IUCN/SSC PRIMATE SPECIALIST GROUP

ACTION PLAN FOR AFRICAN PRIMATE CONSERVATION:
1986-90

Compiled by
J.F. Oates
Hunter College and the Graduate Center
City University of New York
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J.F. Oates
Hunter College and the Graduate Center
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and
Regional Coordinator for Africa
IUCN/SSC Primate Specialist Group
Rain forest understory in the Okomu Forest Reserve, Nigeria. Like other Nigerian Forest Reserves, Okomu is subjected to heavy commercial logging (photo by John F. Oates).
Foreword

In 1977, Sir Peter Scott, then Chairman of the IUCN Species Survival Commission, asked all Specialist Group Chairmen to prepare Global Conservation Strategies for the animal groups for which they were responsible. In response to this, the Primate Specialist Group prepared a 325 page document that included 69 projects costing a total of $3,104,250. Though never published or widely circulated, this document represented the first attempt to approach primate conservation problems on a global rather than merely local basis, and also the first attempt to establish international priorities for primate conservation.

This Global Strategy was sent to a number of conservation organizations and attracted the attention of two in particular, World Wildlife Fund and the New York Zoological Society, which immediately began funding projects identified in this plan. Less than two years later, World Wildlife Fund also established its own Primate Program to deal with international conservation problems. This program has been able to find support for and implement some 100 projects, large and small, in over 30 countries. In addition to many other primate conservation activities, it produces Primate Conservation, the Journal and Newsletter of the IUCN/SSC Primate Specialist Group, which is the major means of communication among the world’s primate conservationists.

The New York Zoological Society has also continued a major involvement in primate conservation, and further support has come from such organizations as Wildlife Preservation Trust International, the Brookfield Zoo, the National Geographic Society, the Fauna and Flora Preservation Society and the Frankfurt Zoo. It is not unfair to say that a good portion of this interest in primate conservation can be attributed to the work of the Primate Specialist Group and the concern generated by the original Global Strategy for Primate Conservation.

Unfortunately, the original Global Strategy is now eight years old and quite out-of-date. A new global review is in order, so that we can continue to follow sound scientific guidelines in determining our international primate conservation priorities during the remainder of this decade.

Since our data base on primates and their conservation needs has grown tremendously over the past few years, it is no longer practical to prepare a single global plan. Instead, we are now in the process of developing regional action plans for Africa, Madagascar, Asia and the Neotropical region. This, the Action Plan for African Primate Conservation, is the first in the new series.

This African Action Plan has been compiled by Dr. John F. Oates, in collaboration with the African Section of the Primate Specialist Group, and it would never have been possible without Dr. Oates’ dedication and expertise based on 20 years of work with African primates. We think that the plan summarizes both the primate and tropical forest conservation needs of the African continent in a clear and succinct manner, and we hope that it will help to stimulate the kind of action required to make sure that all African primate species survive in their natural habitats. All that is needed is a little more than $2,000,000 over the next five years, a very small sum in global terms, especially when we consider what is at stake and what we stand to lose if we are unable to undertake the projects identified.

On behalf of the whole Species Survival Commission, I would like to take this opportunity to thank Dr. Oates and the other members of the African Section of the Primate Specialist Group for their outstanding contribution. Thanks also to UNEP and World Wildlife Fund for making publication of this plan possible.

Russell A. Mittermeier
Chairman, IUCN/SSC Primate Specialist Group

Compiler’s note and acknowledgments

This plan, produced under the auspices of the IUCN Species Survival Commission, has evolved from the first Global Strategy for Primate Conservation, prepared by R.A. Mittermeier in January 1978, and from a planning paper on African rain forest primate conservation prepared by J.S. Gartlan, T.T. Struhsaker and the compiler in October 1981. To gather information for this new plan, a request for information was sent out to members of the African section of the IUCN/SSC Primate Specialist Group in December, 1983, and the information received was incorporated into a draft of this document that was completed in December, 1984. Comments on that draft, and new information received up to the end of August, 1985, have been incorporated into this version.


Although care has been taken to ensure that the finished plan reflects the best expert advice available, it is inevitable that some of the experts disagree on details. In these cases, an effort has been made to follow an objective, unbiased course. This is obviously more easily said than done, and the compiler must therefore take responsibility for any biases, errors, or omissions that are still present.

Department of Anthropology, Hunter College
New York, September 1985
The Chimpanzee (*Pan troglodytes*). Africa’s great apes, the chimpanzees and the gorilla, are the closest living relatives of the human species (photo by G. Teleki).
Introduction

The primates of Africa are of special interest and significance. They play important roles in most of the continent's diverse ecosystems, especially in rain forest, where they commonly form a major part of the biomass of mammalian herbivores. They are also of considerable significance in terms of human history. Man's closest relatives, the chimpanzee and gorilla, inhabit the forests of tropical Africa, and much evidence suggests that many major events in human evolution occurred on the African continent. In several respects, Africa's primates and the ecosystems of which they are a vital part may be regarded as a living museum of human history, where processes of adaptation and speciation can be studied in the environment in which our own species evolved. The loss of a significant portion of these resources would be a very serious matter. This loss is occurring today and will soon be irretrievable if firm, well-planned action is not taken.

This is the Action Plan for the period 1986-90 developed by the African section of the Primate Specialist Group of the IUCN/SSC to avert major losses in Africa's primate fauna. It covers the continent of Africa and the islands of its continental shelf. It does not encompass Madagascar, for which a separate plan is being prepared. The Primate Specialist Group (PSG) is one of several groups of experts providing technical advice to the Species Survival Commission of the International Union for the Conservation of Nature and Natural Resources (IUCN). The PSG, chaired by R.A. Mittermeier, has set itself the main goal of maintaining the current diversity of the order Primates, with a dual emphasis on:

1. ensuring the survival of endangered and vulnerable species wherever they occur; and
2. providing effective protection for large numbers of primates in areas of high primate diversity and/or abundance.

Human activities make it inevitable that a large part of the world's primate populations and their habitats will disappear. The Primate Specialist Group feels that, with respect to action directed specifically at primate populations and their habitats, these losses can best be mitigated by:

1. setting aside protected areas for endangered and vulnerable species;
2. creating large national parks and reserves in areas of high primate diversity and/or abundance;
3. maintaining or increasing the effectiveness of parks and reserves that already exist; and
4. creating and increasing public awareness of the need for primate conservation and the importance of primates both as a part of the natural heritage of the countries in which they occur, and as important components in systems whose proper functioning is vital for human well-being.

The principles underlying these goals are that effective habitat conservation is essential if wild populations are to survive in the long term, and that conservation will not work if people living in the areas where primates occur do not fully support conservation efforts.

As a scientific advisory group, we feel that the most appropriate action the Primate Specialist Group can take to help in achieving these goals is to establish the current patterns of distribution and diversity of the African primate fauna, to assess the threats it faces, and to establish priorities among specific projects aimed at the establishment and management of protected areas. These projects include basic surveys where the distribution and status of primate populations are judged to be poorly known. While our ideal is the creation of many large, strictly-protected reserves in representative biogeographic regions, we recognize that in many cases it is going to be impossible in practice to create such reserves. In these cases we must determine what forms of multiple-use management do the least damage to primate populations and encourage the implementation of this management. In this context, we must be aware that conservation plans will only be effective if they take account of local political and economic realities, and we must try to integrate primate conservation efforts into national resource conservation plans.

Although this Action Plan concentrates on establishing priorities for surveys and reserve management programs, we do not wish to minimize the very strong need almost everywhere in Africa to increase public awareness of the need for and value of conservation. We see a major need for conservation training programs for scientists and managers from African countries, and we believe that illegal traffic in primates must be prevented.

To achieve our chief goal of maintaining current diversity, we must first establish what the current pattern of diversity is. This means drawing up a catalogue of distinct forms, and mapping their patterns of geographical distribution, paying particular attention to areas inhabited by a large number of different forms. Having established existing patterns we can then study the relative degree of threat faced by individual forms and by local groups of forms (communities), and we can determine priorities for conservation action. This Plan, therefore:

1. presents a species list of African primates;
2. assesses the degree of threat to each of these species, as well as noting distinctive subspecies which may be under threat;
3. reviews the distribution of distinct African primate communities, paying special attention to communities with high levels of species diversity or species endemism;
4. lists projects designed to better conserve threatened species and communities, with an estimate of costs; and
5. establishes priorities among these projects, based on the number of primate species involved, their taxonomic uniqueness, and the degree to which they are endangered.

The plan is transnational in its scope. It considers what action is needed to maintain the diversity of primates on a continent-wide basis. It does not address national concerns. Within some countries, one or a few primate species that are common elsewhere may be rare or threatened. In a transnational plan of this sort these cases are not given special attention, but they should obviously be an important part of national conservation strategies, under which individual countries endeavor to protect all elements of their native fauna and flora.
Map 1. The nations of Africa. Primate species lists for the 24 countries which have ten or more primate species are given in Appendix 1 (map by Stephen Nash).
Classification

The classification adopted (Table 1) is purposefully conservative, in the sense that any population or set of populations considered by respected authorities in relatively recent times to represent a distinct genus or species is generally given that status here. This course is followed so that too low a priority is not given to conserving a population that, when gone, is recognized to have been very distinctive.

The classification of the Lorisidae is based on Petter and Petter-Rousseaux (1979), but the galago forms garnetti, thomasi and zanzibaricus are regarded as distinct species, following the studies of Kingdon (1971), Olson (1979), and Bearder (1984). There is currently considerable debate as to the most appropriate generic-level classification of the galagos. Rather than adopt one particular arrangement which is not yet widely accepted, the conservative course followed here is to provisionally place all species in the genus Galago. Further taxonomic studies are needed.

The classification of the Cercopithecinae is broadly, but not entirely, in agreement with that of Napier (1981), who recognizes the genus Mandrillus as being distinct from Papio, and the genera Erythrocebus and Miopithecus as distinct from Cercopithecus. It differs from Napier in the following respects:

1. The westernmost populations of mangabeys are regarded as belonging to a separate species Cerccebus atys, distinct from C. torquatus (following Booth, 1958).
2. Cercopithecus denti and C. wolffi are regarded as subspecies of C. pogonias, on the basis of their distribution and a study of their vocalizations (J.S. Gartlan and T.T. Struhsaker, pers. commun.).
3. Cercopithecus albogularis is regarded as distinct from C. mitis following Dandelot (1971) and Ruvolo (1983).
4. Cercopithecus salongo, known only from two museum specimens, is given provisional species status (C. ? salongo) in our classification. The coat pattern of this animal is very distinctive, and seems unlikely to be the result of hybridization. Cercopithecus “dryas” is not, however, regarded as a valid species; the only known specimen is the skin of a once-captive juvenile that might be either a hybrid or even a member of C. salongo.
5. We have noted as a possibly distinct species (Cercopithecus ? sp.) the animals recently discovered in Gabon by M. Harrison, which apparently belong to the lhoesti-preussi group. Note that Napier regards C. lhoesti and C. preussi as distinct species.
6. We have also given Sclater’s guenon from eastern Nigeria provisional species status (C. ? sclateri) following Kingdon (1980).
7. Napier follows Barros Machado (1969) in recognizing two species of Miopithecus (distinct northern and southern forms). Here, we regard the northern form as unquestionably distinct (Miopithecus ? sp.).

The African Colobinae present a difficult problem. There is no generally agreed classification. The generic arrangement used here is that of Kuhn (1967), who groups the red and olive colobus into Procolobus, distinct from the black and black-and-white forms in Colobus. Within the black-and-white group, the specific arrangement followed is that proposed by Oates and Troccolo (1983), who separate the West African vellerosus from polykomos. The species-level systematics of Procolobus have yet to be adequately resolved. The inadequacy of conventional red colobus classifications (placing them all in the species badius) has been noted by Dandelot (1971). The degree of variation between the different forms is too great to be adequately contained within a single species and it would therefore be better to regard the red colobus as a superspecies as defined by Mayr (1942): a monophyletic group of allopatric species which are morphologically too distinct to be included in one species. However, the number of red colobus species that can be recognized within the group is still uncertain, partly because many populations have yet to be studied in the wild. For the purposes of this plan, we have modified Dandelot’s arrangement of five species (badius, pennanti, rufomitratus, tholloni and kirkii) to take account of evidence on vocalizations (Struhsaker, 1981). Five species are provisionally recognized: Procolobus [badius] badius (including the subspecies badius, temminckii and waldroni), P. [badius] pennanti (including the subspecies pennanti, preussi and bowieri), P. [badius] rufomitratus (including the subspecies rufomitratus, tholloni, ostaletti, ellioti, foai and tephrosceles), P. [badius] gordonorum, and P. [badius] kirkii. Square brackets are used to designate the superspecies. Following the recommendation of Amadon (1966); such brackets could equally be applied to other superspecies groups (the cephus-group of guenons, for instance) but in those cases the species names are in such widespread use that they are unlikely to lead to confusion. It should be stressed that the many subspecies of red colobus listed above are clearly distinct from one another. To avoid the repeated use of cumbersome and unfamiliar terminology when referring to these subspecies, the main text of this report will generally refer to, for example, “the tephrosceles form of red colobus” rather than to “Procolobus [badius] rufomitratus tephrosceles”.

The classification of the Pongidae is that in most widespread use, and is that used by Honacki et al. (1982) and by Wolffheim (1983). Behaviorally and ecologically, we regard the gorilla as sufficiently distinct from the chimpanzee to warrant generic separation.
Table 1
Classification of African Primates

<table>
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<th>Family</th>
<th>Subfamily</th>
<th>Genus</th>
<th>Species</th>
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<td>Lorisidae</td>
<td>Lorisinae</td>
<td>Arctocebus</td>
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<td>Galaginae</td>
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<td>Galago zanzibaricus</td>
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<td>Galago crassicaudatus</td>
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<td>Galago garnetti</td>
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<td>Cercopithecidae</td>
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<td>Allen's galago</td>
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<td>Dwarf galago</td>
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<td>Eastern needle-clawed galago</td>
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<td>Senegal galago, or bushbaby</td>
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<td>Thomas's galago</td>
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<td>Western needle-clawed galago</td>
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<td>Thick-tailed galago</td>
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<td>Garnett's galago</td>
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<td>Barbary macaque</td>
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<td>Sooty mangabey</td>
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<td>Grey-cheeked mangabey</td>
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<td>Black mangabey</td>
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<td>Guinea baboon</td>
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<td>Hamadryas baboon</td>
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<td>Chacma baboon</td>
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<td>Mandrill</td>
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<td>Gelada</td>
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<td>Diana monkey</td>
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<td>Salongo monkey</td>
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<td>De Brazza's monkey</td>
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<td>Owl-faced monkey</td>
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<td>Cercopithecus albogularis</td>
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<td>Cercopithecus aethiops</td>
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<td>Miopithecus talapoin</td>
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<td>Miopithecus ? sp.</td>
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<td>Allenopithecus nigroviridis</td>
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<td>Erithrocebus patas</td>
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<td>Colobinae</td>
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<td>Procolobus [badius] badius</td>
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<td>Procolobus [badius] rufomitratus</td>
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<td>Procolobus [badius] gordonorum</td>
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<td>Procolobus verus</td>
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<td>Colobus polykomos</td>
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<td>Pan paniscus</td>
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Senegale bushbabies (Galago senegalensis). This savanna species is the most widespread of all prosimians (photo by S. Bearder).
Priority Ratings of Species and Subspecies for Conservation Action

Table 2 displays Priority Ratings of African primate species for conservation action. Species have been rated on three parameters:

1. degree of threat to populations;
2. taxonomic uniqueness of species;
3. association of species with other threatened forms.

Ratings are on a 1-6 scale for degree of threat, on a 1-3 scale for degree of taxonomic uniqueness, and are 1 or 2 for association with other threatened primates. Ratings on each parameter are then summed to produce an overall rating for conservation action. According to this system, an overall rating of 11 would accrue to a highly-endangered species that is the sole member of its genus and which occurs in an area where several other threatened primates are found. On the other hand, a species under no special threat which has several close relatives and is not part of a highly threatened community would get an overall rating of 3.

The weighting in this particular rating system is designed to give highly endangered species special attention, while taking some account of their distinctiveness and the degree of threat to the community of which they are a part. A system which has the same scale (e.g., 1-5) for each parameter was rejected since it discriminates against some endangered forms that are obviously worthy of special attention. For instance, in a rating system giving similar weight to degree of threat, taxonomic uniqueness, and association with other threatened forms, a species such as the Barbary macaque (*Macaca sylvanus*) gets a low priority rating compared with a relatively common, unthreatened species (e.g. *Perodicticus potto*) which belongs to a small genus and inhabits a multispecies community containing some threatened members.

A rating system of this type has been employed so that relatively objective general guidelines for conservation can be established. However, it should be appreciated that the ratings are inevitably somewhat arbitrary. They are based on existing evidence available to the compiler, evidence that is often scanty. Ratings have been assigned according to the following criteria:

### a. Degree of Threat
1. Not known to be especially rare or threatened.
2. Rare or at risk. Populations exist at a low density and/or in a limited geographical area, and individuals may not be readily located in a short-term search even by professionals; or, a widely-distributed species not yet under threat as a whole, but with a significant number of populations definitely at risk from habitat alteration and/or hunting.
3. Vulnerable. Populations have limited distribution and/or ecological tolerance, and current rates of habitat alteration and/or hunting pressure likely to intensify; or, current rates of habitat alteration and/or hunting are slowly but significantly diminishing most populations. High probability of moving to category 4 by the year 2000 if no new conservation measures are taken.
4. Highly vulnerable. Surviving populations small or fragmented, and threatened by habitat destruction and/or hunting. Likely to move to category 5 by the year 2000 if no new conservation measures are taken.
5. Endangered. Population restricted to a very limited area, or with a very fragmented distribution; less than 25,000 individuals probably remain, and these are threatened by major habitat alteration and/or severe hunting; likely to move to category 6 by the end of the century if current destructive forces continue to operate.
6. Highly endangered. Less than 10,000 individuals remain, and no large section of the population is really secure.

### b. Taxonomic Uniqueness
1. A member of a large species group (i.e., one of several closely-related species), or species status sometimes questioned, but at least a distinct subspecies.
2. A very distinct species, or one of a small number of closely-related forms which together are clearly distinct from other species.
3. Only member of a monotypic genus (or family), or member of a genus with only two species.

### c. Association with Other Threatened Primates
1. A wide-ranging species, and/or most of range does not overlap with any highly threatened form.
2. A major part of the species' range overlaps with one or more highly threatened forms, or several that are under moderate threat.

The endangered Barbary macaque (*Macaca sylvanus*) is the only African representative of a widespread Asian genus (photo by Dominique Vallet). The diana monkey (*Cercopithecus diana*) is a highly arboreal guenon restricted to the high forests of the Upper Guinea region where it is threatened by habitat destruction and hunting (photo by John F. Oates).
## Table 2

<table>
<thead>
<tr>
<th>Species</th>
<th>Conservation Priority</th>
<th>Degree of Threat</th>
<th>Taxonomic Uniqueness</th>
<th>Associates with Other Threat-Endangered Forms</th>
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Notes to Table 2:

a. The status of *Galago thomasi* is not known. It is given a rating of “2” for degree of threat on the basis of a relatively limited and disjunct distribution in E. Zaire. E. Africa, Angola, and possibly Mt. Cameroon.

b. *Cercocebus salongo* is known only from a few skins from the Wamba area of Zaire. If this specimen is the representative of a distinct species, the population must have a limited distribution. The Wamba area suffers from hunting and habitat destruction.

The Nigerian white-throated guenon (*Cercocebus erythrogaster*) has one of the most restricted distributions of all African primates and its remaining populations are under intense pressure (photo by John F. Oates).

On the basis of table 2, the highest conservation priority rating (9) applies to the following species:

- *Mandrillus leucophaeus*
- *Cercocebus preussi*
- *Cercocebus ? scelateri*
- *Procolobus [badius] gordonorum*
- *Pan paniscus*
- *Gorilla gorilla*

The following have a very high conservation rating (8):

- *Macaca sylvanus*
- *Theropithecus gelada*
- *Cercocebus diama*
- *Cercocebus hamlyni*
- *Cercocebus ? salongo*
- *Cercocebus ? sp. (Gabon)*
- *Cercocebus erythrogaster*
- *Allenopithecus nigroviridis*
- *Procolobus [badius] pennanti*
- *Procolobus [badius] kirki*
- *Colobus satanas*
not only because of their small population size, but also through habitat alteration and hunting. If the existing diversity of African primates is to be maintained, these populations require special attention. They are:

- *Cercocebus galeritus galeritus*
- *Cercocebus galeritus* subsp.
- *Cercopithecus erythrotis erythrotis*
- *Cercopithecus ascanius atrinus*
- *Cercopithecus mitis kandti*
- *Procolobus [badius] pennanti bouvieri*
- *Procolobus [badius] pennanti pennanti*
- *Procolobus [badius] pennanti preussi*
- *Procolobus [badius] rufomitratus rufomitratus*
- *Procolobus /badius/ rufomitratus tephrosceles*
- *Procolobus [badius] badius temminckii*
- *Colobus angolensis prigoginei*
- *Colobus angolensis ruwenzorii* (incl. *C. a. adolffriedrici*)
- *Colobus angolensis* subsp.
- *Gorilla gorilla beringei*

These have a high priority (rating 7):

- *Arctocebus calabarenis*
- *Galago zanzibaricus*
- *Cercocebus torquatus*
- *Cercocebus galeritus*
- *Cercocebus aterrimus*
- *Mandrillus sphinx*
- *Cercopithecus hoesti*
- *Cercopithecus erythrotis*
- *Miopithecus talapoin* (south)
- *Procolobus verus*
- *Pan troglodytes*

And the following species are regarded as vulnerable (Threat Rating 3 or greater), but are not very distinctive taxonomically:

- *Papio papio*
- *Papio hamadryas*
- *Procolobus [badius] badius*
- *Procolobus [badius] rufomitratus*
- *Colobus polykomos*
- *Colobus vellerosus*

All these 34 species (54% of African primate species) are judged to need some conservation attention, but priority should be given to the species with the highest ratings (8 and 9).

**Threatened Subspecies**

This plan does not aim to assess the status of all the very many subspecies of primate that have been described from Africa. The real distinctiveness of many of these forms is questionable. However, there are a few clearly distinct local populations (not usually given species status) which have a very limited geographical distribution and consequently a small population size. Many of these populations are threatened...
Map 2. The eleven distinct regional communities of African primates featured in this plan. Except for desert areas, much of the remainder of the continent carries savanna vegetation with a relatively uniform community of primates that is not currently under great threat. With the exception of the Casamance and Maghreb, regions are mapped here on the basis of vegetation distributions shown by White (1983) (map by Stephen Nash).
Distinct Communities and Ecosystems

Two types of ecosystem may be regarded as particularly important from the viewpoint of conservation, especially if our aim is to maintain diversity: (1) those containing many species, and (2) those with high levels of species endemism. Especially high priority should be given to the protection of such ecosystems when they contain individual primate species which are rated to have a high priority for conservation action.

With the exception of *Maraca sylvanus* and *Papio ursinus* all African primate species have all or most of their populations within the tropics. Much of tropical Africa is covered by dry woodland, wooded savanna, grassland and scrub supporting a low diversity of primates at relatively low densities. Most of the primates in this savanna zone have wide geographical distributions, within which are many National Parks and other reserves providing reasonably good protection to primate populations. Especially limited regions, supporting several endemic primates, are not typical of the savanna zone. One exception, the Casamance region, in the far west of the zone, is given special consideration below. The primates of the Ethiopian Highlands and adjacent regions are also distinctive, although their habitat is peripheral to the main savanna zone. With these exceptions, the African savanna primates do not appear to be especially threatened at present (in fact they are regarded as vermin in many countries). However, there is as yet no widespread monitoring program (similar to that in place for Indian rhesus macaques) that allows us to make robust statements on population trends in any African primate.

It is Africa’s forest primates that occur in the most diverse communities, often show high levels of local endemism, are frequently ecological specialists occurring at low population densities, and live in habitats that are most threatened with alteration as a result of human activities. This plan will therefore focus on forest primates. African forests supporting primates are of several types. There is lowland tropical rain forest, occurring as a block across the western and central equatorial areas of the continent, dissected by major rivers, mountain ranges, and savanna intrusions. There is gallery forest, supported by groundwater from large perennial rivers. There is a small area of coastal forest growing in a local area of moderate rainfall on the East African coast. And there are the temperate forests in the Mediterranean zone of North Africa. Each of these different forest types tends to support a special assemblage of primates.

*Cercopithecus aethiops* is a wide-ranging species, typical of riverine forests throughout the savanna zone of Africa. It has invaded parts of the rain-forest zone where the vegetation has been opened up by farming (photo by Russell A. Mittermeier).

The patas monkey (*Erythrocebus patas*) is an inhabitant of savanna woodland, from Senegal to Tanzania. It is still an abundant species in parts of West Africa (photo by San Diego Zoo).
Monkeys are an important source of animal protein for many people in the African rainforest, but excessive hunting may carry some species to extinction. Here a hunter holds a female white-throated guenon he has just shot in Nigeria's Okomu Forest Reserve (photo by John F. Oates).

The Lowland Rain Forest Zone

Although the African rain forest occupies a smaller area than the South American or Asian rain forests, and has a lower overall species diversity of plants and animals than those areas, it supports one of the most diverse primate communities on earth (about 50 species altogether). But as is the case elsewhere in the tropics, it is the rain-forest zone that is under most pressure as a result of population growth and agricultural and economic development. The annual rate of human population growth in Africa for 1980-90 has been projected as in excess of 3% greater than in tropical America or Asia (Barr, 1981). Meanwhile, environmental conditions, inefficient techniques and a lack of capital resources are causing rates of food production in Africa to lag behind those in other tropical areas (World Bank, 1984). The resulting food shortages are putting great pressure on many forest areas from subsistence agriculture.

It is in the rain forest zone also that primates come under the greatest hunting pressure from man. Even where pressures on forest land are not yet great, primates are often hunted for food. Thus, if the diversity of the African primate fauna is to be maintained, major conservation efforts must be made in the rain forest. Since flourishing primate populations are usually good indicators of the general health of a rain forest ecosystem, successful efforts to conserve these primates will usually involve conservation of the system as a whole.

In relatively undisturbed African forests where there is low hunting pressure, it is not uncommon to find 7-10 sympatric monkey species, together with 1-2 apes and 2-5 prosimians. Such species assemblages are typical of the forests along the Guinea Coast of West Africa between Sierra Leone and Ghana, of the Cameroon and Western Equatorial regions stretching from eastern Nigeria to the Oubangui River, and of the forests of the Congo Basin and eastern Zaire. Five distinct primate communities can be recognized within this broad zone, each containing several endemic forms. These communities may have differentiated during dry phases of the Pleistocene, when the African rain forest is believed to have retracted and fragmented. Each community is here considered separately, starting in the west. A subsequent section deals with six further distinct primate communities which occur elsewhere on the continent. All eleven communities are shown on Map 2.

Footnotes

1. The African rain forest is estimated to occupy 15.2 million km², versus 5.0 million for the American forest and 3.0 million for the Asian forest (Myers, 1980; National Research Council, 1980; UNESCO, 1978).

2. Congo River/Basin are used here as geographical rather than political terms. A significant portion of the river borders the Republic of Congo, which has not renamed this major continental feature.
Upper Guinea

This westernmost community is separated from the equatorial communities by the Dahomey Gap, a thinly-forested area extending from east of the Volta River in Ghana to the Western edge of Nigeria (see Map 3). The Upper Guinea forests support 7-8 endemic primate species: Cercocebus atys, Cercopithecus diana, Cercopithecus petaurista, Cercopithecus campbelli, Procolobus [badius] badius, Procolobus verus (which has an additional small population in Nigeria), Colobus polykomos, and Colobus vellerosus (sometimes considered conspecific with C. polykomos). A subspecies of Cercopithecus nictitans, C. n. stampflii, occurs only in the forests of Upper Guinea and Nigeria.

Colobus polykomos and C. vellerosus meet in the area between the Bandama and Sassandra Rivers in south-central Ivory Coast. The subspecies of most of the other monkeys change in southwestern Ivory Coast between the Cavally and Sassandra Rivers. The area should therefore be considered as consisting of two major subregions in terms of its primates: Upper Guinea West and Upper Guinea East. Upper Guinea West has the higher rainfall and exhibits the most faunal and floral diversity and endemism; it has been proposed that a major Pleistocene forest refuge was located in this subregion, which includes the extreme south of the Republic of Guinea as well as southern Sierra Leone, all of Liberia and the extreme southwest of Ivory Coast. Endemic primates are Colobus polykomos, Cercocetus atys atys, Cercopithecus diana diana, C. petaurista buettikoferi, C. campbelli campbelli and the badius subspecies of red colobus. Other endemic mammals include the pygmy hippopotamus (Choeropsis liberiensis), Jentink’s duiker (Cephalophus jentinki), the banded duiker (Cephalophus zebra), and Kuhn’s mongoose (Liberictis kuhni). Hunting of primates for food by man is intense in this region, particularly in Liberia, and many of the remaining forests are threatened by commercial logging.

The Upper Guinea East subregion is smaller and has a denser human population than Upper Guinea West. Many of the major towns of Ghana and the Ivory Coast are located in or close to the subregion. The area has a low level of endemism at the species level, although the two larger colobus living here are both sometimes regarded as distinct species: Procolobus [badius] waldroni and Colobus vellerosus. Endemic subspecies are Cercocetus atys lunulatus, Cercopithecus diana roloway, Cercopithecus petaurista petaurista, and Cercopithecus campbelli lowei.

For further information on the Upper Guinea area and its primates, see Booth, 1958; Dosso et al., 1981; Galat & Galat-Luong. 1985; Gartlan, 1982; Kuhn, 1965; Robinson, 1971 & 1983; and Verschuren. 1982.

The olive colobus monkey (Procolobus verus) is an elusive inhabitant of West African rain forests. It is the world’s smallest colobine monkey. From right to left in this picture are an adult male, an adult female and a juvenile (photo by John F. Oates).

Cameroon

This region is centered on Mt. Cameroon and extends from eastern Nigeria to the Sanaga River (Map 4). It includes the nearby continental island of Fernando Po (now called Bioko). It shares many species with the Western Equatorial Region south of the Sanaga River, but has a high level of faunal and floral diversity and high levels of endemism (especially at high elevation, where many species are related to forms on East African mountains). Primate species endemic to the Cameroon region are Mandrillus leucophaeus, Cercopithecus preussi, and Cercopithecus erythrosis (each of which has an endemic subspecies on Bioko). Species found only in the Cameroon and W. Equatorial regions, with different subspecies either side of the Sanaga are Arctocebus calabarenisis, Galago alleni, Galago elegantulus, and Procolobus [badius] pennanti. The Colobus satanas population on Bioko is sometimes considered subspecifically distinct from the other population, in the W. Equatorial region. Cercopithecus torquatus is found in both the Cameroon and W. Equatorial regions and also in western Nigeria, and does not show obvious subspecific variation.

The 2.000 km² island of Bioko is a component of the state of Equatorial Guinea. The 30 km wide channel between the island and the mainland is only 100 m deep, so that the island must have been linked to the mainland during the last glaciation. It is therefore a site that can provide valuable evidence on the Quaternary history of the West African forest. However, there has been very little recent biological investigation on Bioko (largely because of difficult economic and political circumstances), and the present status of the island’s unique fauna and flora, containing many endemic forms, is not known. There is believed to be very intense hunting pressures on the remaining larger mammals, and most of the lowland forest was converted to plantations long ago. However, in the very wet southwest of the island the montane vegetation of the large Caldera de San Carlos is probably still intact. Most of the island’s primates once occurred in the area between the Caldera and the southern coastal settlement of Ureka. No effective conservation measures are known to exist.

For further information on Cameroon and Bioko, see Eisentraut, 1973; Gartlan, 1975; and Sanderson, 1940.

The red-capped mangabey (Cercocebus torquatus) is a largely terrestrial rain forest species that is a favorite target for hunters (photo by Russell A. Mittermeier).
Western Equatorial Africa

This region comprises the forest zone of Cameroon south of the Sanaga River, Gabon, mainland Equatorial Guinea, the Congo Republic, and the far south of the Central African Republic, together with the Angolan enclave of Cabinda and the Mayombe Forest of Zaire (north of the Congo River) (Map 5). This is a very significant area in global terms for primate conservation. At least 20 species of nonhuman primate occur here, in a forested area of about 1,000,000 km². Much of the forest is apparently still in a relatively pristine condition, has a low population density of people (including hunter-gatherer pygmies), and supports what are probably the largest remaining populations of Gorilla gorilla and Pan troglodytes. Endemic primate species are Mandrillus sphinx, Cercopithecus cephus and Miopithecus sp. (northern form) and a Cercopithecus monkey related to C. lhoesti recently discovered by Harrison. Among endemic subspecies is the highly endangered bowieri form of red colobus. Further information on the primates of this region may be found in Charles-Dominique. 1977; Gartlan & Struhsaker, 1972; Gautier& Gautier-Hion, 1969; Gautier-Hion, 1966; Sabater Pi & Jones, 1967; Spinage. 1980; and Tutin & Fernandez, 1984.

A young mandrill (Mandrillus sphinx). The mandrill is a forest-living relative of the savanna baboons. Like the closely-related drill of the Cameroon region to the north, the mandrill of western Equatorial Africa is heavily hunted for its meat throughout much of its range (photo by Russell A. Mittermeier).

Congo Basin

This region covers the large forested area south of the main bend of the Congo River, including the forest network which extends south of the main forest block along the numerous tributaries of the Congo (Map 6). It has a low human population density. Most of the region is within Zaire, but it also includes the northern part of Angola. Levels of specific endemism in the fauna are relatively low, suggesting that this may not have been a major Pleistocene refuge area. However, several endemic subspecies occur here. In fact, two somewhat distinct primate faunas occur in the Congo Basin: one in the central basin, north of the Kasai River, and one south of the Kasai, extending into Angola. The most notable primate endemic in the Central Basin is the bonobo or pygmy chimpanzee (Pan paniscus), but this subregion is also home to Cercopithecus pogonias woffi (sometimes considered a distinct species), the tholloni form of red colobus, Cercopithecus ascanius whitesidei, and C. mitis maesi. The few specimens of the puzzling Cercopithecus salongo also come from this area.

In the South Kasai subregion is found the southern form of talapoin monkey, as well as Cercopithecus pogonias pyrogaster, C. ascanius ascanius and C. ascanius atrinanus. Two interesting forms of mangabey occur in the Congo Basin, Cercocebus aterrimus (sometimes considered a subspecies of C. albigena) and C. galeritus chrysogaster (sometimes considered a distinct species). The latter has a very restricted distribution. The unique and poorly-known swamp monkey, Allenopithecus nigroviridis lives along the Congo River and its tributaries, both north and south of the Kasai.

Eastern Zaire

The upper part of the Congo River separates this region from the Congo Basin. It lies between the right bank of the river and the highlands of the western Rift Valley, extending from approximately the Elila River in the south to the Ituri River basin in the north (Map 7). The ranges of many elements of the fauna extend west of the Ituri around the northern edge of the Congo Basin (meeting the Western Equatorial Region in the vicinity of the Oubangui River), while others reach east across the western Rift Valley, extending from approximately the Elila River in the south to the Ituri River basin in the north (Map 7). The ranges of many elements of the fauna extend west of the Ituri around the north, have been located in the area, referred to as the "Central Refuge" by Kingdon (1971) and "Ituri-Maniema" by Misonne (1963). Among endemic primates (shared with the Western Rift Region, see below) are Galago inustus, Cercopithecus hamlyni, Cercopithecus lhoesti, Cercopithecus pogonias denti and Gorilla gorilla graueri. Some other notable endemic mammals are the okapi (Okapia johnstoni), the giant genet (Genetta victoriae), and the aquatic civet (Osbornictis piscivora). Eastern Zaire still contains large areas of primary forest, but there are major differences in forest structure across the region which probably affect primate diversity and density. There is a paper by Rahm (1965) on the mammals of this region, but no ecological studies of its primates have yet been made.

An Allen’s swamp monkey (Allenopithecus nigroviridis) being offered for sale in Zaire. This species inhabits swamps and gallery forests in both Zaire and the Congo Republic (photo by Thomas F. Kulesa).
The bonobo (*Pan paniscus*) occurs only in the forests south of the River Congo. This species is slightly smaller than its close relative the common chimpanzee and is an accomplished user the high forest canopy. Logging concessions threaten its forest habitat (photo by N. Badrian).

**Other Special Communities**

In addition to the relatively large lowland forest regions with distinctive primate communities, several other regions of Africa have high degrees of endemism in their primate fauna at the specific or subspecific level. These regions are, from west to east: Casamance and Fouta Djalon, the Maghreb, Southern Nigeria, the Western Rift, the Ethiopian Highlands, and Coastal East Africa.

**Casamance and Fouta Djalon**

This small region covers southern Senegal, the Gambia, Guinea-Bissau and the western part of the Republic of Guinea (Map 8). It is the home of the least abundant form of savanna baboon (the Guinea baboon, *Papio papio*), the temminckii form of red colobus, and a significant population of chimpanzees. In the past, primates have been relatively well-protected in this part of West Africa because they are not hunted for food, but the human population is large and growing rapidly, producing extensive conversion of woodland habitats. Like other parts of the Sahelian zone, the area has been badly affected by drought. These factors probably put the region's primates in a vulnerable position, but large parts of the region have not had recent thorough surveys. There are two well-protected areas in southern Senegal, the Basse Casamance National Park and the Niokolo-Koba National Park (see McGrew *et al.*, 1981).

**Maghreb**

Apart from the small feral population on Gibraltar, *Macaca sylvanus* is today restricted to a few isolated areas of montane forest in Morocco and Algeria: fir forest in the Rif and Djebel Babour, and cedar and oak forests in the Moyen Atlas and Djurdjura (Map 9). These forests are coming under increasing human exploitation pressure (see Deag, 1977; Fa, 1983). There are no other primates in North Africa, and all other members of the genus *Macaca* live in Asia.

**Southern Nigeria**

The southern part of Nigeria between the border with the Republic of Benin and the Cross River (Map 10) is an intriguing area faunally. Here some elements of the Upper Guinea rain-forest system that have bridged the Dahomey Gap meet members of the Cameroon system to the east. There are also a few local endemic forms not found to east or west. Among these are two primates, *Cercopithecus erythropaster* and *C. sclateri*. *C. erythropaster* occurs only in the rain forests of southwest Nigeria, which are under intense exploitation pressure (lumbering, and conversion to plantations and farms), and where hunting pressure is also very severe. The highly vulnerable *Cercocebus torquatus* occurs in the same forests, which also still harbor precarious populations of chimpanzees and elephants. *C. sclateri* (considered by some authorities...
Mixed oak-forest habitat of the Barbary macaque in north Morocco (photo by John E. Fa).

to be a subspecies of *C. erythrotis* is known only from four museum specimens, only one of which was collected in the wild (the others were captive animals of unknown origin). The wild specimen is from Okigwi, between the Niger and Cross Rivers in southeastern Nigeria, an area with a very high human population density where very little of the original forest cover remains. *Cercocebus torquatus* also occurs between the Niger and the Cross, as do *Arctocebus calabarensis*, *Galago elegantiulus* and, in the north, *Procolobus verus* (see Oates, 1982).

**Western Rift**

The forests at medium and high elevations along the Western (or Albertine) Rift Valley in East Africa (Map 11) are some of the most fascinating in the whole continent, and contain a large number of endemic and threatened primates. The most important areas for primate conservation along the Rift are the Kibale Forest of Uganda, the Bwindi-Kayonza Forest of Uganda, the Virunga Volcanoes, the Nyungwe-Kibira Forest of Rwanda and Burundi, the Gombe Stream National Park in Tanzania, and the Mahale Mountains National Park in Tanzania. Ecologically similar, but poorly known, are the mid-elevation forests on the Zaire side of the Rift, south of Beni.

The Western Rift forests are the home of the mountain gorilla (restricted to Bwindi and the Virungas), the *tephrosceles* form of red colobus, the little-known *Galago inustus*, and some highly localized forms of *Cercopithecus mitis* and *Colobus angolensis*. Major chimpanzee populations are found here. *Cercopithecus lhoesti* occurs at several of the sites, and *C. ascanius* is widespread.

The Kibale Forest in western Uganda, the Bwindi-Kayonza Forest of southwestern Uganda and the Nyungwe-Kibira Forest of southwestern Rwanda and northwestern Burundi are sites of special significance for primate conservation. They occupy altitudinal zones intermediate between the lowland forests of eastern Zaire and the montane forests of the Virunga Volcanoes. The Kibale Forest (560 km$^2$) lies between 1,100 and 1,600 m, Bwindi-Kayonza between 1,200 and 2,600 m, and the Nyungwe-Kibira Forest (1,140 km$^2$) between 1,650 and 2,950 m. Each supports a somewhat different assemblage of primates; some of these are shared with the eastern Zaire forests, but a few of them are unique to this area. For instance Kibale contains much the largest remaining population of the *tephrosceles* form of red colobus, which is restricted to the medium-altitude forests along the eastern border of the lakes of the W. Rift Valley, from Kibale south to Sumbawanga in Tanzania. The Bwindi (or Impenetrable) Forest contains 10 species of primate, including gorillas, and Nyungwe contains a large population of *Colobus angolensis ruwenzorii*, which occurs only in the Lake Kivu area, on the Ruwenzori Mountains and in relic forests on the shore of Lake Victoria on the Uganda-Tanzania border. Another subspecies with a restricted range, *Cercopithecus mitis doggetti*, occurs in both Nyungwe and Bwindi. Kibale, Nyungwe and Bwindi support a very rich diversity of plant and animal species, contain large areas of undisturbed forest, and are located in areas where primates are not heavily hunted. They require special protection (see Harcourt, 1981; Storz, 1982; Struhsaker, 1981).

The Virunga Volcanoes are an important montane ecosystem on the eastern edge of the Congo Basin. They are most significant for primate conservation as the home of the largest population of the mountain race of the gorilla (*Gorilla gorilla beringei*), otherwise found only in the Bwindi Forest of Uganda (see Aveling & Harcourt, 1984; Harcourt & Curry-Lindahl, 1979; Weber & Vedder, 1983). The golden monkey, *Cercopithecus mitis kandti*, is restricted to both Virunga and Bwindi. Kibale, Nyungwe and Bwindi support a very rich diversity of plant and animal species, contain large areas of undisturbed forest, and are located in areas where primates are not heavily hunted. They require special protection (see Harcourt, 1981; Storz, 1982; Struhsaker, 1981).

Gombe Stream, on the shores of Lake Tanganyika, has been the site of a continuous study of chimpanzee behavior since 1960. In addition to chimpanzees, other forest primates at Gombe are the *tephrosceles* form of red colobus, *Cercopithecus ascanius schmidti*, and *C. mitis doggetti*. 

20
The Bwindi Forest Reserve of southwestern Uganda (once known as the Im-
penetrable Forest) contains a significant population of mountain gorillas as
well as a high diversity of other primates (photo by Russell A. Mittermeier).

The tephrosceles form of red colobus in the Kibale Forest, Uganda. Kibale
supports the largest remaining population of this monkey (photo by Lysa
Leland Struhsaker).

The blue monkey (Cercopithecus mitis) is an abundant species in many of
the high altitude forests along the Western Rift Valley in East Africa (photo
by Russell A. Mittermeier).

The Mahale Mountains on the eastern shore of Lake Tanganyika in
Tanzania have been the site of chimpanzee research since 1965. The
area contains a great diversity of ecosystems, from low-lying miombo
woodland, through rain forest to Alpine grassland and bamboo. In ad-
dition to a population of about 700 chimpanzees (the largest in Tanzania),
Mahale supports a great diversity of other fauna and flora. A National
Park was established in 1984, but this park does not yet have proper
anti-poaching control, except for a very small area where chimpanzees
are studied. Among six monkeys in Mahale are Cercopithecus mitis dog-
getti, the tephrosceles form of red colobus and a form of Colobus
angolensis that may be a new subspecies (see Nishida et al., 1981).

The Virunga Volcanoes viewed from southwestern Uganda. Intensive cultiva-
tion around the bases and on the slopes of the volcanoes in Rwanda and Ugan-
da has greatly restricted the habitat available to mountain gorillas and severed
the link between the gorillas of Bwindi and the Virungas (photo by John F.
Oates).

The Ethiopian Highlands (Map 12) are a unique high altitude plateau
(much of it above 3,000 m), extensively dissected by steep-sided river
gorges. A few primates feature among a range of endemic animals: the
gelada (Theropithecus gelada) and two subspecies of black-and-white
colobus. Colobus guereza guereza and C. guereza gallarum. Cer-
copeithicus neglectus occurs in forests in the southwestern highlands,
but does not overlap with T. gelada, which today occurs only on the
northern plateau. Much of the original grassland and forest of the high
plateau has been destroyed by cultivation and tree cutting, and there has
been heavy hunting of some primate populations, especially C. guereza.
For more information, see Berhanu, 1974; Dandelot & Prévost, 1972;

The tephrosceles form of red colobus in the Kibale Forest, Uganda. Kibale
supports the largest remaining population of this monkey (photo by Lysa
Leland Struhsaker).
Coastal East Africa

The forests of Coastal East Africa (including the mountains of southeastern Tanzania) (Map 13), show high levels of faunal and floral endemism. This reflects their isolation from the main Guineo-Congolian forest block, an area with which they have had more or less tenuous connections for millions of years. Faunal analysis suggests that these connections to the west have been both via the Tana River and Kenya Highlands in the north, and via the mountains of southern Tanzania in the south. Isolated relics of a once more-widely spread primate fauna still exist in a narrow strip of forest along the coast of Kenya and Tanzania and on the island of Zanzibar, as well as in the forests on the Tana River and the Tanzanian mountains (especially the Uzungwas). All these areas are small and under pressure.

Primates found throughout this region are *Galago zanzibaricus* and *Cercopithecus albogularis*. Other species which occur in some but not all of the forests of the region are *Colobus angolensis palliatus* (including the populations known as *sharpei*), three forms in the *Procolobus badius* superspecies, two forms of *Cercocebus galeritus*, and one or other of the greater galagos (*Galago crassicaudatus* and *G. garnettii*). For more information, see Kingdon (1971).

On the floodplain of Kenya’s lower Tana River are many isolated forest patches, some of which support one or more of the following endemic subspecies: *Cercocebus galeritus galeritus*, the *rufomitratus* form of red colobus, and *Cercopithecus albogularis albotorquatus*. Despite the establishment of a National Reserve in 1976, populations of both the mangabey and, especially, the red colobus have declined and the river’s flood regime - crucial to the maintenance of the forests - is being altered by dams on the upper river (see Marsh, 1978. 1985). In the forest strip along the Kenyan coast itself are found *Galago zanzibaricus* and small populations of *Colobus angolensis*. Much of this forest has been very heavily disturbed by agriculture, the development of tourist resorts, and by lumbering. Even the areas enclosed within forest reserves are threatened by encroachment and conversion to plantations.

The *kirkii* species of red colobus monkey is found only on the island of Zanzibar (1,650 km²) off the northern coast of Tanzania. *Galago garnettii*, *G. zanzibaricus* and *Cercopithecus albogularis* also occur on the island. Zanzibar shares some other endemic mammals with the coastal forests, such as the Zanzibar red duiker *Cephalophus adersi* (= *C. natalensis adersi*). Although the population of *Procolobus [badius] kirkii* on Zanzibar is dangerously small (recent estimates suggest about 1,500 individuals), it appears to be stable. However, the forest habitat of *kirkii* is being disturbed and encroached, and occasionally individuals are shot (see Silkiluwasha, 1981, for more information).

The Uzungwa Mountains form an isolated group in south-central Tanzania between the Uluguru Mountains to the north, and the southern highlands bordering Lake Malawi to the south. For a relatively small area, the Uzungwas support a very high diversity of plant and animal species, with many endemics. Here is found the majority of remaining populations of the *gordonorum* form of red colobus (probably numbering less than 5,000 individuals), as well as the recently discovered Sanje mangabey (*Cercocebus galeritus* subs.) (see Homewood & Rodgers, 1981; Rodgers & Homewood, 1982).
Recommended Conservation Action

General Recommendations

From our review of the communities of African primates, we conclude that if present patterns of diversity are to be maintained, effective conservation measures must be instituted or maintained in each of the five major lowland forest regions, as well as in the six other regions with special primate faunas. Two different kinds of action are needed: if effective conservation in these regions is to be achieved:

1. SURVEYS are needed in many parts of the areas described above where the distribution and status of primates is still unclear. These surveys should aim to produce recommendations for further conservation action. The highest priority must be given to surveys of areas containing what are believed to be seriously threatened forms. Surveys are the kind of project for which the technical expertise of IUCN/SSC members is especially well suited.

2. Where the distribution and status of primates are relatively well known and potential conservation sites have already been identified, support and technical advice should be given that will lead to the ESTABLISHMENT and/or EFFECTIVE MANAGEMENT OF RESERVES. Highest priority should be given to large reserves, or potential reserves, containing several threatened primates and a diversity of other species. In the larger forest regions, more than one reserve will usually be needed if sufficiently large populations of all typical members of that region’s community are to be adequately protected. And since no one reserve can ever be regarded as totally secure, we recommend that at least two or, if possible, three reserves be established in each major region. Where feasible, these reserves should be located in different countries in the region. However, in some of the smaller special regions, only a single large reserve may be feasible.

Specific Projects

This final section of the Action Plan identifies specific projects that should be priorities in the 1986-90 period. With each project an estimate of the funds required during this period is given. In many cases the estimates are initial approximations and precise budgets still have to be drawn up. The estimates should, however, give some guidance to funding agencies; they indicate the scale of resources needed and how these resources might be most effectively distributed. For instance, survey projects are relatively inexpensive compared with the cost of establishing and managing a large reserve; they are an obvious and cost-effective use of resources in regions where the status of primate populations are unknown and reserve sites have not been identified. Surveys, however, are not of great value in the long term unless management recommendations which result from them are implemented. Projects to help establish and manage effective reserves must therefore be a major part of a conservation strategy of this type, and must take priority in areas where survey work has already been done.

The following specific projects are listed by region:

Upper Guinea

1. Conservation of Tai National Park $100,000

This area of 3,000 km² in the southwestern Ivory Coast is the largest and most developed reserve in the Upper Guinea region. It lies at the boundary of the Upper Guinea East and West subregions. As well as supporting populations of all the region’s characteristic primates, it also has substantial populations of forest elephant and pygmy hippopotamus. However, although the park is theoretically well protected, this protection does not operate well in practice. There are many farms on the park periphery, much illegal tree cutting and organized hunting is taking place (including hunting of chimpanzees, red colobus monkeys, pygmy hippos, antelopes and elephants), and thousands of people (including gold miners) are reported to be permanently resident in the park. A trained warden is needed to organize patrols and enforce park regulations.

2. Development of Sapo National Park $160,000

Sapo (1,300 km²) was recently established as Liberia’s first National Park, but it is completely undeveloped. It contains all the Upper Guinea West primates, with the possible exception of Cercopithicus nictitans. Like the Tai N.P., it is an important area for pygmy hippos, forest elephants, and leopards, and it also contains populations of the Jentink’s and zebra duikers endemic to the Upper Guinea region. Funds are needed to employ, train and equip staff, to lay out boundaries and patrol routes, and to establish a research station.

3. Conservation of the Gola Forest $150,000

The Gola is Sierra Leone’s last major area of lowland rain forest. Located in the southeast of the country, it supports populations of all the Upper Guinea West primates (with the probable exception of C. nictitans), of forest elephants, and of pygmy hippos. Although the remaining parts of the Gola have the status of government Forest Reserves, they are seriously threatened by expanding timber exploitation and hunting. Funds are required to implement management plans currently being prepared and to develop a research station on Tiwai Island on the western edge of the Gola Forest.

4. West Ghana Parks $40,000

Support the Ghana government in efforts to consolidate the Ankasa Game Production Reserve and Nini-Souhien National Park (in the evergreen-flood forest zone of western Ghana) into a single National Park (total area 505 km²), and encourage better protection and consolidation of the Bia National Park and Bia Game Production Reserve in the moist deciduous zone (combined area 302 km²). These forests contain all members of the Upper Guinea East primate community.

5. Survey of Lofa-Mano, Liberia $25,000

The Lofa-Mano area of western Liberia, on the Sierra Leone border, has been proposed as a national park. Assess wildlife populations and management needs. There is much untouched forest in this area, which is floristically different from Sapo, but is threatened by logging and alluvial mining activities.

6. Survey of eastern and central Ivory Coast $25,000

Survey needed to identify a site or sites for primate conservation. Both Cercopithecus diana roloway and Cercopithecus atys lunulatus occur here, and both need better protection. Combine survey with study of the important faunal transition zone in the vicinity of the Sassandra Rivers, where hybridization between several primate populations has been reported.

Map 3. The Upper Guinea rain forest region (shaded) showing location of recommended projects, numbered as in text (map by Stephen Nash).
Cameroon Region

7. Development of Korup National Park, Cameroon $150,000

This is the most significant conservation area (1,250 km²) in the region, and the only site definitely known to support viable populations of the preussi form of red colobus and of Mandrillus leucophaeaeus. Other primates in the park include Cercocebus torquatus, Cercocebus nictitans martini, C. erythrotis camerunensis, C. mona, C. pogonias pogonias, Pan troglodytes, several prosimians, and probably Cercocebus preussi. Resettlement of villagers currently resident within the park, or their enclavement in controlled areas, is a priority, as are construction of a park headquarters and the development of a trail system and tourist facilities.

8. Oban Hills Survey $25,000

Survey the Oban Group of Forest Reserves in the southeast of Nigeria, adjacent to the Cameroon border. This area has a similar fauna and flora to the Korup area, but has been given little attention. It is threatened by timber exploitation and hunting. Populations of the preussi form of red colobus and Mandrillus leucophaeaeus may survive here, and if so this could be an important secondary reserve. A National Park has already been proposed, but no action has been taken on the proposal.

9. Mamfe-Obudu Survey $30,000

Survey the forest area between Mamfe, Cameroon, and Obudu, Nigeria, with emphasis on the Takamanda Reserve, Cameroon. This area is significant as a habitat for both Cercocebus preussi and Gorilla gorilla (possibly an undescribed western highland form). Gorillas still occur in the area, but hunting pressure is intense. The area includes patches of Cameroon Highland montane vegetation, supporting many endemic-plants and animals, many of them still undescribed. There is a long-standing proposal for a National Park on the Nigerian side, and also for upgrading the Takamanda Reserve in Cameroon, but the whole area remains poorly known, and access is extremely difficult. A survey might be combined with a survey of primate populations on Mt. Cameroon itself.

10. Bioko $20,000

Survey remaining forest areas of Bioko (Fernando Po), Equatorial Guinea, concentrating on Santa Isabel peak, the Caldera of San Carlos and the area between the Caldera and Ureka. Make recommendations for primate conservation. Economic conditions in Equatorial Guinea are likely to put serious practical difficulties in the way of a survey, and to hamper the implementation of any conservation proposals. However, the tremendous biological significance of the island is a sufficient reason for at least attempting a survey.

Western Equatorial Region

11. Development of Lope Reserve, Gabon $120,000

The Lope is a large area (5,000 km²) of mostly virgin rain forest, supporting important populations of Gorilla gorilla, Pan troglodytes, Mandrillus sphinx, Colobus satanas and Arctocebus calabarensis. Should be upgraded to National Park, and existing timbering permits revoked. Major primate research in progress is aiding conservation efforts and should be further supported. Study feasibility of extending the reserve east across the Offoué River into the Forêt des Abeilles, home of a newly discovered population of monkeys in the Cercocebus lhoesti-preussi group. This will require further survey work.

12. Dja Survey $50,000

Surveys in and development of, the proposed Dja National Park in southern Cameroon. A large (approx. 4,000 km²) area that is largely unexploited, although coffee and cocoa plantations exist in the northern sector. The rich fauna and flora represent a transition between the coastal and Congo Basin communities. Most of the typical elements of the Western Equatorial primate community are present, including a population of western gorillas.

13. Survey of the Republic of Congo $50,000

Survey should give particular attention to the status of the bouvieri form of red colobus, of Allenopithecus nigroviridis, and of Gorilla gorilla, as well as to the Odzala National Park.

14. Northeastern Gabon $30,000

Develop plans for a reserve in northeast Gabon, near the Cameroon-Congo border. This is part of a very large area of apparently intact forest, hard of access. Among primates found here are Gorilla gorilla, Pan troglodytes, Cercopithecus galeritus and Mandrillus sphinx. The area seems to be relatively safe at present, but there are potential threats from mining and the building of a railway to Belinga. Some general surveys of the area have already been made, but the best location and dimensions of a reserve have yet to be established. This should be done before major development of the area commences. Further surveys are also needed in the southwest of Gabon.

15. Central African Republic $25,000

Assist development of a lowland gorilla reserve in the far south of the Central African Republic. This area is ecologically very similar to those considered in nos. 12 and 14 above, but a well-protected area in a third country would be valuable.
Congo Basin

16. Lomako Forest, Zaire $50,000
   Development of a reserve in the Lomako Forest area, which contains a major Pan paniscus population. Cercocetus aterrimus and Allenopithecus nigroviridis also occur here.

17. Survey of Wamba area, Zaire $50,000
   Investigate the status of Cercopithecus salongo and establish the best location for a second Pan paniscus reserve. This area has a higher population density of P. paniscus than Lomako, but development is intensifying and bonobos are shot for food. Conservation measures are urgently needed.

18. Survey of Salonga National Park, Zaire $40,000
   This park, on the Lomela, Salonga and Momboyo Rivers is very poorly known and seems to have little effective protection. Assess the fauna and conservation needs. P. paniscus may be present.

19. Lukenie-Sankuru, Zaire $25,000
   Survey of Lukenie-Sankuru area to assess the status of Cercocebus galeritus chrysogaster and make recommendations for its conservation.

20. Northeastern Angola $25,000
   Survey of northeastern Angola and adjacent area of southwestern Zaire to assess the status of Cercocebus aterrimus opdenboschi, Cercopithecus ascanius atrinasus, Cercopithecus neglectus, Miopithecus talapoin and Colobus angolensis angolensis, and make recommendations for their conservation.

Eastern Zaire

21. Ituri Forest Survey $50,000
   Survey to assess the distribution and status of members of the Ituri Forest primate community and make conservation recommendations. Particular attention should be focused on Cercopithecus hamlyni and C. lhoesti and on a comparison of primate populations in the different forest types of the region. A primate field study program here should be encouraged.

22. Maiko Survey $30,000
   Survey the Maiko National Park and N. Walikali/W. Lutunguru areas to the south of the Ituri. This huge area has not been explored biologically, but it is believed to support a population of eastern lowland gorillas. Develop management recommendations.

23. Kahuzi-Biega Conservation $20,000
   Improve protection of the Kahuzi-Biega National Park. A major conservation area for eastern lowland gorillas, threatened by hunting and wood cutting. Tourist program requires restructuring to lessen disturbance to gorillas.

Casamance and Fouta Djalon

24. Survey of the Republic of Guinea $60,000
   Survey primate populations and develop reserves to protect major populations of Papio papio, the temminckii form of red colobus and Pan troglodytes verus.
**Maghreb**

25. **Barbary Macaque Conservation** $60,000

Promote conservation of *Macaca sylvanus*, by supporting the establishment of a national park system in Morocco and reinforcing the existing park system in Algeria. Combine with research on the impact of overgrazing, logging and hunting on *Macaca sylvanus* populations in all North African habitats, and study feasibility of reintroducing macaques to Tunisian forests.

Map 9. The Maghreb, showing the distribution of the Barbary macaque (shaded) (map by Stephen Nash).

**Southern Nigeria**

26. **Management of Okomu Forest** $60,000

Assist establishment of a wildlife sanctuary in the Okomu Forest Reserve (1,200 km²) in Bendel State. Okomu contains a major population of *Cercopithecus erythrogaster*, together with a wide variety of other southwest Nigerian plants and animals, including *Cercopithecus torquatus* and *Cercopithecus nictitans stampfii*. A management study is required.

27. **Ondo and Ogun Survey** $20,000

Survey forests of Ondo and Ogun States to investigate status of *C. erythrogaster* and other primates; prepare management recommendations.

28. **Niger-Cross Survey** $20,000

Survey of area between Niger and Cross Rivers to investigate the distribution and status of *Cercopithecus sclateri*. Make recommendations for conservation. Include consideration of better protection for relic populations of *Procolobus verus*.

Map 10. The southern Nigerian rain forest region (shaded) showing location of recommended projects, numbered as in text (map by Stephen Nash).

**Western Rift**

29. **Bwindi Forest Conservation** $100,000

Support more effective conservation of the Bwindi Forest, Uganda, which should include the establishment of a series of nature reserves or a national park and the extension of boundaries. A research station is needed.

30. **Virunga Volcanoes** $100,000

Improve protection of the Virunga conservation area, especially to give better protection to the Ugandan and Zairois sections, and to allow more effective action to be taken against trappers and hunters in the area as a whole. Continue support for the mountain gorilla project in Rwanda. Investigate status of *Cercopithecus mitis* (apparently both *kandti* and *doggetti* are present).

31. **Kibale Forest Conservation** $100,000

Increase the effectiveness of conservation measures in the Kibale Forest Reserve, Uganda, and continue ecological and management studies on the primate community, studies that have been in progress since 1970. This project should include a campaign to upgrade the conservation status of Kibale.

32. **Nyungwe-Kibira Conservation** $100,000

Support surveys and conservation work in the Nyungwe-Kibira Forest. Nyungwe (in Rwanda) currently has the status of a Forest Reserve, whose degree of exploitation has yet to be determined. Kibira (in Burundi) is a National Park, but at present gets little active protection and is threatened by tree-felling and grazing. Efforts must be made to increase the legal protection in Nyungwe; to survey Kibira, especially to determine whether the *tephrosceles* form of red colobus is present; and to improve protection of Kibira.
33. **Gombe Stream National Park** $60,000
   Assist the continued monitoring of Gombe Stream National Park (Tanzania) and its chimpanzee population. Although Gombe is small and has a low diversity of primate species, research there has had a very important role in promoting a wider knowledge of primate behavior. Gombe has great significance as a site providing long-term data on an ape population.

34. **Western Rift of Zaire** $50,000
   Survey forests at mid-elevations (1,200-1,300 m) along the W. Rift Highlands in Zaire from Beni south to the Bujumbura area. Forests and wildlife are fast disappearing. Assess needs for protection.

35. **Mahale Mountains Park Management** $30,000
   Assist development and management of Mahale Mountains National Park (Tanzania). Establishment of more effective anti-poaching patrols are a priority.

Map 12. The Ethiopian Highlands (shaded) showing location of recommended projects, numbered as in text (map by Stephen Nash).

**Ethiopian Highlands**

36. **Simen Mountains Conservation** $50,000
   Help provide better protection for the Simen Mountains National Park, which is the only officially, protected area in which Theropithecus gelada occurs. Conservation is minimal at present. This park also contains Colobus guereza guereza and the last population of the Walia ibex (Capra ibex), and is used by some Papio hamadryas groups in the wet season.

37. **Bale Mountains** $25,000
   Assess the feasibility of translocating gelada breeding groups to the proposed Bale Mountains National Park (south of Addis Ababa), where a study of the rare mountain nyala antelope is in progress. C. guereza guereza also occurs here. Work for better protection of the park.

38. **Harrar Survey** $25,000
   Survey of Harrar district to the east of the high plateau to locate additional conservation areas for Papio hamadryas and Colobus guereza gallarum. Many hamadryas groups in the Awash National Park are hybrids.

Map 13. The forests of Coastal East Africa and the Uzungwa Mountains (shaded) showing location of recommended projects, numbered as in text (map by Stephen Nash).

**Coastal East Africa**

39. **Tana River Research** $65,000
   Establish a research station in Tana River National Reserve. Monitor population trends in Tana River red colobus and mangabey (which declined in the 1975-83 period) and assess forest regeneration.

40. **Kenya Coast Survey** $15,000
   Survey remaining areas of Kenyan coastal forest, especially Boni and Arabuko-Sokoke, and make management recommendations.

41. **Zanzibar Conservation** $20,000
   To safeguard the future of red colobus populations on Zanzibar, increase area protected by Jozani Forest Reserve and upgrade its status to National Park, give better protection to the Muyuni coastal forest strip and Uzi Island, and monitor translocated populations.

42. **Uzungwa Mountains, Tanzania** $40,000
   To improve protection of the Uzungwa Mountains and their endemic red colobus and mangabey populations, support plans to gazette West Kilombero. Mwanihana and Uzungwa Scarp forests as a National Park and assist management efforts in the park; assist management of the Magombera area incorporated into the Selous Game Reserve; support continuing research on the primate community, including surveys on the southern slopes.

**Project Priorities**

Although all these projects are needed, some have a higher priority than others because they involve large numbers of seriously threatened forms and/or a seriously threatened area supporting many primate species or several endemics. These priorities have been quantified by rating projects on the following parameters:

A. Number of species in project area with a high conservation priority rating (a rating of 9-7 overall, or a threat rating of at least 3). Scored on 1 to 4 scale, as follows:

1. 1-2 high priority species
2. 3-4 high priority species
3. 5-6 high priority species
4. 7-8 high priority species
B. Imminence of threat to the ecosystem under consideration, also scored on a 1 to 4 scale:
1. Low degree of threat at present
2. Moderately threatened
3. Highly threatened (e.g., larger in size, but still under serious threat from conversion and/or hunting)
4. Very highly threatened (e.g., small in size and subject to major erosion or conversion in the near future and/or very heavy hunting pressure)

C. Overall primate species diversity in project area, rated on a 1 to 3 scale:
1. 5 or fewer species
2. 6-9 species
3. 10 or more species

D. Number of endemic primate forms in the project area (species or subspecies found only in the region of which the project area is a typical part). Rated on a 1 to 3 scale:
1. 1 or 2 endemic subspecies in the area
2. 1 endemic species, or more than 2 endemic subspecies
3. 2 or more endemic species in the area

Tables 3 and 4 present the results this project rating in two groups: (1) Surveys and (2) Projects to Develop and Manage Identified Conservation Areas. These two kinds of project generally required significantly different commitments of time, personnel and money, and should probably be considered in somewhat different ways by funding agencies.

As with species conservation priority ratings, it should be borne in mind that these ratings are inevitably somewhat arbitrary, are based only on information available to the compiler (which is often incomplete), and are provided as only a general guide to the relative significance of different areas.

### Table 3
**Priority Ratings of Surveys Required in Africa to Identify Conservation Needs and Potential Reserve Areas**

<table>
<thead>
<tr>
<th>Project # and Area (Details in text)</th>
<th>#High Priority Species</th>
<th>Imminence of Threat to Area</th>
<th>Primate Species Diversity</th>
<th>- Endemic Primates in Area</th>
<th>Total Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Lofa-Mano area, Liberia</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>6. East &amp; Centra! Ivy Coast</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>8. Oban Forests, E. Nigeria</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>9. Mantle (Cameroon) to Obuda (Nigeria)</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>13. Republic of Congo</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>17. Wamba area, Zaire</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>18. Salonga National Park, Zaire</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>19. Lukenie-Sankuru area, Zaire</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>20. Northeast Angola</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>21. Ituri Forest, Zaire</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>22. Maiko National Park, Zaire</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>24. Guinea</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>27. Ondo and Ogun. Nigeria</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>28. Niger-Cross Interfluvium, Nigeria</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>34. Western Rift of E. Zaire</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>40. Kenya coastal forests</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>7</td>
</tr>
</tbody>
</table>

### Table 4
**Priority Ratings of Reserve Development and Management Projects for African Primate Conservation**

<table>
<thead>
<tr>
<th>Project # and Area (Details in text)</th>
<th>#High Priority Species</th>
<th>Imminence of Threat to Area</th>
<th>Primate Species Diversity</th>
<th>- Endemic Primates in Area</th>
<th>Total Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tai National Park. Ivory Coast</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>2. Sao National Park. Liberia</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3. Gola Forest, Sierra Leone</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>4. West Ghana Parks</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>7. Korup National Park, Cameroon</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>11. Lopé Reserve, Gabon</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>12. Dja National Park, Cameroon</td>
<td>4?</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>14. Northeast Gabon</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>15. Southern Central Africa Republic</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>16. Lomako Forest, Central Zaire</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>23. Kahunzi-Biega, E. Zaire</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>25. Mahgreb</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>26. Okumu Forest Reserve, Nigeria</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>29. Bwindi Forest Reserve, Uganda</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>30. Virunga Volcanoes</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>31. Kibale Forest Reserve, W. Uganda</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>32. Nyungwe-Kibira Forest, Rwanda and Burundi</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>33. Gombe Stream National Park, Tanzania</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>35. Mahale Mountains, Tanzania</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>36. Simen Mountains National Park</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>37. Bale Mountains National Park, Ethiopia</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>39. Tana River National Reserve, Kenya</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>41. Zanzibar Forests, Tanzania</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>

*If Theropithecus gelada introduced.*

Many populations of the *guereza* form of black-and-white colobus monkey (*Colobus guereza*) have been decimated by hunting for their skins which are used for rugs, coats and other decorative purposes. (Photo by John F. Oates)
Conclusion

The total estimated cost of all the projects listed here is $2,290,000 (see Table 5). Action must be taken on all these projects if we are to ensure that the current diversity of African primates survives into the next century. However, projects identified as having the highest priority ratings should be given particular attention and initiated at the earliest possible opportunity.

In Table 3 the survey projects with the highest priority (total rating 10-13) are in these areas:
- Between Mamfe, Cameroon, and Obudu, Nigeria
- Bioko (Fernando Po), Equatorial Guinea
- East and Central Ivory Coast
- Oban Forests, Nigeria
- Republic of Congo
- Lofa-Mano area, Liberia
- Wamba area, Zaire
- Ituri Forest, Zaire
- Maiko National Park, Zaire
- Ondo and Ogun States, Nigeria
- Niger-Cross Interfluvium, Nigeria

In Table 4, the reserve development and/or management projects with the highest priority (total rating 10-11) are as follows:
- Tai National Park, Ivory Coast
- Dja National Park, Cameroon
- Lomako Forest, Zaire
- Bwindi Forest Reserve, Uganda
- Tana River National Reserve, Kenya
- Soapo National Park, Liberia
- Gola Forest, Sierra Leone
- West Ghana Parks
- Korup National Park, Cameroon
- Lope Reserve, Gabon
- Northeast Gabon
- Southern Central African Republic
- Okomu Forest Reserve, Nigeria
- Kibale Forest Reserve, Uganda

Long term field research projects have proved to be particularly effective in Africa as a focus of primate conservation efforts at a number of sites. We strongly recommend the continued or increased support of such projects in these high priority areas. The development of project base camps and study sites into field stations affiliated with local organizations (such as universities or wildlife conservation departments) should be particularly encouraged. These stations can serve a very valuable role in both research and training, leading to more effective management of the local ecosystem. However, these stations must as far as possible be constructed and run in such a way that they do not require frequent inputs of large amounts of money or the frequent servicing and repair of sophisticated equipment. Local resources of materials and expertise should be used wherever possible.

Table 5
Summary of Funding Requirements for 1986-1990

<table>
<thead>
<tr>
<th>Major Lowland Rain Forest Regions</th>
<th>Other Special Communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casamance and Fouta Djalon</td>
<td>$ 60,000</td>
</tr>
<tr>
<td>SUBTOTAL</td>
<td>$ 60,000</td>
</tr>
<tr>
<td>Maghreb</td>
<td>$ 60,000</td>
</tr>
<tr>
<td>SUBTOTAL</td>
<td>$ 60,000</td>
</tr>
<tr>
<td>Southern Nigeria</td>
<td>$ 60,000</td>
</tr>
<tr>
<td>Western Rift</td>
<td>$ 100,000</td>
</tr>
<tr>
<td>Ethiopian Highlands</td>
<td>$540,000</td>
</tr>
<tr>
<td>Coastal East Africa</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>TOTAL: MAJOR LOWLAND RAIN FOREST REGIONS</td>
<td>$1,290,000</td>
</tr>
<tr>
<td>TOTAL: OTHER SPECIAL COMMUNITIES</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>TOTAL: ALL OF AFRICA, 1986-1990</td>
<td>$2,290,000</td>
</tr>
</tbody>
</table>
Appendix 1
Species Lists for African Countries Containing Ten or More Primate Species

Several factors obviously affect primate species diversity in a single country. Of these, the most important are land area, extent of rain-forest cover, and the number of different regional primate communities contained within the country’s boundaries. Zaire, with the longest species list, is very large, supports large areas of rain forest, and contains members of both the savanna community and of four different forest communities: Congo Basin, Eastern Zaire, Western Rift and Western Equatorial (the small Mayombe Forest area north of the River Congo in the west). However, Cameroon, although only one-fifth the size of Zaire, has almost as many primate species. Within its boundaries Cameroon contains the savanna community and two species-rich forest communities (Cameroon and Western Equatorial). Equatorial Guinea is only about one-hundredth the size of Zaire, but still has 21 species; each of its two widely separated components (Bioko and Rio Muni) falls within a different primate community. These examples indicate why we should devote our attention to distinct regional communities rather than to political entities when planning conservation efforts.

Where species in the following list are shown with a query in parentheses we have not been able to locate a reliable published record or museum specimen from the country in question, but the species is expected to be present on biogeographic grounds; or the existence of the species is otherwise in doubt (e.g., *Cercopithecus salongo*).

Endemic species, definitely known only from a single country, are indicated with an asterisk (*). The only countries with fewer than 10 species that contain a species not included in this list are Morocco and Algeria, with their single species, the Barbary macaque (*Macaca sylvanus*).

<table>
<thead>
<tr>
<th>Country</th>
<th>Species List</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zaire</td>
<td>2,345,000 km², 30-32 species</td>
</tr>
<tr>
<td>Family Lorisidae</td>
<td></td>
</tr>
<tr>
<td>Subfamily Lorisinae</td>
<td></td>
</tr>
<tr>
<td><em>(Arctocebus calabarensis ?)</em> (Mayombe area)</td>
<td></td>
</tr>
<tr>
<td>Perodicticus potto</td>
<td></td>
</tr>
<tr>
<td>Subfamily Galaginae</td>
<td></td>
</tr>
<tr>
<td>Galago demidovii</td>
<td></td>
</tr>
<tr>
<td>Galago inustus</td>
<td></td>
</tr>
<tr>
<td>Galago senegalensis</td>
<td></td>
</tr>
<tr>
<td>Galago thomasi</td>
<td></td>
</tr>
<tr>
<td>Galago elegans</td>
<td></td>
</tr>
<tr>
<td>Galago crassicaudatus</td>
<td></td>
</tr>
<tr>
<td>Family Cercopithecidae</td>
<td></td>
</tr>
<tr>
<td>Subfamily Cercopithecinae</td>
<td></td>
</tr>
<tr>
<td>Cercocebus galeritus</td>
<td></td>
</tr>
<tr>
<td>Cercocebus albigena</td>
<td></td>
</tr>
<tr>
<td>Cercocebus aterrimus</td>
<td></td>
</tr>
<tr>
<td>Papio anubis</td>
<td></td>
</tr>
<tr>
<td>Papio cynocephalus</td>
<td></td>
</tr>
<tr>
<td><em>(Cercopithecus salongo ?)</em></td>
<td></td>
</tr>
<tr>
<td>Cercopithecus neglectus</td>
<td></td>
</tr>
<tr>
<td><em>Cercopithecus hamlyni</em></td>
<td></td>
</tr>
<tr>
<td>Cercopithecus lhoesti</td>
<td></td>
</tr>
<tr>
<td>Cercopithecus mitis</td>
<td></td>
</tr>
<tr>
<td>Cercopithecus nictitans</td>
<td></td>
</tr>
<tr>
<td>Cercopithecus cephus (Mayombe area)</td>
<td></td>
</tr>
<tr>
<td>Cercopithecus ascanius</td>
<td></td>
</tr>
<tr>
<td>Cercopithecus pogonias</td>
<td></td>
</tr>
<tr>
<td>Cercopithecus aethiops</td>
<td></td>
</tr>
<tr>
<td>Miopithecus talapoin</td>
<td></td>
</tr>
<tr>
<td>Allenopithecus nigroviridis</td>
<td></td>
</tr>
<tr>
<td>Erythrocebus patas</td>
<td></td>
</tr>
<tr>
<td>Subfamily Colobinae</td>
<td></td>
</tr>
<tr>
<td>Procolobus [badius] pennanti</td>
<td></td>
</tr>
<tr>
<td>Colobus guereza</td>
<td></td>
</tr>
<tr>
<td>Colobus satanas</td>
<td></td>
</tr>
<tr>
<td>Family Pongidae</td>
<td></td>
</tr>
<tr>
<td>Pan troglodytes</td>
<td></td>
</tr>
<tr>
<td>Gorilla gorilla</td>
<td></td>
</tr>
</tbody>
</table>

| Cameroon | 475,000 km², 29 species |
| Family Lorisidae |
| Subfamily Lorisinae |
| Arctocebus calabarensis |
| Perodicticus potto |
| Subfamily Galaginae |
| Galago alleni |
| Galago demidovii |
| Galago senegalensis |
| Galago thomasi |
| Galago elegans |
| Family Cercopithecidae |
| Subfamily Cercopithecinae |
| Cercocebus torquatus |
| Cercocebus galeritus |
| Cercocebus albigena |
| Papio anubis |
| Mandrillus sphinx |
| Mandrillus leucophaeus |
| Cercopithecus neglectus |
| Cercopithecus preussi |
| Cercopithecus nictitans |
| Cercopithecus erythrotis |
| Cercopithecus cephus |
| Cercopithecus ascanius |
| Cercopithecus mona |
| Cercopithecus pogonias |
| Cercopithecus aethiops |
| Miopithecus sp. |
| Erythrocebus patas |
| Subfamily Colobinae |
| Procolobus [badius] pennanti |
| Colobus guereza |
| Colobus satanas |
| Family Pongidae |
| Pan troglodytes |
| Gorilla gorilla |

| 924,000 km², 20-24 species |
| Family Lorisidae |
| Subfamily Lorisinae |
| Arctocebus calabarensis |
| Perodicticus potto |
| Subfamily Galaginae |
| Galago alleni |
| Galago demidovii |
| Galago senegalensis |
| Galago elegans |
| Family Cercopithecidae |
| Subfamily Cercopithecinae |
| Cercocebus torquatus |
| Cercocebus galeritus |
| Cercocebus albigena |
| Papio anubis |
| Mandrillus leucophaeus |
| Cercopithecus preussi |
| Cercopithecus nictitans |
| *Cercopithecus erythrotis* |
| *Cercopithecus sclateri* |
| *Cercopithecus erythrotis* |
| Cercopithecus mona |
| (Cercopithecus pogonias ?) |
| Cercopithecus aethiops |
| Erythrocebus patas |
| Subfamily Colobinae |
| (Procolobus [badius] pennanti ?) |
| Procolobus verus |
| Colobus vellerosus |
| Colobus guereza |
| Family Pongidae |
| Pan troglodytes |
| Gorilla gorilla |
Equatorial Guinea 28,000 km², 21 species
(includes Bioko Island)
Family Lorisidae
Subfamily Lorisinae
Arctocebus calabarensis
Perodicticus potto
Subfamily Galaginae
Galago alleni
Galago demidovii
Galago elegantulus
Family Cercopithecidae
Subfamily Cercopithecinae
Cercocetus torquatus
Cercocetus galeritus
Cercocetus albigena
Mandrillus sphinx
Mandrillus leucophaeus
Cercopithecus neglectus
Cercopithecus nictitans
Cercopithecus cephus
Cercopithecus pogonias
Miopithecus sp.
Subfamily Colobinae
Procolobus [badius] pennantii
Colobus satanus
Family Pongidae
Pan troglodytes
Gorilla gorilla
Congo Republic 342,000 km², 22 species
Family Lorisidae
Subfamily Lorisinae
Arctocebus calabarensis
Perodicticus potto
Subfamily Galaginae
Galago alleni
Galago demidovii
Galago elegantulus
Family Cercopithecidae
Subfamily Cercopithecinae
Cercocetus torquatus
Cercocetus galeritus
Cercocetus albigena
Papio anubis
Mandrillus sphinx
Cercopithecus neglectus
Cercopithecus nictitans
Cercopithecus cephus
Cercopithecus pogonias
Miopithecus sp.
Allenopithecus nigroviridis
Subfamily Colobinae
Procolobus [badius] pennantii
Colobus satanus
Family Pongidae
Pan troglodytes
Gorilla gorilla
Central African Republic 623,000 km², 19-20 species
Family Lorisidae
Subfamily Lorisinae
Arctocebus calabarensis
Perodicticus potto
Subfamily Galaginae
Galago alleni
Galago demidovii
Galago senegalensis
Galago elegantulus
Family Cercopithecidae
Subfamily Cercopithecinae
Cercocetus torquatus
Cercocetus galeritus
Cercocetus albigena
Papio anubis
Cercopithecus neglectus
Cercopithecus nictitans
Cercopithecus cephus
Cercopithecus pogonias
Miopithecus sp.
Subfamily Colobinae
Colobus guereza
Colobus satanus
Family Pongidae
Pan troglodytes
Gorilla gorilla
Uganda 236,000 km², 19 species

Family Lorisidae
- Subfamily Lorisinae
  - Perodicticus potto
  - Galago demidovii
  - Galago inustus
  - Galago senegalensis
  - Galago crassicaudatus

Family Cercopithecidae
- Subfamily Cercopithecinae
  - Cercocebus albigena
  - Papio anubis
  - Cercopithecus neglectus
  - Cercopithecus lhoesti
  - Cercopithecus mitis
  - Cercopithecus ascanius
  - Cercopithecus pogonias
  - Cercopithecus aethiops
  - Erythrocebus patas
- Subfamily Colobinae
  - Procolobus [badius] badius
  - Colobus guereza
  - Colobus angolensis

Family Pongidae
- Pan troglodytes
- Gorilla gorilla

Kenya 583,000 km², 17 species

Family Lorisidae
- Subfamily Lorisinae
  - Perodicticus potto
  - Galago demidovii
  - Galago senegalensis
  - Galago zanzibaricus
  - Galago garnetti

Family Cercopithecidae
- Subfamily Cercopithecinae
  - Cercocebus galeritus
  - Papio anubis
  - Papio cynocephalus
  - Papio ursinus
  - Cercopithecus neglectus
  - Cercopithecus albogularis
  - Cercopithecus mitis
  - Cercopithecus ascanius
  - Cercopithecus aethiops
  - Erythrocebus patas
- Subfamily Colobinae
  - Procolobus [badius] rufomitratus
  - Colobus guereza
  - Colobus angolensis

Family Pongidae
- Pan troglodytes
- Gorilla gorilla

Angola (including Cabinda) 1,247,000 km², 17-18 species

Family Lorisidae
- Subfamily Lorisinae
  - Perodicticus potto
  - Galago demidovii
  - Galago senegalensis
  - Galago thomasi
  - Galago crassicaudatus

Family Cercopithecidae
- Subfamily Cercopithecinae
  - Cercocebus atys
  - Papio papio
  - Papio anubis
  - Cercopithecus diana
  - Cercopithecus petaurista
  - Cercopithecus campbelli
  - Cercopithecus mona
  - Cercopithecus aethiops
  - Erythrocebus patas
- Subfamily Colobinae
  - Procolobus [badius] badius
  - Colobus guereza
  - Colobus angolensis

Family Pongidae
- Pan troglodytes
- Gorilla gorilla

Ivory Coast 322,000 km², 17 species

Family Lorisidae
- Subfamily Lorisinae
  - Perodicticus potto
  - Galago demidovii
  - Galago senegalensis
- Subfamily Galaginae
  - Galago elegantulus

Family Cercopithecidae
- Subfamily Cercopithecinae
  - Cercocebus galeritus
  - Papio anubis
  - Papio cynocephalus
  - Papio ursinus
  - Cercopithecus neglectus
  - Cercopithecus albogularis
  - Cercopithecus mitis
  - Cercopithecus ascanius
  - Cercopithecus aethiops
  - Erythrocebus patas
- Subfamily Colobinae
  - Procolobus [badius] rufomitratus
  - Colobus guereza
  - Colobus angolensis

Family Pongidae
- Pan troglodytes
- Gorilla gorilla

Ghana 239,000 km², 15 species

Family Lorisidae
- Subfamily Lorisinae
  - Perodicticus potto
  - Galago demidovii
  - Galago senegalensis

Family Cercopithecidae
- Subfamily Cercopithecinae
  - Cercocebus torquatus
  - Papio anubis
  - Papio cynocephalus
  - Papio ursinus
  - Cercopithecus neglectus
  - Cercopithecus albogularis
  - Cercopithecus mitis
  - Cercopithecus ascanius
  - Cercopithecus aethiops
  - Erythrocebus patas
- Subfamily Colobinae
  - Procolobus [badius] badius
  - Colobus guereza
  - Colobus angolensis

Family Pongidae
- Pan troglodytes
- Gorilla gorilla

Sierra Leone 72,000 km², 15 species

Family Lorisidae
- Subfamily Lorisinae
  - Perodicticus potto
  - Galago demidovii
  - Galago senegalensis

Family Cercopithecidae
- Subfamily Cercopithecinae
  - Cercocebus atys
  - Cercocebus torquatus
  - Papio anubis
  - Papio cynocephalus
  - Papio ursinus
  - Cercopithecus neglectus
  - Cercopithecus albogularis
  - Cercopithecus mitis
  - Cercopithecus ascanius
  - Cercopithecus aethiops
  - Erythrocebus patas
Subfamily Colobinae
Procolobus [badius] badius
Procolobus verus
Colobus polykomos
Family Pongidae
Pan troglodytes

Rwanda 26,000 km², 14-16 species

Family Lorisidae
Subfamily Lorisinae
Perodicticus potto
Subfamily Galaginae
(Galago demidovii ?)
(Galago inustus ?)
Galago senegalensis
Galago crassicaudatus

Family Cercopithecidae
Subfamily Cercopithecinae
Cercocetus albigena
Papio anubis
Cercopithecus lhoesti
Cercopithecus mitis
Cercopithecus ascanius
Cercopithecus aethiops
Subfamily Colobinae
Procolobus [badius] rufomitratus

Family Pongidae
Pan troglodytes

Guinea 246,000 km², 14 species

Family Lorisidae
Subfamily Lorisinae
Perodicticus potto
Subfamily Galaginae
Galago demidovii
Galago senegalensis

Family Cercopithecidae
Subfamily Cercopithecinae
Cercocetus atys
Papio papio
Papio anubis
Cercopithecus diana
Cercopithecus petaurista
Cercopithecus campbelli
Cercopithecus aethiops
Erythrocebus patas
Subfamily Colobinae
Procolobus [badius] badius
Colobus polykomos

Family Pongidae
Pan troglodytes

Liberia 111,000 km², 12 species

Family Lorisidae
Subfamily Lorisinae
Perodicticus potto
Subfamily Galaginae
Galago demidovii

Family Cercopithecidae
Subfamily Cercopithecinae
Cercocetus atys
Cercopithecus diana
Cercopithecus nictitans
Cercopithecus petaurista
Cercopithecus campbelli
Cercopithecus aethiops
Subfamily Colobinae
Procolobus [badius] badius
Colobus polykomos

Family Pongidae
Pan troglodytes

Burundi 28,000 km², 11 species

Family Lorisidae
Subfamily Lorisinae
Perodicticus potto
Subfamily Galaginae
Galago senegalensis
Galago crassicaudatus

Family Cercopithecidae
Subfamily Cercopithecinae
Cercocetus albigena
Papio anubis
Cercopithecus lhoesti
Cercopithecus mitis
Cercopithecus aethiops
Subfamily Colobinae
Procolobus [badius] rufomitratus
Colobus angolensis

Family Pongidae
Pan troglodytes

Zambia 752,975 km², 10-12 species

Family Lorisidae
Subfamily Lorisinae
(Perodicticus potto ?)
Subfamily Galaginae
Galago senegalensis
Galago thomasi
(Galago zancibaricus ?)
Galago crassicaudatus

Family Cercopithecidae
Subfamily Cercopithecinae
Papio cynocephalus
Papio ursinus
Cercopithecus albogularis
Cercopithecus mitis
Cercopithecus ascanius
Cercopithecus aethiops
Subfamily Colobinae
Colobus angolensis

Family Pongidae
Pan troglodytes

Ethiopia 1,222,000 km², 10 species

Family Lorisidae
Subfamily Galaginae
Galago senegalensis

Family Cercopithecidae
Subfamily Cercopithecinae
Papio anubis
Papio cynocephalus
Papio hamadryas
*Theropithecus gelada
Cercopithecus neglectus
Cercopithecus mitis
Cercopithecus aethiops
Erythrocebus patas

Subfamily Colobinae
Colobus angolensis

Family Pongidae
Procolobus verus

Togo 57,000 km², 10 species

Family Lorisidae
Subfamily Lorisinae
Perodicticus potto
Subfamily Galaginae
Galago demidovii
Galago senegalensis

Family Cercopithecidae
Subfamily Cercopithecinae
Papio anubis
Cercopithecus petaurista
Cercopithecus mona
Cercopithecus aethiops
Erythrocebus patas
Subfamily Colobinae
Procolobus verus
Colobus vellerosus
Guinea-Bissau  
36,000 km², 9-11 species

Family Lorisidae
Subfamily Lorisinae
(Poodyicticus polio ?)
Subfamily Galaginae
(Galago demidovii ?)
Galago senegalensis

Family Cercopithecidae
Subfamily Cercopithecinae
Papio papio
Cercopithecus petaurista
Cercopithecus campbelli
Cercopithecus aethiops
Erythrocebus patas
Subfamily Colubine
Procolobus [badius] badius
Colobus polykomos

Family Pongidae
Pan troglodytes

Benin  
113,000 km², 9-10 species

Family Lorisidae
Subfamily Lorisinae
Poodyicticus poodyicticus
Subfamily Galaginae
Galago demidovii
Galago senegalensis

Family Cercopithecidae
Subfamily Cercopithecinae
Papio anubis
Cercopithecus petaurista
(Cercopithecus erythrogaster ?)
Cercopithecus mona
Cercopithecus aethiops
Erythrocebus patas
Subfamily Colubine
Colobus vellerosus

Senegal  
197,000 km², 9-11 species

Family Lorisidae
Subfamily Galaginae
Galago demidovii
Galago senegalensis

Family Cercopithecidae
Subfamily Cercopithecinae
Cercocebus atys

The Kibale Forest Reserve, Uganda, site of a major ecological study of rain forest primates since 1970. The conservation status of the forest needs upgrading to ensure its future protection (photo by John F. Oates).
Appendix 2

The Distribution and Status of the Most Threatened African Primate Species

Considered here are species with a threat rating of at least 4 in Table 2 (page 12), that is species regarded as highly vulnerable, endangered or highly endangered. The status information was provided by the IUCN Conservation Monitoring Centre, Cambridge, England, and the maps (pages 37-41) were drawn by Stephen Nash.

Barbary macaque

*Macaca sylvanus*

**Status:** Once widespread throughout North Africa, it is now restricted to small patches of forest and scrub in northern Morocco and Algeria. A small feral population also occurs in Gibraltor. Population estimates exist, but numbers have undoubtedly declined dramatically in recent years and the only known protected population occurs within the Korup Reserve in Cameroon. The species is semi-terrestrial with a flexible social organization, small units occasionally joining to form groups of up to 200 animals. Seriously threatened by habitat destruction and hunting. Surveys are urgently required to determine whether viable populations occur outside Korup. If so, they require immediate protection, especially against hunting.

Gelada

*Theropithecus gelada*

**Status:** Found only in the central highlands of Ethiopia. Estimates suggested a total population of c. 500,000 during the early 1970s; though it may well be lower now in the wake of the 1980s droughts. So long as the human population continues to increase, the species’ habitat is under threat from encroachment by agriculture and deforestation. Efforts are needed to ensure the survival of the only conservation area in which the species occurs. The possibility of establishing a population in another suitable conservation area should be explored.

Diana monkey

*Cercopithecus diana*

**Status:** Inhabits rain forest in Sierra Leone, Liberia, Ivory Coast, Ghana, and the southern edge of Guinea. Early reports of its occurrence in other areas are unconfirmed. No population estimates are available and reports of its rarity vary widely, although it is almost certainly threatened throughout much of its range as a result of habitat destruction and hunting. In all countries where it occurs needs protection from hunting and the preservation of remaining areas of habitat. Further studies and local conservation programmes are also urgently required.

Salongo monkey

*Cercopithecus salongo*

**Status:** Endemic to Zaire where it is known from two specimens obtained from local hunters near Wamba, Zone de Djolu, 22°31'E, 0°01'N - 0°01'S. No other data are available.

Owl-faced guenon

*Cercopithecus hamlyni*

**Status:** Occurs in the eastern Congo basin, in lowland, montane and bamboo forests. Deforestation is extensive in much of its range and no information is available on its occurrence within protected areas. Surveys of its status and distribution are urgently needed, as is full protection of remaining areas of habitat.

Preuss’s guenon

*Cercopithecus preussi*

**Status:** A montane forest species which has a very limited distribution on and around Mount Cameroon and on the island of Bioko. No population estimates exist, but it is believed threatened by habitat destruction and hunting and is particularly vulnerable because of its limited range. Surveys of its status and distribution are needed, as is full protection of remaining areas of habitat and enforcement of anti-poaching laws. A captive breeding programme needs instigating.

Harrison’s monkey

*Cercopithecus ? sp. (Gabon)*

**Status:** This monkey was discovered in the Forêt des Abeilles, Gabon, by M. J. S. Harrison in 1984. It is apparently a close relative of Cercopithecus lhoesti and C. preussi. Little information on its status is available, but it is obviously hunted since Harrison’s discovery was based on hunters’ kills (information from compiler).

White-throated guenon

*Cercopithecus erythrogaster*

**Status:** Known only from south western Nigeria where it is restricted to small forest patches, although a possibility exists that it occurs in Benin. Threatened by habitat destruction and hunting. Numbers declining. Stringent habitat protection and hunting restrictions are needed, and further data on status and ecology required.

Red-eared guenon

*Cercopithecus erythrotis*

**Status:** Two subspecies occur in Nigeria and Cameroon, and a third is endemic to Bioko. Lives in primary and secondary forests, and is threatened by habitat destruction and hunting. Stringent habitat protection and hunting restrictions are needed, and further data on status and ecology of all three subspecies are required. (Compiler’s note: In this plan, the *sclateri* form of this guenon, found in eastern Nigeria, is regarded as a possibly distinct species. It is believed to be under great pressure from habitat destruction and hunting.)

Pennant’s red colobus

*Procolobus [adius] pennanti*

**Status (pennanti form):** Endemic to Bioko. No estimates of its population are available, and intensive hunting has put its survival in serious jeopardy. There is no recent information on its occurrence, and surveys are urgently needed required to determine whether any significant populations survive and can be saved. 

**(preussi form):** Very restricted range in lowland evergreen forest of Cameroon. Total number unknown but believed to be less than 8,000. Its habitat of mature forest with emergent trees renders it particularly susceptible to logging activities. Still hunted for food, although it has been accorded partial protection. Only survives in the Korup Reserve and perhaps the Ejhagam Reserve. 

**(bouvieri form):** Endemic to Congo (Brazzaville) where it has only been recorded in the Léfini Reserve. Numbers are perilously low, hunting is rife, and formal protection of the reserve has expired. Surveys of its distribution and status are needed extremely urgently and immediate protection from hunting and other forms of disturbance is required if it is to survive.

Zanzibar red colobus

*Procolobus [adius] kirkii*

**Status:** Endemic to Zanzibar Island off the Tanzania coast, where it only occurs at relatively high densities in four forest areas in the south. The taxon lives in relatively large, multi-male groups in overlapping home ranges. It is severely threatened by habitat destruction within its very restricted range, and no populations are currently protected effectively. Jozani Forest Reserve and other remaining areas of habitat require full legal and practical protection if this species is to be saved.
Uhehe red colobus
*Procolobus (badius) gordonorum*

**Status:** Endemic to Tanzania. Scattered and very restricted distribution in forests around the Uzungwa Mountains and Magombero Forest Reserve. It is extremely rare. The population most likely to be viable occurs in the Magombero Forest which has been bisected by the Zambia-Tanzania railway and is severely threatened by further habitat disturbance. In the Uzungwa highlands, some populations have been virtually eliminated by hunting. Thorough conservation measures have been proposed and need to be implemented immediately if this species is to be saved.

Black colobus
*Colobus satanas*

**Status:** Restricted to high forest in the evergreen rain forest belt from Cameroon to the Congo River; also occurs in Bioko. Numbers declining because of hunting and habitat destruction. Apparent inability to survive in secondary forest following logging increases its vulnerability, and it is now only found in protected or inaccessible areas. Currently protected in at least one reserve in Cameroon, but hunting and oil exploration threaten it there. Further information on its status and distribution are urgently needed.

Bonobo
*Pan paniscus*

**Status:** The bonobo has a discontinuous range in the central Zaire basin of Equatorial Africa, south of the Zaire and Lomami Rivers. Although the extent of potential habitat is in the region of 350,000 km², the bonobo is believed to occur in only small isolated groups within this range. There are no substantive data concerning total numbers and all estimates are speculative, ranging from 100,000 - 200,000 down to about 15,000; as of 1982 only a few viable populations were known. The species is hunted for dietary and religious purposes, but the most serious threat comes from an increase in traditional slash-and-burn agriculture, and from commercial logging operations. Although protected by law, enforcement is negligible. Also no existing national park is known to harbour the species. The most urgent conservation requirement therefore is to establish parks and reserves in areas where the bonobo’s presence has been verified. A survey is also required to determine more fully the species distribution and abundance. The bonobo does breed in captivity.

Gorilla
*Gorilla gorilla*

**Status:** Gorillas occur in two regions of Africa - equatorial west Africa and east central Africa, the two areas being separated by the 1,000 km of the Congo Basin tropical forest. Three subspecies are now usually recognized. The western lowland gorilla (G. g. gorilla) from Cameroon, Central African Republic, Congo (Brazzaville), Equatorial Guinea, Gabon, Cabinda enclave and possibly southeast Nigeria; the eastern lowland gorilla (G. g. graueri) from eastern Zaire; and the mountain gorilla (G. g. beringei) from the Virunga Volcano region of Rwanda, Uganda and Zaire, and the Bwindi Forest Reserve of Uganda. Little detailed knowledge exists of gorilla numbers, and details of their distribution in Zaire and Congo (Brazzaville) are largely unknown. In Gabon, a nationwide census undertaken between December 1980 and February 1983 estimated numbers to be 35,000 ± 7,000. The eastern lowland gorilla possibly numbers about 3,000 - 5,000, and the endangered mountain gorilla about 400. Forest clearance for agriculture and commercial logging, and hunting for food, are factors which which adversely affect gorillas and are likely to increase as human numbers rise.
Theropithecus gelada

Cercopithecus diana

Cercopithecus ?salongo

Cercopithecus hamlyni
Cercopithecus preussi
Cercopithecus sp. (Gabon)
Cercopithecus erythrogaster
Cercopithecus ?sclateri
Cercopithecus erythrotis

Allenopithecus nigroviroidis

Procolobus (badius) pennanti

Procolobus (badius) kirkii