising a total of 13 individuals (Geissmann and Chan 2004).

Gibbons generally establish long-term pair bonds, but in the Bawangling Nature Reserve there were observations of two females in the same group both carrying offspring (Liu *et al.* 1989; Bleisch and Chen 1991). This could be a result of older offspring being unable to locate appropriate mates (Wu *et al.* 2004) and limited space to establish new groups (Liu *et al.* 1989). Efforts are underway by FFI to create new protected areas in forests such as those of Che Tao, Vietnam, where local support for the protection of endangered gibbons is apparently on the rise. There is an urgent need to secure the forests on the Island of Hainan, and the survival of the few remaining gibbons there.

Alan R. Mootnick, Anthony B. Rylands &
William R. Konstant

Sumatran Orangutan

Pongo abelii Lesson, 1827

Indonesia

(2000, 2002, 2004)

The Sumatran orangutan is one of two species of the genus *Pongo*. While the viability of both is in question, the Sumatran orangutan faces a more immediate extinction risk than the Bornean, *Pongo pygmaeus* (Linnaeus, 1760), and is considered Critically Endangered. The species is endemic to the Indonesian island of Sumatra, and is now restricted almost entirely to forests in the lowlands of Nangroe Aceh Darussalam (NAD) and provinces in North Sumatra. More than 1,500 orangutans remain in the Singkil swamp. Sumatran orangutans are estimated to total about 7,500 individuals (based largely on 2002 satellite images), living in 13 fragmented habitat units stretching from northern NAD south to the Sibolga-Tarutung-Padangsidempuan area. It has been suggested that the southernmost population may be genetically distinct from its northern relatives. The largest populations live within NAD province, where recent political turmoil has made monitoring and conservation work difficult. A large population is found in the Leuser Ecosystem, but less than half of these orangutans live within the Gunung Leuser National Park boundaries. Throughout its range, the primary threat to Sumatran orangutans is logging. Old-growth forests in Indonesia have declined by more than 80% in the last 25 years, and broad surveys throughout the species' range have demonstrated that orangutan populations have plummeted in the region's severely logged areas. Of the 13 identified orangutan populations on Sumatra, only seven are estimated at 250 or more individuals. Six of these relatively large populations have experienced between 10% and 15% annual habitat loss due to logging. Villagers and immigrants from nearby areas such as Nias Island and refugees from NAD accelerate habitat loss through encroachment and conversion of land for agriculture. Hunting often occurs when orangutans steal fruit from gardens at the forest edge and are shot by farmers. Some refugees hunt orangutans for meat, but this generally only occurs in the far south of their range (Sibolga). Key conservation interventions necessary for Sumatran orangutan survival include expanding the moratorium on logging concessions beyond NAD, improving patrols and law enforcement, stopping illegal logging, promoting forest restoration, halting road construction, addressing human-orangutan conflict, and providing connectivity in the landscape to allow for genetic exchange. At current rates of habitat destruction from logging, a further 50% of Sumatran orangutans will vanish in a decade. However, there is as much reason to believe the rate of decline will increase as there is for mitigation of this threat; solutions to conserve the remaining lowland primary habitats are urgently needed.

Susie Ellis, Mark Leighton & Ian Singleton

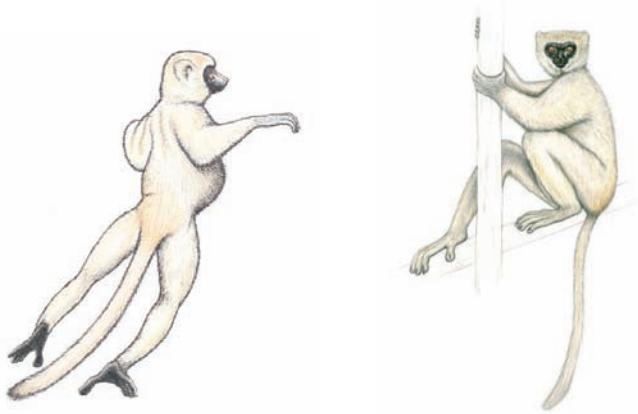
Madagascar



Greater Bamboo Lemur
Prolemur simus (Gray, 1871)



White-collared Lemur
Male (left), Female (right)
Eulemur albocollaris (Rumpler, 1975)



Silky Sifaka
Propithecus candidus Grandidier, 1871



Perrier's Sifaka
Propithecus perrieri Lavauden, 1931

Africa



Mt. Rungwe Galago
Galagoides sp. nov.



Pennant's Red Colobus
Procolobus pennantii pennantii (Waterhouse, 1838)

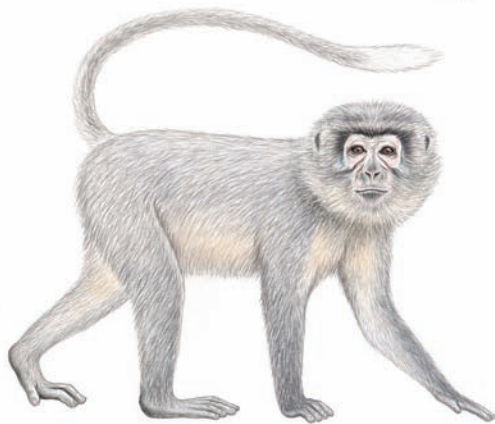
Africa, continued



Tana River Red Colobus
Procolobus rufomitrat (Peters, 1879)



White-naped Mangabey
Cercocebus atys lunulatus (Temminck, 1853)



Sanje River Mangabey
Cercocebus sanjei Mittermeier, 1986



The Eastern Gorillas
Gorilla beringei Matschie, 1903



Cross River Gorilla
Gorilla gorilla diehli Matschie, 1904

Neotropical Region



Black-Faced Lion Tamarin
Leontopithecus caissara Lorini and Persson, 1990



Buff-headed Capuchin or Yellow-breasted Capuchin
Cebus xanthosternos Wied-Neuwied, 1826



Brown Spider Monkey
Ateles hybridus brunneus Gray, 1872



Northern Muriqui
Brachyteles hypoxanthus (Kuhl, 1820)

Asia



**Horton Plains Slender Loris,
Ceylon Mountain Slender Loris**
Loris tardigradus nycticeboides (Hill, 1942)



**Pagai Pig-tailed Snub-nosed Monkey
or Simakobu**
Simias concolor Miller, 1903



Miller's Grizzled Surili
Presbytis hosei canicrus Miller, 1934

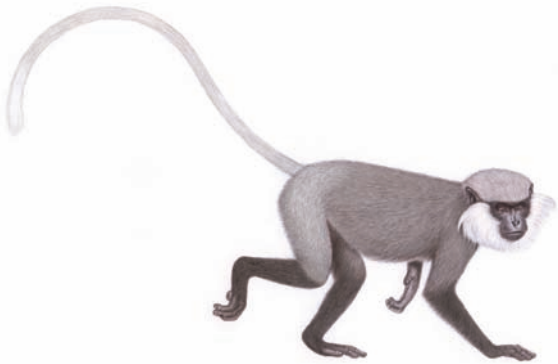
Asia, continued



Delacour's Langur
Trachypithecus delacouri (Osgood, 1932)



Golden-headed Langur or Cat Ba Langur
Trachypithecus poliocephalus poliocephalus
(Trouessart, 1911)



Western Purple-faced Langur
Semnopithecus vetulus nestor
Bennett, 1833



Grey-shanked Douc
Pygathrix cinerea Nadler, 1997



Tonkin Snub-nosed Monkey
Rhinopithecus avunculus Dollman, 1912



Hainan Black-crested Gibbon
Nomascus nasutus hainanus (Thomas, 1892)



Sumatran Orangutan
Pongo abelii Lesson, 1827

Bibliography

Greater Bamboo Lemur

Prolemur simus (Gray, 1871)

- Albrecht, G. H., P. D. Jenkins and L. R. Godfrey. 1990. Ecogeographic size variation among the living and subfossil prosimians of Madagascar. *Am. J. Primatol.* 22: 1–50.
- Arrigo-Nelson, S. J. and P. C. Wright. 2004. Survey results from Ranomafana National Park: New evidence for the effects of habitat preference and disturbance on the distribution of *Haplemur*. *Folia Primatol.* 75: 331–334.
- Dolch, R., R. D. Hilgartner, J.-N. Ndrimiary and H. Randriamahazo. 2004. “The grandmother of all bamboo lemurs”: Evidence for the occurrence of *Haplemur simus* in fragmented rainforest surrounding the Torotorofotsy marshes, Central Eastern Madagascar. *Lemur News* 9: 24–26.
- Godfrey, L. R. and M. Vuillaume-Randriamanantena. 1986. *Haplemur simus*: Endangered lemur once widespread. *Primate Conserv.* (7): 92–96.
- Godfrey, L. R., W. L. Jungers, E. L. Simons, P. S. Chatrath and B. Rakotosaminana. 1999. Past and present distributions of lemurs in Madagascar. In: *New Directions in Lemur Studies*, B. Rakotosaminana, H. Rasimanana, J. U. Ganzhorn and S. M. Goodman (eds.), pp.19–53. Kluwer Academic/Plenum Publishers, New York.
- Godfrey, L. R., E. L. Simons, W. L. Jungers, D. D. DeBlieux and P. S. Chatrath. 2004. New discovery of subfossil *Haplemur simus*, the greater bamboo lemur, in western Madagascar. *Lemur News* 9: 9–11.
- Goodman, S. M., V. R. Razafindratsia, V. Schütz and R. Ratsimbazafy. 2001. Les lémuriens. In: *Inventaire biologique du Parc National de Ranomafana et du couloir forestier qui la relie au Parc National d'Andringitra*, S. M. Goodman and V. R. Razafindratsia (eds.), pp.231–243. Centre d'Information et du Documentation Scientifique et Technique, Antananarivo.
- Groves, C. P. 2001. *Primate Taxonomy*. Smithsonian Institution Press, Washington, DC.
- Irwin, M. T., S. E. Johnson and P. C. Wright. 2005. The state of lemur conservation in southeastern Madagascar: Population and habitat assessments for diurnal lemurs using surveys, satellite imagery and GIS. *Oryx* 39(2): 204–218.
- Macedonia, J. M. and K. F. Stanger. 1994. Phylogeny of the Lemuridae revisited: Evidence from communication signals. *Folia Primatol.* 63: 1–43.
- Meier, B. 1987. Preliminary report of a field study on *Lemur rubriventer* and *Haplemur simus* (nov. species) in Ranomafana-Ifanadiana 312 Faritany Fianarantsoa, Madagascar, July 1986–January 1987. Unpublished report to Ministry of Scientific Research, Antananarivo.
- Meier, B. and Y. Rumpler. 1987. Preliminary survey of *Haplemur simus* and of a new species of *Haplemur* in eastern Betsileo, Madagascar. *Primate Conserv.* (8): 40–43.
- Rakotosamimanana, B., R. R. Ralaiaison, R. C. Ralisoamalala, T. M. Rasolofoharivelo, V. Raharimanantsoa, R. M. Randrianarison, J. G. Rakotondratsimba, D. R. W. Rasolofoson, E. O. Rakotonirainy and T. M. Randriamboavonjy. 2004. Comment et pourquoi les lémuriens diurnes disparaissent peu à peu dans les forêts d'Ambato et de Moramanga (région de Moramanga) Madagascar? *Lemur News* 9: 19–24.
- Rumpler, Y., S. Warter, B. Ishak and B. Dutrillaux. 1989. Chromosomal evolution in primates. *Hum. Evol.* 4: 157–170.
- Santini-Palka, M. E. 1994. Feeding behaviour and activity patterns of two Malagasy bamboo lemurs, *Haplemur simus* and *Haplemur griseus*, in captivity. *Folia Primatol.* 63(1): 44–49.
- Schwarz, E. 1931. A revision of the genera and species of Madagascar Lemuridae. *Proc. Zool. Soc. Lond.* 1931: 399–428.
- Stanger-Hall, K. F. 1997. Phylogenetic affinities among the extant Malagasy lemurs (Lemuriformes) based on morphology and behavior. *J. Mammal. Evol.* 4: 163–194.
- Sterling, E. J. and M. G. Ramaroson. 1996. Rapid assessment of the primate fauna of the eastern slopes of the Réserve Naturelle Intégrale d'Andringitra, Madagascar. In: *A Floral and Faunal Inventory of the Eastern Slopes of the Réserve Naturelle Intégrale d'Andringitra, Madagascar, with Reference to Elevational Variation*, S. M. Goodman (ed.). *Fieldiana Zool., New Series* 85: 293–305.
- Tan, C. L. 1999. Group composition, home range size, and diet in three sympatric bamboo lemur species (genus *Haplemur*) in Ranomafana National Park, Madagascar. *Int. J. Primatol.* 20: 547–566.
- Tan, C. L. 2000. Behavior and ecology of three sympatric bamboo lemur species (genus *Haplemur*) in Ranomafana National Park, Madagascar. PhD thesis, State University of New York, Stony Brook.
- Vuillaume-Randriamanantena, M., L. R. Godfrey and M. R. Sutherland. 1985. Revision of *Haplemur* (*Prohaplemur*) *gallieni* (Standing 1905). *Folia Primatol.* 45: 89–116.
- Wilson, J. M., P. D. Stewart and S. V. Fowler. 1988. Ankarana—a rediscovered nature reserve in northern Madagascar. *Oryx* 22: 163–171.
- Wright, P. C., P. S. Daniels, D. M. Meyers, D. J. Overdorff and J. Rabesoa. 1987. A census and study of *Haplemur* and *Propithecus* in southeastern Madagascar. *Primate Conserv.* (8): 84–87.

White-collared Lemur

Eulemur albocollaris (Rumpler, 1975)

- CBSG. 2002. *Evaluation et Plans de Gestion pour la Conservation (CAMP) de la Faune Madagascar: Lémuriens, Autres Mammifères, Reptiles et Amphibiens, Poissons d'eau douce et Evaluation de la Viabilité des Populations et des Habitats des Hypogeomys antimena (Vositse)*. IUCN/SSC Conservation Breeding Specialist Group (CBSG), Apple Valley, Minnesota.

- Djletati, R., B. Brun and Y. Rumpler. 1997. Meiotic study of hybrids in the genus *Eulemur* and taxonomic considerations. *Am. J. Primatol.* 42: 235–245.
- Irwin, M. T., S. E. Johnson and P. C. Wright. 2005. The state of lemur conservation in southeastern Madagascar: Population and habitat assessments for diurnal lemurs using surveys, satellite imagery and GIS. *Oryx* 39(2): 204–218.
- Johnson, S. E. 2002. Ecology and speciation in brown lemurs: white-collared lemurs (*Eulemur albocollaris*) and hybrids (*Eulemur albocollaris* x *Eulemur fulvus rufus*) in southeastern Madagascar. PhD thesis, University of Texas, Austin.
- Johnson, S. E. and D. J. Overdorff. 1999. Census of brown lemurs (*Eulemur fulvus* spp.) in southeastern Madagascar: Methods testing and conservation implications. *Am. J. Primatol.* 47: 51–60.
- Johnson, S. and Y. Wyner. 2000. Notes on the biogeography of *Eulemur fulvus albocollaris*. *Lemur News* 5: 25–28.
- Petter, J.-J. and A. Petter-Rousseaux. 1979. Classification of the prosimians. In: *The Study of Prosimian Behavior*, G. A. Doyle and R. D. Martin (eds.), pp.359–409. Academic Press, London.
- Rumpler, Y. 1975. The significance of chromosomal studies in the systematics of the Malagasy lemurs. In: *Lemur Biology*, Vol. 1, I. Tattersall and R. W. Sussman (eds.), pp.25–40. Plenum Press, New York.
- Sterling, E. J. and M. G. Ramaroson. 1996. Rapid assessment of the primate fauna of the eastern slopes of the Réserve Naturelle Intégrale d'Andringitra, Madagascar. In: *A Floral and Faunal Inventory of the Eastern Slopes of the Réserve Naturelle Intégrale d'Andringitra, Madagascar: With Reference to Elevational Variation*, S. M. Goodman (ed.), *Fieldiana Zool., New Series* 85: 293–305.
- Tattersall, I. 1982. *The Primates of Madagascar*. Columbia University Press, New York.
- Wyner, Y., R. Absher, G. Amato, E. Sterling, R. Stumpf, Y. Rumpler and R. DeSalle. 1999. Species concepts and the determination of historic gene flow patterns in the *Eulemur fulvus* (brown lemur) complex. *Biol. J. Linn. Soc.* 65: 39–56.
- Wyner, Y. M., S. E. Johnson, R. M. Stumpf and R. DeSalle. 2002. Genetic assessment of a white-collared x red-fronted lemur hybrid zone at Andringitra, Madagascar. *Am. J. Primatol.* 57: 51–66.
- Silky Sifaka**
Propithecus candidus Grandidier, 1871
- Duckworth, J. W., M. I. Evans, A. F. A. Hawkins, R. J. Saford and B. Sheldon. 1995. The lemurs of Marojejy Strict Reserve, Madagascar; a status overview with notes on ecology and threats. *Int. J. Primatol.* 16: 545–559.
- Garbutt, N. 1999. *Mammals of Madagascar*. Yale University Press, New Haven, Connecticut.
- Kelley, E. and M. I. Mayor. 2002. Preliminary study of the silky sifaka (*Propithecus diadema candidus*) in northeast Madagascar. *Lemur News* 7: 16–18.
- Mittermeier, R. A., I. Tattersall, W. R. Konstant, D. Meyers and R. Mast. 1994. *Lemurs of Madagascar*. Conservation International, Washington, DC.
- Patel, E. R. 2002. Behavioral ecology and communication in wild silky sifakas. Unpublished report to the Margot Marsh Biodiversity Foundation, Great Falls, Virginia.
- Patel, E. R., C. S. Coke, A. Ritchie and C. Santorelli. 2003. Alloparental care (including allonursing) in free ranging silky sifakas (*Propithecus diadema candidus*) in primary northeastern montane rainforest in Madagascar. *Am. J. Primatol.* 60 (Suppl.1): 71.
- Schmid, J. and R. Smolker. 1998. Rapid assessment of the primate fauna of the Réserve Spéciale d'Anjanaharibesud, Madagascar. *Fieldiana Zool., New Series* 89: 224–249.
- Sterling, E. and K. McFadden. 2000. Rapid census of lemur populations in Parc National de Marojejy, Madagascar. In: *A Floral and Faunal Inventory of the Parc National de Marojejy, Madagascar; with Reference to Elevational Variation*, S. M. Goodman (ed.), *Fieldiana Zool., New Series* 97: 265–274.
- Tattersall, I. 1982. *The Primates of Madagascar*. Columbia University Press, New York.
- Perrier's Sifaka**
Propithecus perrieri Lavauden, 1931
- Ganzhorn, J. U., O. Langrand, P. C. Wright, S. O'Connor, B. Rakotosamimanana, A. T. C. Feistner and Y. Rumpler. 1996/97. The status of lemur conservation in Madagascar. *Primate Conserv.* (17): 70–86.
- Hawkins, A. F. A., P. Chapman, J. U. Ganzhorn, Q. M. C. Bloxam, S. C. Barlow and S. J. Tonge. 1990. Vertebrate conservation in Ankarana Special Reserve, northern Madagascar. *Biol. Conserv.* 54: 83–110.
- Mayor, M. and S. M. Lehman. 1999. Conservation of Perrier's sifaka (*Propithecus diadema perrieri*) in Analamera Special Reserve, Madagascar. *Lemur News* 4: 21–23.
- Meyers, D. and J. Ratsirarson. 1988. Survey of the rare *Propithecus diadema* subspecies in Madagascar. Unpublished report to World Wildlife Fund (WWF). Project number 6384.
- Meyers, D. and J. Ratsirarson. 1989. Distribution and conservation of two endangered sifakas in northern Madagascar. *Primate Conserv.* (10): 82–87.
- Mittermeier, R. A., I. Tattersall, W. R. Konstant, D. Meyers and R. Mast. 1994. *Lemurs of Madagascar*. Conservation International, Washington, DC.
- Petter, J.-J., R. Albignac and Y. Rumpler. 1977. *Mammifères Lémuriens (Primates Prosimiens). Faune de Madagascar*, Vol. 44. ORSTOM/CNRS, Paris.
- Tattersall, I. 1982. *The Primates of Madagascar*. Columbia University Press, New York.
- ZICOMA. 1999. Zones d'Importance pour la Conservation des Oiseaux à Madagascar. Projet ZICOMA, Antananarivo, Madagascar. 266pp.

Mt. Rungwe Galago*Galagoides* sp. nov.

Bearder, S. K., L. Ambrose, C. Harcourt, P. Honess, A. Perkin, E. Pimley, S. Pullen and N. Svoboda. 2003. Species-typical patterns of infant contact, sleeping use and social cohesion among nocturnal primates in Africa. *Folia Primatol.* 74: 337–354.

Bioko Red Colobus*Procolobus pennantii pennantii* (Waterhouse, 1838)

Butynski, T. M. and S. H. Koster. 1994. Distribution and conservation status of primates in Bioko Island, Equatorial Guinea. *Biodiv. Conserv.* 3: 893–909.

Gautier-Hion, A., M. Colyn and J.-P. Gautier. 1999. *Histoire Naturelle des Primates d'Afrique Centrale*. ECOFAC, Libreville, Gabon.

Kone, I. 2004. Report on recent primate surveys in the south-east of Ivory Coast. Unpublished report, Conservation des Espèces et des Populations Animales (CEPA), Schlierbach, France.

McGraw, W. S. 1998. Three monkeys nearing extinction in the forest reserves of eastern Côte d'Ivoire. *Oryx* 32: 233–236.

McGraw, W. S. 2005. Update on the search for Miss Waldron's red colobus monkey (*Procolobus badius waldroni*). *Int. J. Primatol.* 26(3): 605–619.

McGraw, W. S. and J. F. Oates. 2002. Evidence for a surviving population of Miss Waldron's red colobus. *Oryx* 36: 223–226.

Oates, J. F. 1994. The natural history of African colobines. In: *Colobine Monkeys: Their Ecology, Behaviour and Evolution*, A. G. Davies and J. F. Oates (eds.), pp.75–128. Cambridge University Press, Cambridge, UK.

Oates, J. F. 1996. *African Primates: Status Survey and Conservation Action Plan*. Revised edition. IUCN, Gland, Switzerland.

Oates, J. F., T. T. Struhsaker and G. H. Whitesides. 1996/1997. Extinction faces Ghana's red colobus and other locally endemic subspecies. *Primate Conserv.* (17): 138–144.

Oates, J. F., M. Abedi-Lartey, W. S. McGraw, T. T. Struhsaker and G. H. Whitesides. 2000. Extinction of a West African red colobus monkey. *Conserv. Biol.* 14: 1526–1532.

Oates, J. F., R. A. Bergl and J. M. Linder. 2004. Africa's Gulf of Guinea Forests: Biodiversity Patterns and Conservation Priorities. *Adv. Appl. Biodiv. Sci.* (6): 1–90. Center for Applied Biodiversity Science, Conservation International. Washington, DC.

Struhsaker, T. T. 1999. Primate communities in Africa: The consequence of long-term evolution or the artifact of recent hunting? In: *Primate Communities*, J. G. Fleagle, C. Janson and K. E. Reed (eds.), pp.289–294. Cambridge University Press, Cambridge, UK.

Struhsaker, T. T. 2005. The conservation of red colobus monkeys (*Procolobus*) and their habitats. *Int. J. Primatol.* 26(3): 525–538.

Waltert, M., Lien, K. Faber and M. Muhlenberg. 2002. Further declines of threatened primates in the Korup Project Area, south-west Cameroon. *Oryx* 36: 257–265.

Wolfheim, J. H. 1983. *Primates of the World: Distribution, Abundance, and Conservation*. University of Washington Press, Seattle.

Tana River Red Colobus*Procolobus rufomitatus* (Peters, 1879)

Butynski, T. M. and G. Mwangi. 1994. Conservation status and distribution of the Tana River red colobus and crested mangabey. Report to Zoo Atlanta, Georgia, Kenya Wildlife Service, National Museums of Kenya, Institute of Primate Research, and East African Wildlife Society, Nairobi, Kenya. 68pp.

Butynski, T. M. and G. Mwangi. 1995. Census of Kenya's endangered red colobus and crested mangabey. *African Primates* 1: 8–10.

Marsh, C. W. 1985. A survey of Tana River primates. Unpublished report to the Institute of Primate Research, Nairobi, Kenya.

Wieczkowski, J., D. N. Mbora, A. Kariuki and S. Strum. 2001. Tana River Primate and Habitat Monitoring Project. Report to Margot Marsh Biodiversity Foundation, Great Falls, Virginia. 13pp.

White-naped Mangabey*Cercocebus atys lunulatus* (Temminck, 1853)

Abedi-Lartey, M. and J. Amponsah. 1999. Preliminary survey of anthropoid primates in Krokosua Hills Forest Reserve. Unpublished report, Protected Areas Development Program and Wildlife Division of the Forestry Commission, Accra, Ghana.

Asibey, E. O. 1978. Primate conservation in Ghana. In: *Recent Advances in Primatology*, Vol. 2, D. J. Chivers and W. Lane-Petter (eds.), pp.55–74. Academic Press, New York.

Fleagle, J. G. and W. S. McGraw. 2002. Skeletal and dental morphology of African papionins: Unmasking a cryptic clade. *J. Hum. Evol.* 42: 267–292.

Kone, I. 2004. Report on recent primate surveys in the south-east of Ivory Coast. Unpublished report, Conservation des Espèces et des Populations Animales (CEPA), Schlierbach, France.

Magnuson, L. 2002. Distribution and habitat use of the Rolo-way guenon in Ghana, West Africa. Master's thesis, Humboldt State University, Arcata, California.

McGraw, W. S. 1998. Three monkeys nearing extinction in the forest reserves of eastern Côte d'Ivoire. *Oryx* 32: 233–236.

McGraw, W. S. and J. F. Oates. 2002. Evidence for a surviving population of Miss Waldron's red colobus. *Oryx* 36(3): 223–226.

Oates, J. F., T. T. Struhsaker and G. H. Whitesides. 1996/1997. Extinction faces Ghana's red colobus monkey and other locally endemic subspecies. *Primate Conserv.* (17): 138–144.

Sanje River Mangabey

Cercocebus sanjei Mittermeier, 1986

- Dinesen, L., T. Lehmberg, M. C. Rahner and J. Fjeldså. 2001. Conservation priorities for the forests of the Udzungwa Mountains, Tanzania, based on primates, duikers and birds. *Biol. Conserv.* 99: 223–236.
- Ehardt, C. L. 2001. The endemic primates of the Udzungwa Mountains, Tanzania. *African Primates* 4: 15–26.
- Ehardt, C. L., T. T. Struhsaker and T. M. Butynski. 1999. Conservation of the endangered primates of the Udzungwa Mountains, Tanzania: Surveys, habitat assessment, and long-term monitoring. Final Report, Margot Marsh Biodiversity Foundation, Great Falls, Virginia, and Conservation International, Washington, DC.
- Ehardt, C. L., T. P. Jones and T. M. Butynski. 2005. Protective status, ecology and strategies for improving conservation of *Cercocebus sanjei* in the Udzungwa Mountains, Tanzania. *Int. J. Primatol.* 26(3): 557–583.
- Groves, C. P. 1996. The nomenclature of the Tanzanian mangabey and the Siberut macaque. *Austr. Primatol.* 10(4): 2–5.
- Homewood, K. M. and W. A. Rodgers. 1981. A previously undescribed mangabey from southern Tanzania. *Int. J. Primatol.* 2: 47–55.

Eastern Gorilla

Gorilla beringei Matschie, 1903

- Butynski, T. M. 2001. Africa's great apes. In: *Great Apes and Humans: The Ethics of Co-existence*, B. B. Beck, T. S. Stoinski, M. Hutchins, T. L. Maple, B. Norton, A. Rowan, E. F. Stevens and A. Arluke (eds.), pp.3–56. Smithsonian Institution Press, Washington, DC.
- Steklis, H. D., C. N. Gerald and S. Madry. 1996/1997. The mountain gorilla—conserving an endangered primate in conditions of extreme political instability. *Primate Conserv.* (17): 145–151.
- Kalpers, J., E. Williamson, M. Robbins, A. McNeilage, A. Nzamurambaho, N. Lola and G. Mugiri. 2003. Gorillas in the crossfire: Population dynamics of the Virunga mountain gorillas over the past three decades. *Oryx* 37: 326–337.

Cross River Gorilla

Gorilla gorilla diehli Matschie, 1904

- Bassey, A. E. and J. F. Oates (eds.). 2001. Proceedings of the international workshop and conference on the Conservation of the Cross River gorillas, Calabar, Nigeria, April 6–9, 2001.
- Oates, J. F., D. White, E. L. Gadsby and P. O. Bisong. 1990. Conservation of gorillas and other species. Appendix 1 to *Cross River National Park (Okwangwo Division): Plan for Developing the Park and its Support Zone*. World Wide Fund for Nature, Godalming, UK.
- Oates, J. F., K. L. McFarland, J. L. Groves, R. A. Bergl, J. M. Linder and T. R. Disotell. 2003. The Cross River gorilla: Natural history and status of a neglected and critically

endangered subspecies. In: *Gorilla Biology: A Multidisciplinary Perspective*, A. B. Taylor and M. L. Goldsmith (eds.), pp.472–497. Cambridge University Press, Cambridge, UK.

- Oates, J. F., R. A. Bergl and J. M. Linder. 2004. Africa's Gulf of Guinea Forests: Biodiversity Patterns and Conservation Priorities. *Adv. Appl. Biodiv. Sci.* (6): 1–90. Center for Applied Biodiversity Science, Conservation International, Washington, DC.
- Sarmiento, E. E. 2003. The Cross River gorilla: The most endangered gorilla subspecies. *Primate Conserv.* (19): 65–72.
- Sarmiento, E. E. and J. F. Oates. 2000. Cross River gorillas: A distinct subspecies, *Gorilla gorilla diehli* Matschie, 1904. *Am. Mus. Novitates* (3304): 1–55.
- Sunderland-Groves, J. L. and J. F. Oates. 2003. Priority conservation actions for Cross River gorillas in Cameroon and Nigeria. Report, Wildlife Conservation Society, New York.

Black-faced Lion Tamarin

Leontopithecus caissara Lorini and Persson, 1990

- Amaral, A. T., F. Prado, C. B. Valladares-Pádua, P. de Marco Jr. and L. M. Scoss. In press. Population estimate for the black-faced lion tamarin (*Leontopithecus caissara*) on the Island of Superagüi, Guaraqueçaba, Paraná, Brazil. *Am. J. Primatol.*
- Ballou, J. D., R. C. Lacy, D. G. Kleiman, A. B. Rylands and S. Ellis (compilers). 1998. *Leontopithecus II: Final Report. The Second Population and Habitat Viability Assessment for Lion Tamarins* (Leontopithecus), Belo Horizonte, Brazil, 20–22 May 1997. Conservation Breeding Specialist Group (CBSG), Apple Valley, Minnesota.
- Kleiman, D. G. and A. B. Rylands (eds.). 2002. *Lion Tamarins: Biology and Conservation*. Smithsonian Institution Press, Washington, DC.
- Prado, F. and C. B. Valladares-Pádua. 2004. Ecologia alimentar de um grupo de mico-leão-da-cara-preta, *Leontopithecus caissara* (Primates: Callitrichidae), no Parque Nacional de Superagüi, Guaraqueçaba – PR, Brasil. In: *A Primatologia no Brasil – 8*, S. L. Mendes and A. G. Chiarello (eds.), pp.145–154. Sociedade Brasileira de Primatologia, Vitória, Espírito Santo.
- Rylands, A. B. 1994. Mico-leão-da-cara-preta, *Leontopithecus caissara* Lorini & Persson, 1990. In: *Livro Vermelho dos Mamíferos Brasileiros Ameaçados de Extinção*. G. A. B. da Fonseca, A. B. Rylands, C. M. R. Costa, R. B. Machado and Y. L. R. Leite (eds.), pp.73–81. Fundação Biodiversitas, Belo Horizonte.
- Schmidlin, L. A. J. 2004. Análise da disponibilidade de habitat para o mico-leão-da-cara-preta (*Leontopithecus caissara* Lorini & Persson, 1990) e identificação de áreas preferenciais para o manejo da espécie por técnicas de geoprocessamento. Master's thesis, Universidade Federal do Paraná, Curitiba.

Buff-headed Capuchin or Yellow-breasted Capuchin*Cebus xanthosternos* Wied-Neuwied, 1820

- Coimbra-Filho, A. F., R. Rocha e Silva and A. Pissinatti. 1991. Acerca da distribuição geográfica original de *Cebus apella xanthosternos* Wied 1820 (Cebidae, Primates). In: *A Primatologia no Brasil – 3*, A. B. Rylands and A. T. Bernardes (eds.), pp.215–24. Fundação Biodiversitas and Sociedade Brasileira de Primatologia, Belo Horizonte.
- Coimbra-Filho, A. F., A. B. Rylands, A. Pissinatti and I. B. Santos 1991/1992. The distribution and status of the buff-headed capuchin monkey, *Cebus xanthosternos*, in the Atlantic forest region of eastern Brazil. *Primate Conserv.* (12–13): 24–30.
- Oliver, W. L. R. and I. B. Santos. 1991. Threatened endemic mammals of the Atlantic forest region of south-east Brazil. *Wildl. Preserv. Trust, Spec. Sci. Rep.* 4: 1–126.
- Pinto, L. P. de S., A. F. Coimbra-Filho and A. B. Rylands. 1998. *Cebus apella xanthosternos* (Wied, 1820). In: *Livro Vermelho das Espécies Ameaçadas de Extinção da Fauna de Minas Gerais*, Â. B. M. Machado, G. A. B. da Fonseca, R. B. Machado, L. M. de S. Aguiar and L. V. Lins (eds.), pp. 86–89. Fundação Biodiversitas, Belo Horizonte.

Brown Spider Monkey*Ateles hybridus brunneus* Gray, 1872

- Defler, T. R. 2004. *Primates of Colombia*. Conservation International Tropical Field Guide Series, Conservación Internacional, Bogotá.
- Defler, T. R., J. V. Rodríguez and J. I. Hernández-Camacho. 2003. Conservation priorities for Colombian primates. *Primate Conserv.* (19): 10–18.
- Eisenberg, J. F. 1989. *Mammals of the Neotropics: The Northern Neotropics. Vol. 1, Panama, Colombia, Venezuela, Guyana, Suriname, French Guiana*. The University of Chicago Press, Chicago.
- Hernández-Camacho, J. and R. W. Cooper. 1976. The non-human primates of Colombia. In: *Neotropical Primates: Field Studies and Conservation*, R. W. Thorington Jr. and P. G. Heltne (eds.), pp.35–69. National Academy of Sciences, Washington, DC.

Northern Muriqui*Brachyteles hypoxanthus* (Kuhl, 1820)

- Strier, K. B. 1999. *Faces in the Forest: The Endangered Muriqui Monkeys of Brazil*. Harvard University Press, Cambridge, Massachusetts.
- Strier, K. B. 2000. Population viability and regional conservation priorities for muriquis (*Brachyteles arachnoides*) in Brazil's Atlantic forest. *Biotropica* 32: 903–913.
- Strier, K. B. and G. A. B. da Fonseca. 1996/1997. The endangered muriqui in Brazil's Atlantic forest. *Primate Conserv.* (17): 131–137.
- Strier, K. B., J. P. Boubli, V. O. Guimarães and S. L. Mendes. 2002. The muriqui population at the Estação Biológica de Caratinga, Minas Gerais, Brazil: Updates. *Neotrop. Primates* 10(3): 115–199.

Horton Plains Slender Loris, Ceylon Mountain Slender Loris*Loris lydekkerianus nycticeboides* Hill, 1942

- Nekaris, K. A. I. 2003. Observations of mating, birthing and parental behaviour in three subspecies of slender loris (*Loris tardigradus* and *Loris lydekkerianus*) in India and Sri Lanka. *Folia Primatol.* 74: 312–336.
- Nekaris, K. A. I. and J. Jayewardene. 2003. Pilot study and conservation status of the slender loris (*Loris tardigradus* and *L. lydekkerianus*) in Sri Lanka. *Primate Conserv.* (19): 83–90.
- Nekaris, K. A. I. and J. Jayewardene. 2004. Survey of the slender loris (Primates, Lorisidae Gray, 1821: *Loris tardigradus* Linnaeus, 1758 and *Loris lydekkerianus* Cabrera, 1908) in Sri Lanka. *J. Zool., Lond.* 262: 1–12.

Pagai Pig-tailed Snub-nosed Monkey or Simakobu*Simias concolor* Miller, 1903

- Fuentes, A. 1996/1997. Current status and future viability for the Mentawai primates. *Primate Conserv.* (17): 111–116.
- Paciulli, L. M. 2004. The effects of logging, hunting, and vegetation on the densities of the Pagai, Mentawai Island primates. PhD Dissertation, State University of New York, Stony Brook, New York.
- Phillips, W. W. A. 1980, 1981, 1984. *Manual of the Mammals of Sri Lanka*. 2nd edition. Wildlife and Nature Protection Society, Sri Lanka. 390pp.
- Tenaza, R. R. and A. Fuentes. 1995. Monandrous social organization of pig-tailed langurs (*Simias concolor*) in the Pagai Islands, Indonesia. *Int. J. Primatol.* 16(2): 195–210.
- Whittaker, D. J. 2006. A conservation action plan for the Mentawai primates. *Primate Conserv.* (20): 95–105.
- Yanuar, A., A. Fuentes and K. Studd. 1999. A short report on the current status of the Mentawai snub-nosed langur (*Simias concolor concolor*) on Simalegu Island, South Pagai, Mentawai, Indonesia. *Trop. Biodiv.* 5: 299–305.

Miller's Grizzled Surili*Presbytis hosei canicrus* Miller, 1934

- Brandon-Jones, D. 1997. The zoogeography of sexual dichromatism in the Bornean grizzled sureli, *Presbytis comata* (Desmarest, 1822). *Sarawak Mus. J.* 50(71): 177–200.
- Duckworth, J. W. 1995. Mammal records from Similajau National Park. *Sarawak Mus. J.* 48: 157–161.
- Duckworth, J. W. 1998. Mammals in Similajau National Park, Sarawak, in 1995. *Sarawak Mus. J.* 51: 171–192.
- Meijard, E. and V. Nijman. 2000. Distribution and conservation of the proboscis monkey (*Nasalis larvatus*) in Kalimantan, Indonesia. *Biol. Conserv.* 92: 15–24.

Delacour's Langur*Trachypithecus delacouri* (Osgood, 1932)

- Nadler, T. 1996. Report on the distribution and status of Delacour's langur (*Trachypithecus delacouri*). *Asian Primates* 6: 1–4.

- Nadler, T. 2004. Distribution and status of the Delacour's langur (*Trachypithecus delacouri*) and recommendations for its long-term conservation. In: *Conservation of Primates in Vietnam*, T. Nadler, U. Streicher and Ha Thang Long (eds.), pp.63–71. Frankfurt Zoological Society, Hanoi.
- Nadler, T., F. Momberg, Nguyen Xuan Dang and N. Lormee. 2003. *Vietnam Primate Conservation Status Review 2002. Part 2: Leaf Monkeys*, pp. 145–164. Fauna and Flora International and Frankfurt Zoological Society, Hanoi.
- Ratajszczak, R., R. Cox and Ha Dinh Duc. 1990. A preliminary survey of primates in North Vietnam. Report to World Wide Fund for Nature – WWF, Project 3869, Gland, Switzerland.

Golden-headed Langur or Cat Ba Langur

- Trachypithecus poliocephalus poliocephalus* (Trouessart, 1911)
- Nadler, T. 1999. Goldschopflangur (*Trachypithecus poliocephalus*) im Endangered Primate Rescue Center, Vietnam und die Bestandssituation in seinem Verbreitungsgebiet. *Zool. Garten N.F.* 69: 241–245.
- Nadler, T. and Ha Thang Long. 2000. *The Cat Ba Langur: Past, Present and Future. The Definitive Report on Trachypithecus poliocephalus—the World's Rarest Primate*. Frankfurt Zoological Society, Hanoi. 104pp.
- Nadler, T., F. Momberg, Nguyen Xuan Dang and N. Lormee. 2003. *Vietnam Primate Conservation Status Review 2002. Part 2: Leaf Monkeys*, pp.55–67. Fauna and Flora International – Vietnam Program and Frankfurt Zoological Society, Hanoi.
- Roos, C., T. Nadler, Y. P. Zhang and H. Zischler. 2001. Molecular evolution and distribution of the superspecies *Trachypithecus [francoisi]*. *Folia Primatol.* 72: 181–182.
- Stenke, R. and Chu Xuan Canh. 2004. The golden-headed langur (*Trachypithecus poliocephalus poliocephalus*) on Cat Ba Island—status, threat factors and recovery options. In: *Conservation of Primates in Vietnam*, T. Nadler, U. Streicher and Ha Thang Long (eds.), pp.72–77. Frankfurt Zoological Society, Hanoi.

White-headed Langur

- Trachypithecus poliocephalus leucocephalus* Tan, 1957
- Dezhi Wang and Jin Tong. 2004. Current status of the white-headed langur (*Trachypithecus poliocephalus leucocephalus*): Distribution, population structure and conservation. In: *Conservation of Primates in Vietnam*, T. Nadler, U. Streicher and Ha Thang Long (eds.), pp.115–116. Frankfurt Zoological Society, Hanoi.
- Huang Chengming, Fuwen Wei, Ming Li, Guoqiang Quan and Hanhua Li. 2002. Current status of white-headed langur (*Trachypithecus leucocephalus*) in China. *Biol. Conserv.* 104: 221–225.
- Huang Chengming and Li Youbang. 2002. The ecological research of white-headed langur and black langur—review and prospect. *Chinese Prim. Res. Conserv. News* 10: 14–16.

- Nadler, T. 2003. Verbreitung und Bestand des Weisskopflangur (*Trachypithecus poliocephalus leucocephalus*). *Zool. Garten N.F.* 73: 324–335.
- Rogers, E. and Zhaoyuan Li. 2002. Effect of deteriorating habitat quality on white-headed langurs. *Abstracts: The XIXth Congress of the International Primatological Society*, pp.72–73. 4–9 August, 2002. Mammalogical Society of China and Institute of Zoology, Chinese Academy of Sciences, Beijing, China.
- Zhaoyuan Li. 2002. Survival status of white-headed langurs (*Trachypithecus leucocephalus*) in Guangxi, China. *Chinese Primate Research and Conservation News* 10: 18–19.

Western Purple-faced Langur

- Semnopithecus vetulus nestor* Bennett, 1833
- Dela, J. D. S. 1998. The ecology and social biology of a selected population of the western purple-faced leaf monkey (*Trachypithecus vetulus nestor* = *Presbytis senex nestor*). Ph.D. thesis, University of Peradeniya, Peradeniya, Sri Lanka.
- Hill, W. C. O. 1934. A monograph on the purple-faced leaf monkeys (*Pithecus vetulus*). *Ceylon J. Sci. (B)* 19 (Pt.1): 23–88.
- Molur, S., D. Brandon-Jones, W. Dittus, A. A. Eudey, A. Kumar, M. Singh, M. M. Feeroz, M. Chalise, P. Priya and S. Walker (eds.). 2003. *Status of South Asian Primates: Conservation Assessment and Management Plan (CAMP) Workshop Report, 2003*. Zoo Outreach Organisation, IUCN/SCC Conservation Breeding Specialist Group – South Asia, Coimbatore, India. 432pp.

Grey-shanked Douc

- Pygathrix nemaeus cinerea* Nadler, 1997
- Ha Thang Long. 2000. Records of grey-shanked douc langur (*Pygathrix cinerea*) in the Central Highlands of Vietnam. Report to Frankfurt Zoological Society, Hanoi.
- Ha Thang Long. 2004. Distribution and status of the grey-shanked douc langur (*Pygathrix cinerea*) in Vietnam. In: *Conservation of Primates in Vietnam*, T. Nadler, U. Streicher and Ha Thang Long (eds.), pp. 52–57. Frankfurt Zoological Society, Hanoi.
- Lippold, L. K. and Vu Ngoc Thanh. 2000. The grey-shanked douc langur: Survey results from Tien Phuoc, Quang Nam, Vietnam. *Asian Primates* 8: 3–6.
- Nadler, T., F. Momberg, Nguyen Xuan Dang and N. Lormee. 2003. *Vietnam Primate Conservation Status Review 2002. Part 2: Leaf Monkeys*, pp.145–164. Fauna and Flora International and Frankfurt Zoological Society, Hanoi.
- Pham Nhat. 1993. The distribution and status of the douc langurs (*Pygathrix nemaeus*) in Vietnam. *Aust. Primatol.* 8: 3–4.

Tonkin Snub-nosed Monkey

- Rhinopithecus avunculus* Dollman, 1912
- Boonratana, R. and Le Xuan Canh. 1998. Conservation of Tonkin snub-nosed monkeys (*Rhinopithecus [Presbytis]*

- cus] *avunculus*) in Vietnam. In: *The Natural History of the Doucs and Snub-nosed Monkeys*, N. G. Jablonsky (ed.), pp.207–215. World Scientific Publishing, Singapore.
- Le Khac Quyet. 2004. Distribution and conservation of the Tonkin snub-nosed monkey (*Rhinopithecus avunculus*) in Du Gia Nature Reserve, Ha Giang Province, northeast Vietnam. In: *Conservation of Primates in Vietnam*, T. Nadler, U. Streicher and Ha Thang Long (eds.), pp.58–62. Frankfurt Zoological Society, Hanoi.
- Le Khac Quyet and S. P. Simmons. 2002. Results of surveys on Tonkin snub-nosed monkey (*Rhinopithecus avunculus*) in the northeastern Vietnam. Report to Singapore Zoo and Fauna and Flora International, Hanoi.
- Nadler, T., F. Momberg, Nguyen Xuan Dang and N. Lormee. 2003. *Vietnam Primate Conservation Status Review 2002. Part 2: Leaf Monkeys*, pp.145–164. Fauna and Flora International and Frankfurt Zoological Society, Hanoi.
- Hainan Black-crested Gibbon**
Nomascus nasutus hainanus (Thomas, 1892)
- Bleisch, W. V. and N. Chen. 1991. Ecology and behavior of wild black-crested gibbons in China with a reconsideration of evidence of polygyny. *Primates* 32: 539–548.
- Brandon-Jones, D., A. A. Eudey, T. Geissmann, C. P. Groves, D. J. Melnick, J. C. Morales, M. Shekelle and C.-B. Stewart. 2004. Asian primate classification. *Int. J. Primatol.* 25: 97–164.
- Geissmann, T. 2003. Symposium on Gibbon Diversity and Conservation: Concluding resolution. *Asian Primates* 8(3/4): 28–29. Available at: <http://www.tiho-hannover.de/gibbons/main/fullpapers/2003resolution.html>.
- Geissmann, T. and B. Chan. 2004. The Hainan black crested gibbon: Most critically endangered ape. *Folia Primatol.* 75 (Suppl. 1): 116. (Abstract.)
- Geissmann, T., Nguyen Xuan Dang, N. Lormée, and F. Momberg, F. 2000. *Vietnam Primate Conservation Status Review 2000. Part 1: Gibbons*. Fauna and Flora International, Indochina Programme, Hanoi.
- Geissmann, T., La Quang Trung, Trinh Dinh Hoang, Vu Dinh Thong, Dang Ngoc Can and Pham Duc Tien. 2003. Rarest ape rediscovered in Vietnam. *Asian Primates* 8(3/4): 8–10.
- Groves, C. P. 2004. Taxonomy and biogeography of primates in Vietnam and neighbouring regions. In: *Conservation of Primates in Vietnam*, T. Nadler, U. Streicher, and Ha Thang Long (eds.), pp.15–22. Frankfurt Zoological Society, Hanoi.
- La Quang Trung and Trinh Dinh Hoang. 2004. Status review of the Cao Vit black crested gibbon (*Nomascus nasutus*) in Vietnam. In: *Conservation of Primates in Vietnam*, T. Nadler, U. Streicher, and Ha Thang Long (eds.), pp.90–94. Frankfurt Zoological Society, Hanoi.
- Liu, Z. H. and C. F. Tan. 1990. An analysis of habitat structure of the Hainan gibbon. *Acta Theriologica Sinica* 10: 163–169. In Chinese with English summary.
- Liu, Z. H., S. M. Yu and X. C. Yuian. 1984. Resources of the Hainan black gibbon and its present situation. *Chin. Wildl.* 6: 1–4. In Chinese.
- Liu, Z. H., Y. Z. Zhang, H. S. Jian and C. H. Southwick. 1989. Population structure of *Hylobates concolor* in Bawangling Nature Reserve, Hainan, China. *Am. J. Primatol.* 19: 247–254.
- Mootnick, A. R. In press. Gibbon taxonomy recommended for rescue centers. In: *All Apes Great and Small. Volume 2: Asian Apes*, B. M. F. Galdikas, N. E. Briggs, L. K. Sheeran, G. L. Shapiro and J. Goodall (eds.). Kluwer Academic/Plenum Publishers, New York.
- Nadler, T. 2003. Rediscovery of the Eastern black crested gibbon *Nomascus nasutus* in Vietnam. *The Gibbon's Voice* 6(1): 1–3.
- Roos, C. 2004. Molecular evolution and systematics of Vietnamese primates. In: *Conservation of Primates in Vietnam*, T. Nadler, U. Streicher and Ha Thang Long (eds.), pp.23–28. Frankfurt Zoological Society, Hanoi.
- VNA. 2004. Endangered gibbon and rare flora species found. Report on Web site of Sci/Tech-Environment, Vietnam News Agency (VNA), Hanoi. <http://www.vnagency.com.vn>. Accessed 17 November 2004.
- Wang, S. and G. Quan. 1986. Primate status and conservation in China. In: *Primates: The Road to Self-sustaining Populations*, K. Benirschke (ed.), pp. 213–220. Springer Verlag, New York.
- Wu Wei, Wang Xiaoming, F. Claro, Ding Youzhong, A.-C. Souris, Wang Chundong, Wang Changhe and R. Berzins. 2004. The current status of the Hainan black-crested gibbon *Nomascus* sp. cf. *nasutus hainanus* in Bawangling National Nature Reserve, Hainan, China. *Oryx* 38(4): 452–456.
- Sumatran Orangutan**
Pongo abelii Lesson, 1827
- IUCN. 2004. *2004 IUCN Red List of Threatened Species*. IUCN: The World Conservation Union, Gland, Switzerland.
- Rijksen, H. D. 2001. The orangutan and the conservation battle in Indonesia. In: *Great Apes and Humans: The Ethics of Co-existence*, B. B. Beck, T. S. Stoinski, M. Hutchins, T. L. Maple, B. Norton, A. Rowan, E. F. Stevens and A. Arluke (eds.), pp.57–70. Smithsonian Institution Press, Washington, DC.
- Rijksen, H. D. and E. Meijaard. 1999. *Our Vanishing Relative: The Status of Wild Orangutans at The Close of The Twentieth Century*. Kluwer Academic Publishers, Dordrecht.
- Singleton, I., S. Wich, S. Husson, S. Stephens, S. Utami Atmoko, M. Leighton, N. Rosen, K. Traylor-Holzer, R. Lacy and O. Byers (eds.). 2004. *Orangutan Population and Habitat Viability Assessment: Final Report*. IUCN/SSC Conservation Breeding Specialist Group (CSG), Apple Valley, Minnesota.
- Wich, S. A. and M. L. Geurts. 2001. *Orangutan Surveys in Sumatra Utara, Riau and Sumatra Barat*. Survey Report to the Golden Ark Foundation, The Netherlands.

General

- Brandon-Jones, D., A. A. Eudey, T. Geissmann, C. P. Groves, D. J. Melnick, J. C. Morales, M. Shekelle and C.-B. Stewart. 2004. Asian primate classification. *Int. J. Primatol.* 25: 97–164.
- Butynski, T. M. 1996/1997. African primate conservation—the species and the IUCN/SSC Primate Specialist Group network. *Primate Conserv.* (17): 87–100.
- Eudey, A. A. (compiler). 1987. *Action Plan for Asian Primate Conservation: 1987–91*. IUCN, Gland, Switzerland.
- Eudey, A. A. 1996/1997. Asian primate conservation—the species and the IUCN/SSC Primate Specialist Group network. *Primate Conserv.* (17): 101–110.
- Ganzhorn, J. U., O. Langrand, P. C. Wright, S. O'Connor, B. Rakotosamimanana, A. T. C. Feistner and Y. Rumpler. 1996/1997. The state of lemur conservation in Madagascar. *Primate Conserv.* (17): 70–86.
- Gautier-Hion, A., M. Colyn and J.-P. Gautier. 1999. *Histoire Naturelle des Primates d'Afrique Centrale*, ECOFAC, Libreville, Gabon.
- Groves, C. P. 1993. Primates. In: *Mammal Species of the World*, D. E. Wilson and D. M. Reeder (eds.), 2nd edition, pp. 243–277. Smithsonian Institution Press, Washington, DC.
- Groves, C. P. 2001. *Primate Taxonomy*. Smithsonian Institution Press, Washington, DC.
- Grubb, P., T. M. Butynski, J. F. Oates, S. K. Bearder, T. R. Disotell, C. P. Groves and T. T. Struhsaker. 2003. Assessment of the diversity of African primates. *Int. J. Primatol.* 14: 1301–1357.
- Kingdon, J. 1997. *The Kingdon Field Guide to African Mammals*. Academic Press, London.
- Mittermeier, R. A., J. U. Ganzhorn, W. R. Konstant, K. Glander, I. Tattersall, Y. Rumpler, M. I. Mayor, E. E. Louis Jr. and A. B. Rylands. In prep. Lemur diversity in Madagascar.
- Oates, J. F. 1996. *African Primates: Status Survey and Conservation Action Plan*. Revised edition. IUCN—The World Conservation Union, Species Survival Commission (SSC), Gland, Switzerland.
- Rowe, N. 1996. *The Pictorial Guide to the Living Primates*. Pogonias Press, East Hampton, New York.
- Rylands, A. B., E. Rodríguez-Luna and L. Cortés-Ortiz. 1996/1997. Neotropical primate conservation—the species and the IUCN/SSC Primate Specialist Group network. *Primate Conserv.* (17): 46–69.
- Rylands, A. B., R. A. Mittermeier and E. Rodríguez-Luna. 1997. Conservation of Neotropical primates: Threatened species and an analysis of primate diversity by country and region. *Folia Primatol.* 68(3–5): 134–160.
- Rylands, A. B., H. Schneider, A. Langguth, R. A. Mittermeier, C. P. Groves and E. Rodríguez-Luna. 2000. An assessment of the diversity of New World primates. *Neotrop. Primates* 8(2): 61–93.

Authors' addresses:

- John M. Aguiar**, Center for Applied Biodiversity Science, Conservation International, 1919 M Street NW, Suite 600, Washington, DC 20036, USA, e-mail: <j.aguiar@conservation.org>.
- Alexandre T. Amaral**, IPÊ—Instituto de Pesquisas Ecológicas, Caixa Postal 47, Nazaré Paulista 12960-000, São Paulo, Brazil, e-mail: <alexandre@ipe.org.br>.
- Simon Bearder**, Nocturnal Primate Research Group, Department of Anthropology, School of Social Science and Law, Oxford Brookes University, Oxford OX3 0BP, UK, e-mail: <skbearder@brookes.ac.uk>.
- Jean Philippe Boubli**, Conservation and Research for Endangered Species, Zoological Society of San Diego, 15600 San Pasqual Valley Road, Escondido, CA 92027-7000, USA, e-mail: <jpboubli@yahoo.com>.
- Douglas Brandon-Jones**, 32A Back Lane, Ham, Surrey TW10 7LF, UK, e-mail: <douglas@quadrumania.net>.
- Thomas M. Butynski**, Eastern Africa Regional Program, Conservation International, c/o IUCN, P. O. Box 68200, City Square 00200, Nairobi, Kenya, e-mail: <TButynski@aol.com>.
- Gustavo Canale**, Instituto de Estudos Sócioambientais do Sul da Bahia (IESB), Rua Major Homem Del Rey 147, Cidade Nova, Ilhéus 45650-000, Bahia, Brazil, e-mail: <canale@iesb.org.br>.
- Camila Cassano**, Instituto de Estudos Sócioambientais do Sul da Bahia (IESB), Rua Major Homem Del Rey 147, Cidade Nova, Ilhéus 45650-000, Bahia, Brazil, e-mail: <camila@iesb.org.br>.
- Tim R. B. Davenport**, The Southern Highlands Conservation Programme, Wildlife Conservation Society, P.O. Box 1475, Mbeya, Tanzania, e-mail: <tdavenport@wcs.org>.
- Thomas R. Defler**, IMANI, Universidad Nacional de Colombia, A.A. 215, Leticia, Amazonas, Colombia, e-mail: <thomasdefler@hotmail.com>.
- Janie Dela**, 45/1 Gunatilleke Mawatha, Etambogada, Panadua, Sri Lanka, e-mail: <jini@sltnet.lk>.
- Luiz Gustavo Dias**, Fundação Biodiversitas, Rua Ludgero Dolabela 1021, 7º andar, Caixa Postal 1462, Gutierrez, Belo Horizonte 30430-130, Minas Gerais, Brazil, e-mail: <luiz.muriqui@biodiversitas.org.br>.
- Carolyn L. Ehardt**, Department of Anthropology, University of Georgia, Baldwin Hall, Athens, GA 30602-1619, USA, e-mail: <cehardt@arches.uga.edu>.
- Susie Ellis**, Indonesia and Philippines Programs, Conservation International, 1919 M Street NW, Suite 600, Washington, DC 20036, USA, e-mail: <s.ellis@conservation.org>.
- Ardith A. Eudey**, 164 Dayton Street, Upland, CA 91786-3120, USA, e-mail: <eudey@aol.com>.
- Agustin Fuentes**, Director, Primate Behavior and Ecology Program, Central Washington University, 400 E. 8th Street, Ellensburg, WA 98926-7544, USA, e-mail: <afuentes@nd.edu>.

Jörg U. Ganzhorn, Institute of Zoology, Ecology and Conservation, Martin Luther King Platz 3, 20146 Hamburg, Germany, e-mail: <ganzhorn@zoologie.uni-hamburg.de>.

Carlos Eduardo Guidorizzi, Instituto de Estudos Sócioambientais do Sul da Bahia (IESB), Rua Major Homem Del Rey, 147, Cidade Nova, Ilhéus 45650-000, Bahia, Brazil, e-mail: <du_guidorizzi@yahoo.com>.

Frank Hawkins, Conservation International, B.P. 5178, Antananarivo 101, Madagascar, e-mail: <fhawkins@conservation.org>.

Steig Johnson, Department of Anthropology, 2500 University Drive, University of Calgary, Calgary, AB Canada T2N 1N4, e-mail: <steig.johnson@ucalgary.ca>.

Maria Cecília M. Kierulff, Team, a/c Conservation International do Brasil, Avenida Getúlio Vargas 1300, 7º. Andar, Savassi, 30112-021 Belo Horizonte, Minas Gerais, Brazil, e-mail: <c.kierulff@conservation.org.br>.

William R. Konstant, 403 Poplar Road, Flourtown, PA 19031, USA, e-mail: <bkonstant@houstonzoo.org>.

Rebecca Kormos, 1170 Grizzly Peak Blvd., Berkeley, CA 94708, USA, e-mail: <rebeccakormos@yahoo.com>.

Annette Lanjouw, International Technical Advisor, International Gorilla Conservation Programme (IGCP), c/o Africa Wildlife Foundation, Britak Centre, Mara Road, P.O. Box 48177, 00100 Nairobi, Kenya, email: <alanjouw@awfke.org>.

Mark Leighton, Harvard University, Peabody Museum, 11 Divinity Avenue, Cambridge, MA 02138, USA, e-mail: <leighton@fas.harvard.edu>.

Jean-Marc Lernoùld, CEPA—Conservation des Espèces et des Populations Animales, 17, rue de l'étang, F-68440 Schlikerbach, France, e-mail: <lernoùld@association-cepa.org>.

Lindsay Magnuson, College of the Redwoods, Department of Biology, Eureka, CA 95501, USA, e-mail: <lindsay-magnuson@redwoods.edu>.

W. Scott McGraw, The Ohio State University, Anthropology, 124 West 17th Avenue, Columbus, OH 43210-1364, USA, e-mail: <mcgraw.43@osu.edu>.

Sérgio Lucena Mendes, Departamento de Ciências Biológicas—CCHN, Universidade Federal do Espírito Santo, Av. Mal. Campos 1468, Maruípe, Vitória 29040-090, Espírito Santo, Brazil, e-mail: <slmendes@npd.ufes.br>.

David Meyers, Wildlife Conservation Society, B.P. 8500, Antananarivo 101, Madagascar, e-mail: <meyersconsult@yahoo.com>.

Russell A. Mittermeier, Conservation International, 1919 M Street NW, Suite 600, Washington, DC 20036, USA, e-mail: <r.mittermeier@conservation.org>.

Alan R. Mootnick, Director, Gibbon Conservation Center, P.O. Box 800249, Santa Clarita, CA 91380-0249 USA, e-mail: <gibboncenter@earthlink.net>.

Alba Lucia Morales-Jiménez, Department of Anthropology, School of Social Science and Law, Oxford Brookes University, Oxford OX3 0BP, UK, e-mail: <albalu@hotmail.com>.

Tilo Nadler, Endangered Primate Rescue Center, Cuc Phuong National Park, Nho Quan District, Ninh Binh Province, Viet Nam, e-mail: <t.nadler@mail.hut.edu.vn>.

K. Anna. I. Nekaris, Nocturnal Primate Research Group, Department of Anthropology, School of Social Science and Law, Oxford Brookes University, Oxford OX3 0BP, UK, e-mail: <anekaris@brookes.ac.uk>.

John F. Oates, Department of Anthropology, Hunter College, City University of New York (CUNY), 695 Park Avenue, New York, NY 10021, USA, e-mail: <john.oates@hunter.cuny.edu>.

Lisa Paciulli, Babcock Hall 102, Department of Anthropology, University of North Dakota, Grand Forks, ND 58202-8374, USA, e-mail: <lisa.paciulli@und.nodak.edu>.

Andrew Perkin, 39A Rickman Close, Woodley, Reading, RG5 3LL, UK, and c/o TFCG, P.O. Box 23410, Dar es Salaam, Tanzania, e-mail: <bwanakomba@yahoo.co.uk>.

Fabiana Prado, IPÊ—Instituto de Pesquisas Ecológicas, Caixa Postal 47, Nazaré Paulista 12960-000, São Paulo, Brazil, e-mail: <pradof@uol.com.br>.

Martina Raffel, Allwetterzoo Münster, Sentruper Straße 315, D-48161 Münster, Germany, e-mail: <raffel@allwetterzoo.de>.

José Vicente Rodríguez-Mahecha, Biodiversity Science Unit and Analysis, CBC de Los Andes, Conservación Internacional, Bogotá, Colombia, e-mail: <jvrodriguez@conservation.org>.

Noel Rowe, Primate Conservation, Inc., 1411 Shannock Road, Charlestown, RI 02813-3726, USA, e-mail: <nrowe@primate.org>.

Anthony B. Rylands, Center for Applied Biodiversity Science, Conservation International, 1919 M Street NW, Suite 600, Washington, DC 20036, USA, e-mail: <a.rylands@conservation.org>.

Gabriel Rodrigues dos Santos, Instituto de Estudos Sócioambientais do Sul da Bahia (IESB), Rua Major Homem Del Rey 147, Cidade Nova, Ilhéus 45650-000, Bahia, Brazil, e-mail: <gabriel@iesb.org.br>.

Ian Singleton, Sumatran Orangutan Conservation Programme, P.O. Box 1472, Medan 20000, North Sumatra, Indonesia, e-mail: <mokko@indo.net.id>.

Roswitha Stenke, Project Manager of the 'Cat Ba Langur Conservation Project', Cat Ba National Park, Cat Hai, Hai Phong, Vietnam, e-mail: <Rosi.Stenke@fpt.vn>.

Jacqui L. Sunderland-Groves, Wildlife Conservation Society, Cross River Gorilla Project, c/o Limbe Botanic Garden, P.O. Box 437, Limbe, South West Province, Cameroon, e-mail: <Takamanda@aol.com>.

Karen B. Strier, Department of Anthropology, University of Wisconsin—Madison, 1180 Observatory Drive, 5440 Social Science Building, Madison, WI 53706, USA, e-mail: <kbstrier@facstaff.wisc.edu>.

Thomas T. Struhsaker, Department of Biological Anthropology and Anatomy, Box 90383, Duke University, Durham, NC 27708-0383, USA, e-mail: <tomstruh@acpub.duke.edu>.

Cláudio Valladares-Pádua, IPÊ—Instituto de Pesquisas Ecológicas, Caixa Postal 47, Nazaré Paulista 12960-000, São Paulo, Brazil, e-mail: <cpadua@ipe.org.br>.

Sally Walker, c/o Zoo Outreach Organisation, Post Box 1063, 29 First Cross, Bharati Colony, Peelamedu, Coimbatore, Tamil Nadu 641 004, India, e-mail: <zooreach@vsnl.com>.

Roland Wirth, Zoological Society for Conservation of Species and Populations (ZGAP), Franz-Senn-Strasse 14, D-81377 München, Germany, e-mail: <roland.wirth@zgap.de>.

Zhaoyuan Li, Faculty of Conservation Biology, Southwest Forestry College, Bailongsi, Kunming, Yunnan 650224, China, e-mail: <zhaoyuanl@yahoo.com>.

Received for publication: March 2005

Revised: January 2006