



Fewer than

Today, the total population of Cross River gorillas may number fewer than 300 individuals.

300 left

## Regional Action Plan for the Conservation of the Cross River Gorilla (*Gorilla gorilla diehli*)

Hope

Implementation of the recommendations in this plan will make a significant difference to the survival of the Cross River gorilla.

Survival





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Cross River Gorilla  
(*Gorilla gorilla diehli*)

**The actions recommended in this plan are estimated to cost \$4.6 million over a five-year period. Almost one-third of those funds have already been committed through government and donor support for general conservation efforts in the region.**

# Regional Action Plan for the Conservation of the Cross River Gorilla (*Gorilla gorilla diehli*)

Compiled and edited by John Oates<sup>1</sup>, Jacqueline Sunderland-Groves<sup>2</sup>, Richard Bergl<sup>3</sup>, Andrew Dunn<sup>4</sup>, Aaron Nicholas<sup>5</sup>, Ebai Takang<sup>6</sup>, Fidelis Omeni<sup>7</sup>, Inaoyom Imong<sup>8</sup>, Roger Fotso<sup>9</sup>, Louis Nkembu<sup>10</sup>, and Liz Williamson<sup>11</sup>

<sup>1</sup> Hunter College and the Graduate Center, City University of New York, and Africa Program, Wildlife Conservation Society, USA.

<sup>2</sup> Center for International Forestry Research, Indonesia, and University of Sussex, UK.

<sup>3</sup> Graduate Center, City University of New York (currently at North Carolina Zoological Park), USA.

<sup>4</sup> Wildlife Conservation Society – Nigeria.

<sup>5</sup> Wildlife Conservation Society – Cameroon.

<sup>6</sup> Ministry of Forestry and Wildlife, Cameroon.

<sup>7</sup> Ministry of Environment, Housing and Urban Development, Federal Government of Nigeria.

<sup>8</sup> Wildlife Conservation Society – Nigeria.

<sup>9</sup> Wildlife Conservation Society – Cameroon.

<sup>10</sup> Environment and Rural Development Foundation, Cameroon.

<sup>11</sup> IUCN/SSC Primate Specialist Group, Section on Great Apes.

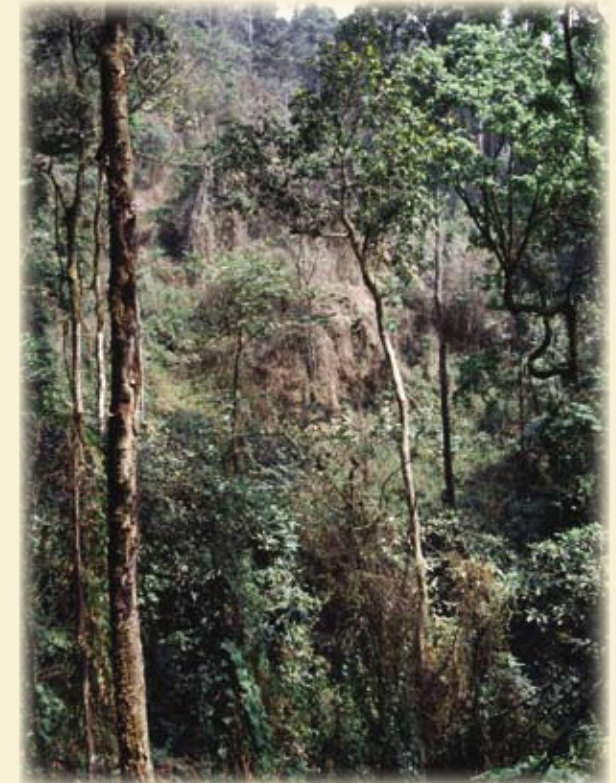
## Executive Summary

**T**HIS DOCUMENT REPRESENTS THE consensus of experts who met at a workshop in April 2006 in Calabar, Cross River State, Nigeria, to formulate a set of priority actions that would increase the survival prospects for the Cross River gorilla (*Gorilla gorilla diehli*). The Cross River gorilla is recognized by IUCN as Critically Endangered, and is the most threatened taxon of ape in Africa. It is the most westerly and northerly form of gorilla, and occurs only in a limited area around the mountainous headwaters of the Cross River, straddling the border between Cameroon and Nigeria.

Participants at the 2006 workshop, which built upon the outcomes of previous meetings in Calabar in 2001 and Limbe, Cameroon, in

2003, included representatives of forestry and wildlife conservation agencies from the two range countries, of local and international nongovernmental conservation and development organizations, and of university-based researchers.

The Cross River gorilla was named as a new species in 1904, but was largely neglected by the outside world until the first systematic surveys of its populations began in 1987. Since then it has received increasing attention from scientists and conservationists. The work of the last two decades has revealed that fewer than 300 Cross River gorillas may remain, spread across an area of about 12,000 km<sup>2</sup>. Within that area, most gorilla signs have been found in 11 discrete localities, most of which are 10 km



Afi Mountain, Nigeria. Afi is the most westerly locality for any gorillas and experiences a prolonged dry season.



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A Cross River gorilla in the wild, Afi Mountain, Nigeria. Photographing them is extremely difficult because of their rarity, the rugged terrain they inhabit, and their wariness of humans.

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**The outlook for these apes is far from hopeless, but a concerted and sustained effort will be required if their long-term survival is to be assured.**

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Sunrise over Kagwene Mountain, Cameroon, an area that is frequented by Cross River gorillas.

or more apart. As described in this plan, recent genetic studies suggest that gorillas at 10 of these localities (extending east from Afi Mountain in Nigeria to Kagwene Mountain in Cameroon) constitute one population, divided into three subpopulations which still occasionally exchange migrants; potential gorilla habitat still connects all of these localities, although sometimes tenuously. It is not yet clear whether the recently rediscovered gorillas in the Bechati-Fossimondi-Besali area represent a peripherally isolated population or retain genetic contact with the Afi-to-Kagwene population to the northwest. In the broader landscape within which the 11 known gorilla localities are embedded are large areas of apparently suitable habitat into which the existing population has the potential to expand, and which may also be occupied by some yet to be discovered groups of gorillas.

Genetic analysis points to a relatively recent marked reduction in the total population size of *G. g. diehli* and this is likely to have been due to hunting by humans. The hunting of wildlife to supply a large bushmeat trade is rampant throughout this part of Africa and although gorillas are legally protected across their range, individuals are still occasionally killed by hunters. Hunting therefore remains a serious threat to the persistence of such a small, fragmented population. In addition, the gorilla's forest habitat continues to be eroded and fragmented by farming, burning by pastoralists, and the extension and expansion of roads. Human settlements are scattered throughout the landscape inhabited by the gorillas, and the population of

these settlements continues to grow at a high rate; on the edges of this landscape, are areas with some of the densest human populations in Africa. Despite these ever-growing pressures on the Cross River gorillas and their habitat, the outlook for these apes is far from hopeless, but a concerted and sustained effort will be required if their long-term survival is to be assured.

This plan outlines a program of action that, if put into effect, could ensure the Cross River gorilla's survival. The actions we recommend are estimated to cost \$4.6 million over a five-year period and around one-third of those funds have already been committed through government and donor support for general conservation efforts in the region. About \$3 million therefore remains to be raised. The recommendations in this plan fall into two categories: recommendations for actions that need to be taken throughout the Cross River gorillas' range, and site-specific recommendations.

Among those that apply across the range of *G. g. diehli* are the following:

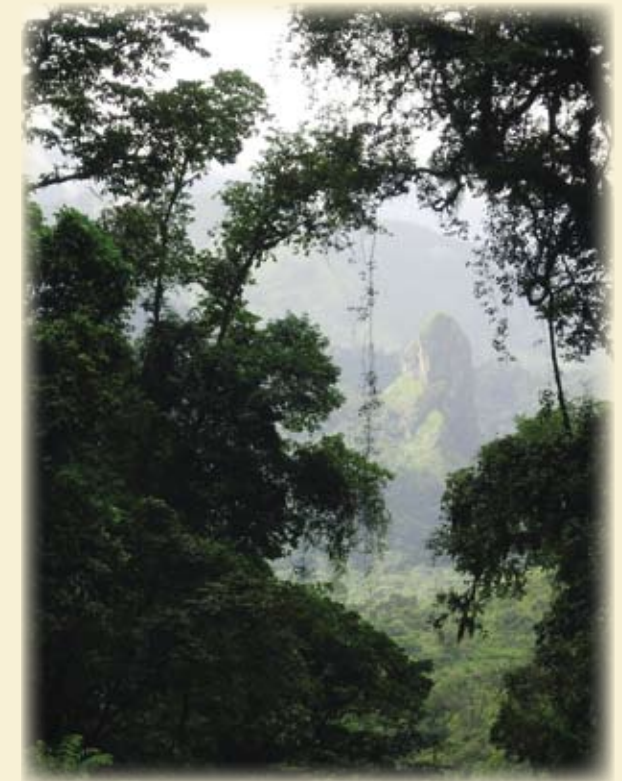
- Given the nature of their distribution, a landscape-based approach should be taken for the conservation of Cross River gorillas that must include effective cooperation by conservation managers across the Cameroon-Nigeria border.
- There is a need to expand efforts to raise awareness among all segments of human society about the value of conservation in general and about the uniqueness of the Cross River gorilla in particular.

- Community participation in conservation efforts is essential, and for this to occur there needs to be mutual understanding among government agencies, non-governmental organizations and local people.
  - Ecotourism can bring benefits for conservation but can also have negative impacts. Given the precarious status of Cross River gorillas, plans for habituating these apes for tourist viewing must be evaluated with great care, giving full consideration to all risks to the apes.
  - Improvements are needed both in the existing legislation protecting gorillas, and in how the laws are enforced.
  - Continued research is needed to better understand the population biology of the gorillas, including surveys of poorly-known areas (especially within potential corridors connecting population nuclei), the monitoring of known populations, and more intensive genetic sampling.
- Improve law enforcement and institute a patrol system (all sites).
  - Improve protected-area infrastructure (Afi, Okwangwo).
  - Develop or finalize a management plan or strategy (all sites).
  - Re-trace or demarcate conservation area boundaries (all sites).
  - Take steps to upgrade the national conservation status of sites (Takamanda, Mone, Mbulu, Kagwene).
  - Elaborate community-based land-use plans within sites, in buffer zones, and/or in corridors (Afi, Mbe, Mbulu, Bechati-Fossimondi-Besali).
  - Develop ecotourism plans, not necessarily focussed on gorillas (Afi, Okwangwo).
  - Develop fire-protection plans (Afi, Mbe, Kagwene).

Sites identified for specific actions are (in Nigeria) Afi Mountain Wildlife Sanctuary, the Mbe Mountains and the Okwangwo Division of Cross River National Park in Nigeria, and (in Cameroon) the proposed Takamanda National Park, Mone River Forest Reserve, the Mbulu Forest, Kagwene Mountain (a proposed gorilla sanctuary), and the Bechati-Fossimondi-Besali hill area. Among recommendations that apply to several of these sites are the following:

The Cameroon-Nigeria border region, where the Cross River gorilla occurs, is a biodiversity hotspot of global significance that supports a high diversity of animal and plant species, large numbers with restricted ranges, and many of which are threatened. Threatened primates that share parts of the Cross River gorilla's habitat include the drill (*Mandrillus leucophaeus*), Preuss's guenon (*Cercopithecus preussi*) and the Nigeria-Cameroon chimpanzee (*Pan troglodytes vellerosus*). Successful efforts to secure the future

of the Cross River gorilla and its habitat would, therefore, provide a wide range of important conservation benefits. We hope that this plan will assist in guiding the actions needed to improve the conservation prospects for this critically endangered ape (and for this biodiversity hotspot as a whole), and in raising the funds needed to undertake them.



Kagwene Mountain, Cameroon, where a sanctuary is being developed specifically to protect Cross River gorillas.

## Résumé

**C**E DOCUMENT REPRÉSENTE LE CONSENSUS des experts réunis à l'occasion d'un atelier organisé en Avril 2006 à Calabar, dans l'état de Cross River au Nigeria, pour définir un ensemble d'actions prioritaires, qui devraient accroître les perspectives de survie du gorille de la rivière Cross (*Gorilla gorilla diehli*). Le gorille de la rivière Cross qui est reconnu par l'UICN comme une espèce en danger critique d'extinction, est également le taxon le plus menacé des grands singes d'Afrique. C'est la forme de gorille la plus occidentale et nordique de l'aire de répartition des gorilles, et elle a une zone de distribution restreinte dans le système montagneux formant les sources du Cross River, à cheval sur la frontière entre le Cameroun et le Nigeria.

Cet atelier de 2006, qui a capitalisé les résultats des réunions antérieures organisées en 2001 à Calabar au Nigeria et en 2003 à Limbe au Cameroun, a connu la participation entre autre des représentants des services des forêts et de la conservation de la faune des deux pays, des organisations non gouvernementales locales et internationales de conservation et de développement, ainsi que des chercheurs venant des universités.

Le gorille de la rivière Cross fut décrit comme nouvelle espèce en 1904, mais qui a été largement négligée par le monde extérieur avant la mise-en-oeuvre des premiers sondages systématiques en 1987, date de démarrage des premiers inventaires systématiques de ses populations. Depuis cette époque, il fait l'objet d'une attention toujours croissante des scientifiques et des spécialistes de la conservation. Les résultats

des travaux réalisés au cours des deux dernières décennies révèlent qu'il serait possible qu'il reste moins de 300 individus, disséminés sur un territoire d'environ 12000 km<sup>2</sup>. A l'intérieur de ce territoire, la majorité des indices de présence de gorille ont été relevés dans 11 localités isolées et distantes les unes des autres d'au moins 10 km. Tel que décrit dans ce plan, les études génétiques récentes suggèrent que les gorilles au niveau de 10 de ces localités (s'étalant de l'Est du Mont Afi au Nigeria jusqu'au Mont Kagwene au Cameroun), constituent une seule population, répartie en trois sous-populations qui occasionnellement échangent des migrants; l'ensemble de ces localités restent connectées entre elles par des habitats potentiels pour les gorilles, même si certains habitats sont relativement réduits. Il n'est pas encore clairement établi si les gorilles récemment redécouverts dans la zone de Bechati-Fosimondi-Bessali représentent une population périphérique isolée, ou une population qui maintient un lien génétique avec la population du secteur Afi-Kagwene plus au Nord Ouest. A l'échelle de la grande région qui englobe les 11 localités à gorilles, il existe de vastes habitats, de toute apparence propices pour les gorilles, à l'intérieur desquels les populations actuelles pourraient potentiellement s'étendre, mais qui peut être aussi abriter déjà des populations de gorilles non encore découvertes.

Les analyses génétiques indiquent une importante réduction récente de la taille des populations de *Gorilla gorilla diehli* et ceci serait probablement une conséquence de la chasse par les hommes. La chasse pour approvisionner le

marché de la viande de brousse est une activité endémique dans cette région de l'Afrique, et bien que les gorilles soient protégés par la loi dans toute son aire de distribution, des individus sont occasionnellement tués par les chasseurs. La chasse demeure une menace sérieuse pour la survie d'une population aussi réduite et fragmentée. De plus ces habitats forestiers des gorilles continuent d'être érodés et fragmentés par l'agriculture, les brûlis, le pâturage ainsi que l'extension et l'expansion des routes. Les habitations humaines sont disséminées partout à travers l'aire de distribution des gorilles, et les populations de ces groupements continuent à croître à un rythme effréné ; à la lisière de cette région se trouvent certaines des zones les plus densément peuplées en Afrique. Malgré ces pressions toujours croissantes sur le gorille de la rivière Cross et ses habitats, l'avenir de ces grands singes est loin d'être désespéré, mais nous avons besoin d'efforts concertés et soutenus pour assurer leur survie à long terme.

Ce plan définit les grandes lignes d'un programme d'action qui, si mis en œuvre, pourrait assurer la survie du gorille de la rivière Cross. Les actions que nous recommandons sont estimées pour un coût total de \$4,6 million sur une période de cinq ans, et le tiers de cette somme est déjà sécurisé à travers le soutien des gouvernements et des bailleurs pour les efforts généraux de conservation dans la région. Environ \$3 million restent à rechercher. Les recommandations de ce plan sont réparties en deux catégories : des recommandations pour les actions à entreprendre à l'échelle de toute l'aire de

distribution du gorille de la rivière Cross, et les recommandations spécifiques pour chaque site.

Parmi les recommandations qui s'appliquent pour toute l'aire de distribution du *Gorilla gorilla diehli*, figurent :

- L'adoption d'une approche paysage pour la conservation du gorille de la rivière Cross, compte tenu de son mode de distribution. Cette approche doit s'accompagner de la coopération effective entre les gestionnaires de la conservation des deux cotés de la frontière entre le Cameroun et le Nigeria.
- L'accroissement des efforts pour susciter la prise de conscience, parmi toutes les couches de la société humaine, sur la valeur de conservation en général et la singularité du gorille de la rivière Cross en particulier.
- La participation de la communauté à l'effort de conservation est essentielle, et pour ce faire, il y a un besoin d'entente mutuelle entre les agences gouvernementales, les organisations non gouvernementales, et les populations locales.
- L'écotourisme peut générer des bénéfices pour la conservation, mais peut aussi avoir des impacts négatifs. Compte tenu du statut précaire du gorille de la rivière Cross, tout projet d'habituation de ces grands singes pour le tourisme de vision doit être évalué avec beaucoup de précautions et prendre entièrement en considération tous les risques pour les grands singes.
- Des améliorations sont nécessaires aussi bien pour les législations existantes protégeant les

gorilles, que pour la façon dont ces lois sont appliquées.

- La poursuite des travaux de recherche est nécessaire pour permettre une meilleure connaissance de la biologie des gorilles, y compris la prospection des zones peu connues (spécialement à l'intérieur des corridors potentiels connectant les noyaux de populations), le suivi des populations connues, et un échantillonnage génétique plus intensif.

Les sites identifiés pour les actions spécifiques sont : (au Nigeria) Sanctuaire de Faune du Mont Afi, Mont Mbe et le Département de Okwango du Parc National de Cross River au Nigeria, et (au Cameroun) le Parc National de Takamanda en cours de création, la Réserve Forestière de la Rivière Mone, la Forêt de Mbulu, le Sanctuaire de gorilles du Mont Kagwene en cours de création, et les collines de Bechati-Fossimondi-Besali. Parmi les recommandations qui s'appliquent à plusieurs de ces sites on peut citer :

- Améliorer la mise en application de la loi et instituer un système de patrouilles (tous les sites)
- Améliorer l'infrastructure des aires protégées (Afi, Okwango)
- Développer et finaliser une stratégie ou un plan d'aménagement (tous les sites)
- Reconstituer et matérialiser les limites des aires de conservation (tous les sites)
- Prendre les mesures nécessaires pour améliorer le statut de conservation des sites (Takamanda, Mone, Mbulu, Kagwene)

- Elaborer un plan participatif d'affectation des terres à l'intérieur des sites, dans la zone tampon et/ou dans les corridors (Afi, Mbe, Mbulu, Bechati-Fossimondi-Besali)
- Développer des plans pour l'écotourisme, pas nécessairement focalisés sur les gorilles (Afi, Okwango)
- Développer des plans de protection contre les feux (Afi, Mbe, Kagwene)

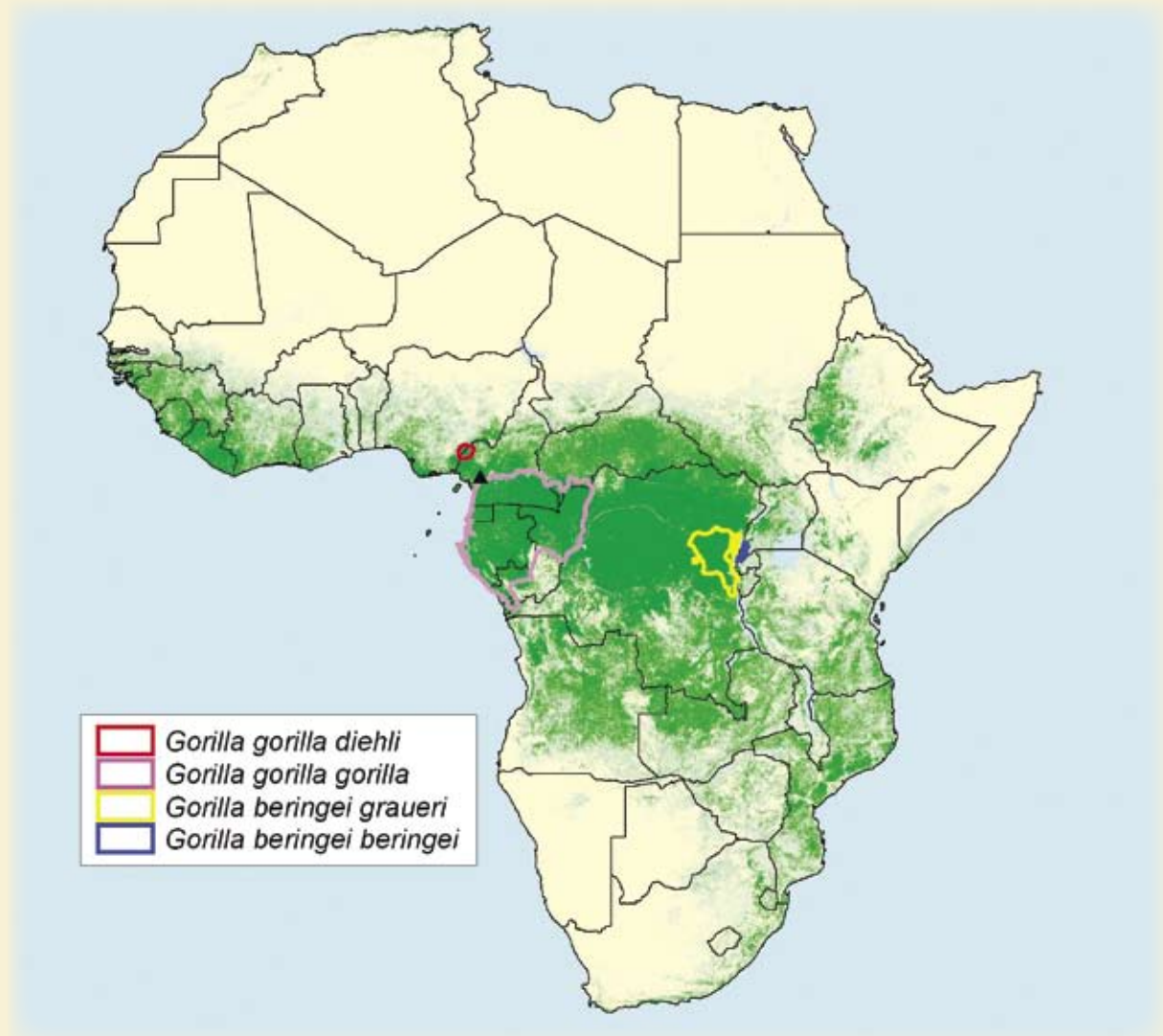
La région frontalière entre le Cameroun et le Nigeria, le zone de distribution du gorille de la rivière Cross, est un point chaud de biodiversité d'une importance capitale qui abrite une grande diversité d'espèces animales et végétales, un grand nombre d'espèces ou sous-espèces ayant une aire de distribution restreinte, et plusieurs espèces et sous-espèces en danger. Les primates menacés qui partagent une partie de l'habitat du gorille de la rivière Cross comprennent entre autre le drill (*Mandrillus leucophaeus*), le cercopithèque de Preuss (*Cercopithecus preussi*) et le chimpanzé de la frontière Nigeria-Cameroun (*Pan troglodytes vellerosus*). L'aboutissement des efforts pour sécuriser la survie du gorille de la rivière Cross devrait ainsi générer une large gamme de bénéfices importants pour la conservation. Nous espérons que ce plan servira non seulement de guide pour les actions nécessaires pour accroître les perspectives de conservation de ce grand singe gravement en danger, et ce point chaud de biodiversité en général, mais aussi à la recherche des fonds nécessaires pour la mise en œuvre de ces actions.

## Introduction

**T**HE CROSS RIVER GORILLA (*Gorilla gorilla diehli*) is the northern and western-most gorilla subspecies and is restricted to the hilly rain-forest region along the Nigeria-Cameroon border, which forms the headwaters of the Cross River (Map 1). Its population is separated by about 300 km from the nearest population of western lowland gorillas (*Gorilla gorilla gorilla*), and by around 200 km from the recently-discovered gorilla population in the Ebo Forest of Cameroon. Based on the small size of the remaining Cross River gorilla population, its fragmentation across a large complex landscape, and continuing threats to its survival from habitat destruction and hunting, this subspecies is listed as Critically Endangered in the IUCN Red List (IUCN 2006).

Gorillas in this region first became known to science in 1904 when the German taxonomist Paul Matschie described skulls collected from the area of today's Takamanda Forest Reserve in Cameroon, as representing a new species, *Gorilla diehli*. Subsequent studies of gorilla anatomy and taxonomy reclassified Cross River gorillas as a subspecies of *Gorilla gorilla* (Rothschild 1904, 1908), and later subsumed them (along with all western gorillas) within the monotypic subspecies *Gorilla gorilla gorilla* (Coolidge 1929). However, new measurements and analyses of museum specimens, in combination with re-analyses of existing data, led to a realization that the skeletons of gorillas in the Cross River region are significantly distinct from those of other western gorillas to merit their recognition as the subspecies *G. g. diehli* (Stumpf et al. 1998, Sarmiento and Oates 2000, Stumpf et al. 2003).

Today, the total population of Cross River gorillas may number fewer than 300 individuals. This population is spread across a broad landscape (Map 2), including a more-or-less continuous forest area of about 8,000 km<sup>2</sup>



**Map 1.** The distribution of four gorilla subspecies in relation to tree cover (shown in green). The Cross River gorilla (*G. g. diehli*) is the most northern and western subspecies. The black triangle shows the location of the gorilla population in the Ebo Forest, Cameroon. The taxonomic affinities of the Ebo gorillas have not been resolved. Map by Richard A. Bergl.



from Afi Mountain in the west to Kagwene Mountain in the east, together with a possibly isolated outlying locality in the forests near Bechati in the southeast. In the Afi-to-Kagwene landscape, the gorillas are concentrated in rugged hill areas that are difficult for people to reach and therefore least disturbed by farming and hunting. New genetic studies (Bergl 2006, Bergl and Vigilant 2007) suggest that individual animals do occasionally move between known gorilla localities in this landscape and therefore the gorillas of Afi-to-Kagwene may be considered as one population (see pp.11–12).

The rugged nature of the terrain inhabited by the Cross River gorillas, and the generations of hunting to which they have been exposed, have led them to be rare, wary of humans, and exceedingly difficult to study. A few anecdotal accounts of their natural history were published between 1932 and 1957 (e.g., Allen 1932, March 1957) but it was not until the early 1980s that the outside world began to show serious interest in the survival of this special gorilla population. In 1987, the first systematic population survey took place, but was restricted to Nigeria (Harcourt et al. 1989). Following this survey, coordinated by the Nigerian Conservation Foundation (NCF), planning for formal conservation was initiated in Nigeria in 1990 by the World Wide Fund for Nature (WWF), working in partnership with NCF and the government of Cross River State. That effort led to the establishment of Cross River National Park in 1991, with gorillas protected in the park's Okwangwo Division.

In 1996, long-term ecological research on Cross River gorillas commenced at Afi Mountain in Nigeria (McFarland 2007), and in 1997 a concentrated survey effort commenced in Cameroon (Groves 1999). These initiatives have grown into a broad program of research and conser-

vation activities in both Nigeria and Cameroon (Oates et al. 2003). This program has involved universities, government agencies in both countries, and non-governmental conservation organizations (in particular, the Wildlife Conservation Society [WCS], NCF, WWF, Fauna and Flora International [FFI]), the Pandrillus Foundation, and Cameroon's Environment and Rural Development Foundation (ERuDeF).

A series of workshops to plan for the more effective conservation of Cross River gorillas throughout their range has been organized by WCS, the first taking place in Calabar in 2001 (Bassey and Oates 2001), the second in Limbe in 2003 (Sunderland-Groves and Jaff 2003), and the third in Calabar in 2006. These workshops have encouraged greater transboundary cooperation in gorilla conservation, and led to the recommendation for the upgrading of the conservation status of Cameroon's Takamanda Forest Reserve, adjacent to Okwangwo in Nigeria. The goal of the 2006 workshop was specifically to formulate recommendations for this action plan.

## Socioecology of Cross River Gorillas

**U**NDERSTANDING THE CROSS RIVER gorillas' basic ecological needs is essential for making informed decisions on their conservation. Over the last decade, Cross River gorilla ecology has been studied at Afi Mountain in Nigeria (by K. McFarland) and at Kagwene Mountain in Cameroon (by J. Sunderland-Groves). Research at these sites indicates that Cross River gorilla diet, ranging behavior and grouping patterns differ from those of other populations of western gorillas in some important ways,

and may even vary significantly within the Cross River gorilla population.

Cross River gorillas live in an area with a more markedly seasonal climate than any other western gorillas; the area has a longer and more intense dry season, and higher wet season rainfall. At Afi Mountain, herbaceous vegetation is a dietary staple across the year, but fruit from a wide variety of species is eaten when available. Compared to other western gorillas, the Afi gorillas feed more heavily on liana and tree bark throughout the year, and consume less fruit during periods of seasonal fruit scarcity, which are prolonged and more severe. Whereas Afi gorillas traveled longer distances when consuming large amounts of fruit, Kagwene gorillas traveled shorter distances when fruit was abundant (K. McFarland, 2007; J. Sunderland-Groves, unpublished observations).

Across their range, Cross River gorillas generally live in small groups (commonly 4–7 individuals), but some groups are larger. During McFarland's research the Afi study group most often contained 18 individuals and used a total range of approximately 30 km<sup>2</sup>, larger than that of most other western gorilla groups that have been studied. The Afi group covered its range in a cyclical pattern over a 3-month period, but used different parts at varying intensities in relation to variation in food availability and predation pressure. The Afi group formed foraging and sleeping subgroups and supergroups for periods of one or more days, particularly when consuming widely dispersed fruit and herb resources; highly variable nest group sizes at Kagwene suggest similar flexibility in grouping patterns. At both Afi and Kagwene, Cross River gorillas constructed night-nests in trees more often than has been reported among western lowland gorillas.

## Introduction, *continued*

### Threats to Cross River Gorilla Survival

**R**ATHER LITTLE IS KNOWN ABOUT the past distribution and abundance of Cross River gorillas, but a few older reports suggest that their numbers were higher in the past (e.g., March 1957). A recent genetic study suggests that the Cross River gorilla population has undergone a marked reduction in size, perhaps within the last 100–200 years (Bergl 2006). This decline is probably the result of the increasing availability and use of guns. Other factors contributing to the decline are habitat loss and fragmentation caused by the spread of agriculture, cattle-grazing and road construction.

#### Hunting

Although Cross River gorillas are a protected species across their range, isolated cases of them being killed by hunters still occur, and the loss of even a few individuals poses a serious threat to the viability of the population, given the small numbers present at each locality. Hunting was identified as a major threat to the future existence of gorillas as far back as the 1930s (Anon. 1934). Gorilla hunting in this region, as elsewhere, is not purely for subsistence; gorilla meat is consumed, their bones are used in traditional medicine and as fetishes, and infants have been sold as pets. Because gorillas are such impressive animals, hunters often keep the skulls of individuals they have killed, so these trophies are found in many villages. While hunting certainly had a significant impact on this population, traditional practices in some localities may have deterred gorilla hunting. For example, throughout much of the Cross River gorilla range in Cameroon, there is a traditional prohibition on the sale of gorilla meat, and hence hunters have not sought out this species. Similarly, people in the Kagwene Mountains and Bechati-Fossimondi forest region of Cameroon, and some people on the Obudu Plateau in Nigeria, have a traditional ban on

eating gorillas. The prolonged presence of research projects at some Cross River gorilla localities over the past 10 years, coupled with conservation education activities and increased law enforcement, have undoubtedly helped to reduce gorilla hunting.

#### Habitat Loss and Fragmentation

In the north of the Cross River gorilla's range and in the Bamenda Highlands to the east, much of the montane forest that probably harbored gorillas in the past has been lost to agriculture and, through burning by pastoralists, converted to grassland. This process continues at the margins of the subspecies' present range, where there are high human population densities. Many small human settlements are scattered throughout the gorillas' range (some in the form of legal enclaves within protected areas) and the continuing expansion of these settlements has the potential to further fragment the forest and make it impossible for gorillas to migrate between their mountain strongholds. The improvement of old roads within the gorillas' range and the building of new roads are also contributing to habitat loss and fragmentation, as they open up new areas for settlement and cultivation, and act as possible barriers to migration.

#### Disease

Cases of devastating epidemic diseases such as Ebola and anthrax have not yet been recorded among apes in the Cross River region of Cameroon and Nigeria. But with humans, domesticated animals and gorillas living comparatively close together and often using the same habitat, there is a serious risk of a variety of pathogens and parasites spreading to the gorillas. The small size of the Cross River gorilla subpopulations makes them extremely vulnerable to the effects of introduced disease, and groups could be effectively eliminated by virulent infections.



Bushmeat being carried as a head-load, Cameroon.

© WCS Cameroon

### The Pet Trade

Even today there is a continuing trade in infant gorillas as pets. In attempts to capture infants, hunters may kill several adult gorillas that are trying to protect the mother and young animal. The only confirmed Cross River gorilla in captivity is housed at the Limbe Wildlife Centre in Cameroon, but many more have probably been captured from this region in the past. Young gorillas only survive these traumas if they are given special care. In 2003, two gorillas smuggled across the border to Nigeria some years previously were repatriated to Cameroon and are also now housed at the Limbe Wildlife Centre, which had a total of 11 gorillas in its collection in early 2007. These gorillas are believed to be Western lowland gorillas (*Gorilla gorilla gorilla*), but their smuggling (and the subsequent smuggling of four gorillas to Nigeria that were then sold to Malaysia) highlights a potential threat to Cross River gorillas. Long-term education efforts and lobbying at the governmental level are beginning to have an impact on the trade in live gorillas.

## Legislation Protecting Cross River Gorillas

**B**OTH CAMEROON AND NIGERIA ARE MEMBERS OF international conventions that commit them to protecting endangered wildlife, and both countries have laws in force that protect gorillas. However, in both countries such laws are generally poorly enforced.

### Cameroon

In Cameroon, the management of wildlife resources in general, and of great apes in particular, is the responsibility of the Ministry of Forestry and Wildlife (MINFOF). Specific legislation protecting gorillas is contained within the Forestry and Wildlife Law of 1994. For research in protected areas, MINFOF issues permits upon the presentation of research authorization given by the Ministry of Scientific Research and Innovation (MINRESI).

Under the 1994 Forestry and Wildlife Law, wildlife species are categorized as Class A, B or C based on their rarity; categorization of wildlife species was updated in 2006. Gorillas are listed as Class A animals and as such are fully protected: it is strictly forbidden to pursue, capture or kill them, except in rare and exceptional cases. Possession of a Class A species or products derived from them can be grounds for prosecution, and those convicted can be fined and/or jailed.

Cameroon has a National Anti-Poaching Strategy adopted in 1999 and revised in 2000 the goal of which is to help improve implementation of the 1994 Forestry and Wildlife Law. This strategy emphasizes sensitization, the development of livelihood alternatives, cooperation with partners, the promotion of sport hunting, and other similar initiatives. Additionally, a Forest and Wildlife Control Strategy has been developed to better enforce the Forestry and Wildlife Law. Related to this, Cameroon has also formulated a National Action Plan for the Conservation

of Great Apes. Finally, Cameroon has signed and ratified a number of international conventions and sub-regional agreements; notably the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), CBD, CMS, and the Central African Forests Commission (COMIFAC).

### Nigeria

Forestry and wildlife matters in the Federal Republic of Nigeria are administered at both the federal and state levels of government. States exercise control over game and forest reserves and wildlife sanctuaries, while the federal government is in charge of national parks. The Nigerian national parks, currently seven in number, were established under the National Parks Decree (No. 36) of 1991, later replaced by the National Park Service Decree (No. 46) of 1999, and are administered by the National Park Service (a parastatal under the Federal Ministry of Environment, Housing and Urban Development).

Great apes are protected by both federal and state laws in Nigeria. However, implementation of these laws remains a cause of concern for local and international conservationists. All wildlife in national parks is protected by law as, theoretically, are all endangered species listed in the federal Endangered Species (Control of International Trade and Traffic) Decree of 1985, which is administered by the Federal Ministry of Environment, Housing and Urban Development through its Department of Forestry. State wildlife laws vary greatly, depending on the extent to which colonial-era legislation has been upgraded. Gorillas in Nigeria occur only in Cross River State, whose wildlife conservation law is currently under revision. The draft law includes full protection for the Cross River gorilla in the state, including all forest reserves, wildlife sanctuaries and community land, with strict penalties for defaulters.

The federal Endangered Species Act is the legal instrument through which wildlife trade and international

agreements are enforceable. Nigeria participates in many international conservation conventions. Nigeria ratified the African Convention on the Conservation of Nature and Natural Resources in 1968, CITES in 1974, and the Convention on Biological Diversity in 1994. Nigeria signed the Convention on Migratory Species in 1987. The Endangered Species Act has been assessed by the secretariat of CITES and found to lack the ingredients necessary for effective implementation of the Convention, and inadequate implementation of CITES led the Standing Committee of the Convention to impose a suspension of trade in CITES-listed species with Nigeria in September 2005.



Rangers patrolling Afi Mountain, Nigeria.

Introduction, *continued*

## Gorilla Distribution and Site Descriptions

**T**HE LANDSCAPE ACROSS WHICH THE Cross River gorilla population is scattered has a surface area of approximately 12,000 km<sup>2</sup> and ranges in elevation from less than 200 m in the valleys of some of the major Cross River tributaries (such as the R. Oyi) to 2,037 m at Kagwene on the edge of the Bamenda Highlands. The natural vegetation in the lowlands of this region is moist semi-deciduous tropical forest; this changes to submontane forest at 700–800 m, with a transition to montane forest at about 1,500 m (Map 2). Where there are human settlements, a mosaic of farmland, farmbush and secondary forest occurs, and along the northern fringe of this landscape most of the upper elevation forest has been converted to grassland that is maintained through annual burning by pastoralists and farmers. Within this landscape, eight areas can be delineated as sites for action in Cross River gorilla conservation: Afi, Mbe and Okwangwo in Nigeria; Takamanda, Mone, Mbulu, Kagwene and Bechati-Fossimondi-Besali in Cameroon (Table 1).

### Nigeria

About one-third of the landscape across which Cross River gorillas are spread lies in Nigeria. Here, gorillas occur in three areas, all within Cross River State: the Afi Mountain Wildlife Sanctuary, the Mbe Mountains, and the Okwangwo Division of Cross River National Park.

### Afi Mountain Wildlife Sanctuary

Afi Mountain Wildlife Sanctuary (AMWS) is the westernmost of the Cross River gorilla localities. The sanctuary was created in 2000 to protect wildlife in approximately 100 km<sup>2</sup> of lowland and hill forest in the northwestern corner of the 380 km<sup>2</sup> Afi River Forest Reserve. Rocky peaks with sparse vegetation rise to an elevation of

1,300 m in the hilliest eastern sections of AMWS. On the western flank of the mountain, there is a large grassland roost of migratory European barn swallows (*Hirundo rustica*), estimated to contain up to 20 million birds at times and reputed to be the largest wintering roost site of swallows in Africa.

Sixteen villages surround AMWS and farms from these settlements adjoin, and in some cases encroach upon, most of the sanctuary boundary. Scattered logging has occurred in lowland areas, but not in the mountainous parts of the wildlife sanctuary. Fires started in the lowlands during bush clearing for farms have swept across most outer slopes of the mountain in the last decade. Open areas created by fire and landslips are common on steep slopes and these areas often support large herb

patches which are an important staple food for the gorillas. Local people still hunt illegally on Afi Mountain, but poaching has lessened since the wildlife sanctuary was created and particularly since more effective patrolling has been initiated by the state government (with support from NGO partners). The Afi gorillas' range is concentrated in approximately 40 km<sup>2</sup> of the central portion of the Afi Mountain massif, but gorilla signs have been reported in the adjoining Olum hills to the northeast and in the lowlands to the west.

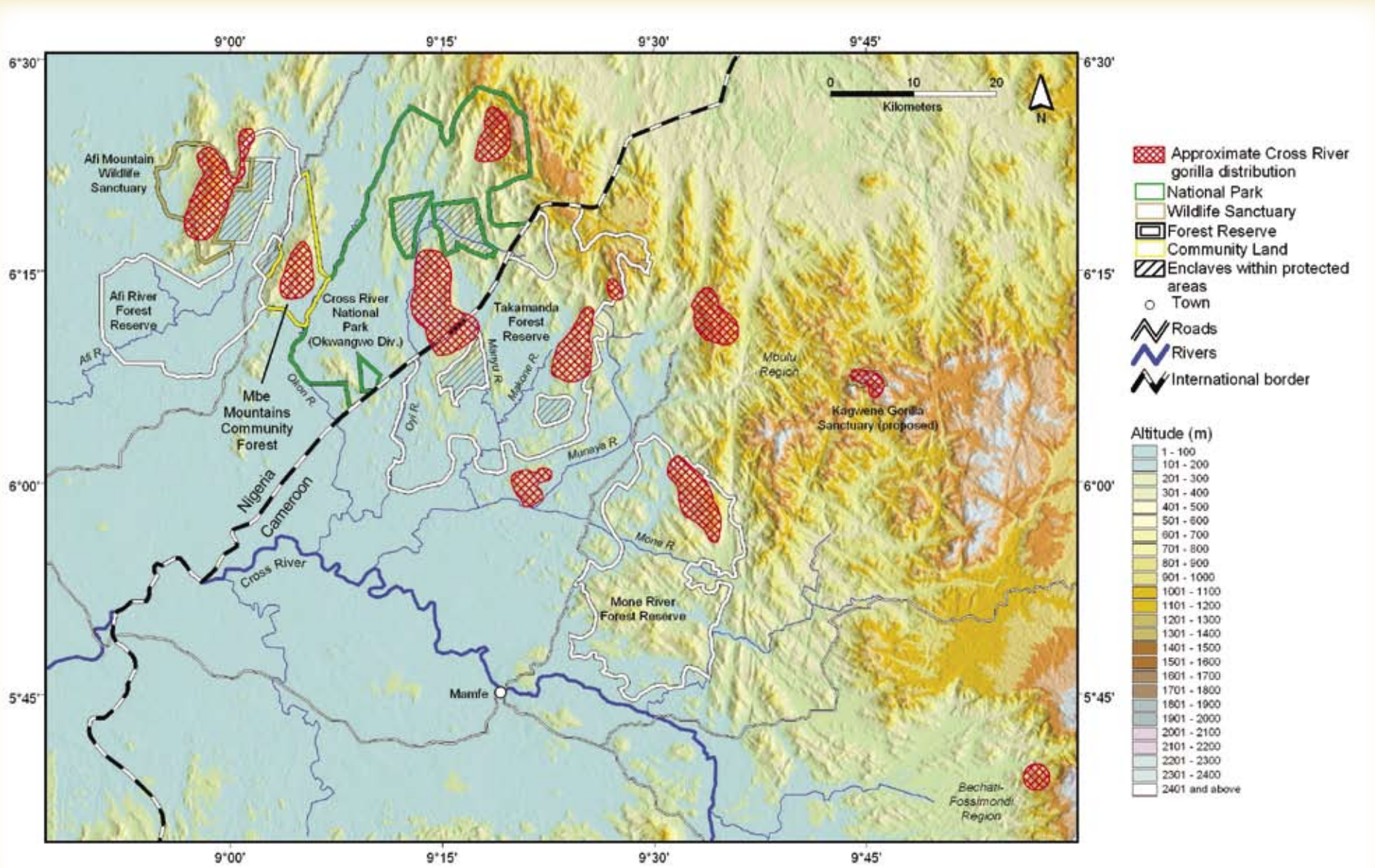
### Mbe Mountains

Immediately to the east of Afi Mountain, and adjoining the Afi River Forest Reserve, are the Mbe Mountains, an area of community forest that has received attention from

**Table 1.** Key sites for Cross River gorillas.

Country/Site	Status	Altitude (m)	Area (km <sup>2</sup> )	Gorilla range (km <sup>2</sup> )	Estimated numbers
<b>Nigeria</b>					
Afi Mountain	Wildlife Sanctuary	130–1,300	ca. 100	40	25–30
Mbe Mountains	Proposed Community Wildlife Sanctuary	110–900	85	25	25–30
Okwangwo Division, Cross River NP <sup>1</sup>	National Park	110–1,700	640	65	25–50
<b>Cameroon</b>					
Takamanda <sup>1</sup>	Forest Reserve, proposed National Park and adjacent areas of non-classified forest	80–1,500	676	80	45–65
Mone River	Forest Reserve	110–1,200	538	35	20–30
Mbulu	Unclassified	500–2,000	ca. 1,000	30	20–30
Kagwene Mountain	Proposed Gorilla Sanctuary	1,700–2,000	19	19	20–30
Bechati-Fossimondi-Besali	Unclassified	500–1,200	80–100	ca. 25	20–30
<b>TOTAL</b>					<b>200–295</b>

<sup>1</sup> One subpopulation lives in the hill ranges which extend from above Obonyi in Takamanda, Cameroon, to south of Okwa in the Okwangwo Division, Nigeria.



**Map 2.** The known current distribution of Cross River gorillas in the Cameroon-Nigeria border region based on surveys conducted in the last decade. As described later in this plan, there is evidence that gorillas occasionally move beyond the hill areas (shown in red) in which their activities are concentrated. Map by Richard A. Bergl.

## Introduction, *continued*

conservationists since surveys located gorillas there in 1983. The Mbe forest also covers about 100 km<sup>2</sup>, and its hills rise to 900 m. There are tenuous forest connections between Afi and Mbe, but a paved road runs through this connection. Nine villages lie close to the northern, western and southern edges of Mbe and their farms encroach on gorilla habitat; as at Afi, dry-season fires set for bush clearing sometimes burn into the forest. The Mbe communities have agreed to limit their hunting on the mountain and negotiations are underway to create a community-run conservation area covering the gorilla habitat. Gorillas in the Mbe Mountains are concentrated in an area of ridges and valleys in the center of this community forest, though they also occasionally use the lowlands to the south of the mountain. The area routinely used by gorillas is approximately 25–30 km<sup>2</sup>.

### Cross River National Park, Okwangwo Division

East again from the Mbe forest, and separated from it by the Okon River, lies the northern part of Cross River National Park (CRNP). CRNP consists of the Okwangwo Division (640 km<sup>2</sup>) north of the Cross River and the Oban Division (about 3,000 km<sup>2</sup>) south of the Cross. The park was created in 1991 from four former forest reserves. Gorillas occur only in Okwangwo. Elevations in Okwangwo range from 150 m in river valleys in the south to around 1,700 m on the edge of the Obudu Plateau in the north, and within the park boundaries there is a rare forest continuum from lowland through submontane to montane types. Gorillas are known from two areas of Okwangwo: (1) the former Boshi Extension Forest Reserve (established in 1958 to protect gorillas) that occupies ridges and valleys extending northwest from the Obudu Plateau, and (2) the Okwa Hills in the central

region of Okwangwo, immediately west of Cameroon's Takamanda Forest Reserve. Boshi Extension is the most northern Cross River gorilla locality; the range of the Boshi Extension gorillas covers roughly 25–30 km<sup>2</sup>, centered on the Mache, Asache and Enyimayi river valleys, but may extend further west and south. The Okwa Hills region is the most lowland of the Cross River gorilla localities; the area ranged over by gorillas in this locality appears to be quite large (about 70 km<sup>2</sup>), but it is unclear how much of this area is habitually occupied. The gorillas using this Okwa Hills area are part of a subpopulation that ranges across the border into the Obonyi area of Takamanda in Cameroon.

The large villages of Okwa 1, Okwa 2 and Okwangwo are “enclaved” within the Okwangwo Division of CRNP and the expansion of village farmlands outside of their enclave boundaries threatens to bisect the forests of the Okwangwo Division and further isolate the gorilla subpopulations unless some remedy is found. The Balegete cluster of villages south of the Obudu Plateau and the neighboring Matene communities in Cameroon provide a barrier between the Boshi Extension forests and those of northern Takamanda. Although CRNP and its wildlife are in theory fully protected, hunting in the park is still widespread and its montane forests on the edge of the Obudu Plateau are being eroded by fire.

### A Global Biodiversity Hotspot

In addition to being home to the Cross River gorilla, the region straddling the Nigeria-Cameroon border is a biodiversity hotspot of global significance (Myers et al. 2000, Oates et al. 2004). High levels of species richness and endemism are exhibited across a wide range of taxa (Oates et al. 2004, Bergl et al. 2007). For primates this region is one of the most species-rich in the world. Among other endemic and endangered primates with which the Cross River gorilla shares these forests are the Nigeria-Cameroon chimpanzee (*Pan troglodytes vellerosus*), the drill (*Mandrillus leucophaeus*), and Preuss's guenon (*Cercopithecus preussi*). Other important components of the mammal fauna include the forest elephant (*Loxodonta cyclotis*), forest buffalo (*Syncerus caffer nanus*), and many species of duiker. The region also has a unique and diverse bird fauna (including 26 endemic species), and contains several of Birdlife International's Important Bird Areas (Fishpool et al., 2001). Other groups that exhibit high levels of diversity and endemism include amphibians, butterflies, fish, and small mammals. Though the region has been somewhat neglected by international conservation efforts, it is recognized as a landscape of High Conservation Priority by USAID's Central African Regional Program for the Environment (CARPE) and is included in two of the World Wildlife Fund's Critically Endangered Terrestrial Ecosystems.

### Cameroon

Although a larger proportion of the Cross River gorilla's range is located in Cameroon than Nigeria, no part of this range currently has a higher protection status than Forest Reserve (a status that allows timber harvesting and provides no special safeguards for wildlife). Around half of the Cross River gorillas in Cameroon occur on land that has no formally protected status; however, two new protected areas are in process of being gazetted. In Cameroon, all Cross River gorillas are located within Cameroon's



Kagwene Mountain, Cameroon.

© Jacqueline Sumpterland-Groves

South West Province with the exception of those in the Kagwene locality which extends a few kilometers into the North West Province.

### Takamanda Forest Reserve

Takamanda Forest Reserve covers an area of 676 km<sup>2</sup> at the most northern point of Cameroon's South West Province. The reserve was created in 1934 as a production forest to protect watersheds, and to conserve the area for future commercial agricultural activities and/or timber exploitation. The western boundary of the reserve adjoins similar forests of CRNP's Okwangwo Division in Nigeria. The majority of the lowland forest area within the southern and central part of the reserve lies between elevations of 100–400 m. The terrain is rolling in the lowlands but rises sharply to 1,700 m in the north of reserve, where slopes are extremely steep. Small hills between 500 m and 700 m lie at the western, eastern and southern fringes of the reserve and are inhabited by gorillas. The settlements of Obonyi 1 and 3, Matene and Kekpane are enclaved within Takamanda, paralleling the enclave situation in Okwangwo. Road access to the area is poor and the local communities rely almost solely on forest products (such as bushmeat and non-timber plant products) and farming for subsistence

and to generate income. Many of the forest products harvested are traded across the border in Nigeria. Since 2004, actions have been taken by the Government of Cameroon, with the assistance of WCS, to upgrade the status of Takamanda to a National Park, in view of its overall biological importance.

Gorillas are known to occur in four localities in and around the Takamanda Forest Reserve. The Takamanda South locality takes in the low hills surrounded by the communities of Takpe, Awurri and Assam, north of the Munaya River and just outside the southern border of the forest reserve; Takamanda South is one of the smaller Cross River gorilla localities, with gorillas occupying an area of approximately 20 km<sup>2</sup>. Northeast of this area, the Takamanda East locality consists of the hills north of Kekpane, west of the Basho villages and east of the Makone River; about 25 km<sup>2</sup> of this region is used by gorillas. Northeast again is likely the smallest of the known Cross River gorilla localities; Takamanda North, located in an extremely steep and rocky area covering about 15 km<sup>2</sup> just south of the grassland-forest border in the northeastern corner of the forest reserve, close to Atolo village. The fourth Takamanda gorilla locality lies north of Obonyi and straddles the Nigeria-Cameroon border into Okwangwo (described above).

### Mone River Forest Reserve

Approximately 7 km south-east of Takamanda lies the Mone River Forest Reserve, which covers an area of 538 km<sup>2</sup>. Although Mone has similar vegetation to Takamanda, the landscape is more topographically diverse, with scattered hills rising between 350 m and almost 1,000 m. The forest is believed to contain a larger elephant population than Takamanda. The existence of gorillas in Mone was only confirmed in 2000, when a population was discovered in a mountainous 30 km<sup>2</sup> region in the extreme northeast of the reserve, close to

the village of Mbu (Groves 2001). Considerable areas of forested hills are contiguous with this area and have not yet been thoroughly searched for gorillas. There are no villages enclaved within Mone, but uncontrolled hunting, timber exploitation and extraction of other forest products occur throughout the reserve.

### Mbulu Forest

The hilly area of land referred to as Mbulu stretches from the eastern boundary of Takamanda to the northern boundary of Mone and west to the Bamenda highlands. This forested region connects the two Forest Reserves of Takamanda and Mone. These forests currently have no formal protected status. Elevations reach up to 1,800 m with the south and central sectors dominated by mature forest and the north dominated by grassland. Gorillas have been found in the north-central part of the Mbulu Forest on a long highland ridge between the villages of Ashunda, Badshama, Ote and Bandolo. The total area known to be used by gorillas is estimated to be 30–40 km<sup>2</sup>, but forests immediately south of, and contiguous with, this area have not been thoroughly surveyed. Small villages are scattered throughout Mbulu and, with almost no road access, local communities rely on farming, hunting, tree-cutting and harvesting non-timber forest products. There is currently little control of land use by communities.

### Kagwene Mountain

At the far eastern edge of the Mbulu Forest, and extending into the Njikwa forests of North West Province, lies Kagwene Mountain. The Kagwene Mountain consists of a mosaic of submontane and montane forest, and grassland, at elevations reaching over 2,000 m. It is the eastern-most part of the Afi-to-Kagwene landscape, and is the highest altitude site at which Cross River gorillas are known. Forest through which gorillas could travel connects Kagwene and the Bantakpa forests, about 6 km to the northwest.

## Introduction, *continued*

Though the gorillas occupy only a small area (19 km<sup>2</sup>), the population appears to be relatively large, numbering between 20 and 30 animals. Nine human settlements surround the base of Kagwene, and hunting of wildlife and the collection of other forest products on the mountain were common until recently. A traditional ban on gorilla hunting and consumption of gorilla meat has protected the gorillas from poaching, but habitat loss due to pastoralism and farming threatens to seriously reduce their habitat. A gorilla research project established at Kagwene in 2002 is working with local communities and the Government of Cameroon to create a 19 km<sup>2</sup> Kagwene Gorilla Sanctuary, the gazettement of which is in process.

### Bechati-Fossimondi-Besali

Twenty-five kilometers south-east of Mone River Forest Reserve lies a 80–100 km<sup>2</sup> forested area between Bechati, Fossimondi and Besali, where gorillas were recently rediscovered. This locality is about 60 km from the nearest known Cross River gorilla locality in northern Mone. The area rises from 500 m at Bechati, through 1,700 m at Bamumbu to 1,900 m in Fossimondi, and therefore grades from lowland to submontane forest. At Fossimondi, the submontane forest supports important populations of endemic birds including the banded wattle-eye and Bannerman's turaco. Surveys of the gorilla population in this area have been initiated, together with a conservation education effort targeted at local communities and government. Ten main human settlements surround and use the Bechati-Fossimondi-Besali forest. In addition, the area is threatened by its close proximity to a logging concession, and by the expansion of locally-owned oil palm plantations. However, a local ban on gorilla hunting has been in place since the start of conservation activities in 2003. Gorillas have also been reported in some neighboring forest areas (such as Bamumbu and Nkong) and further surveys have begun to determine the reliability

of these reports. Surveys are planned to discover whether there is a potential corridor for gorillas between Bechati and Mone.

## Population and Habitat Continuity

**T**HOUGH EVIDENCE OF GORILLAS IN THE AREAS between the eight key Cross River gorilla sites is limited, analysis of genetic data and satellite imagery (see Map 3) has demonstrated that the gorilla subpopulations are not isolated from one another (Bergl 2006, Bergl and Vigilant 2007). DNA microsatellite data suggest that at least three genetically identifiable subpopulations are present: a Central subpopulation consisting of the majority of known Cross River gorilla localities, and Western and Eastern subpopulations consisting of Afi Mountain and Kagwene Mountain. Genetic data from the Bechati-Fossimondi-Besali gorillas are not available, but given the remoteness of this area from other known gorilla localities, it is likely that these gorillas represent a fourth subpopulation. Even though the Afi and Kagwene gorillas represent genetically identifiable subpopulations, genetic analyses have detected migrants from these areas into the Mbe Mountains and Upper Mbulu respectively. Migrant individuals have also been discovered in the Mone North and Takamanda South localities. These migrations (which occurred during the adult lifetime of gorillas sampled by Bergl in 2002–2004) have occurred despite high levels of human activity in the forest and the ongoing fragmentation of the gorillas' habitat.

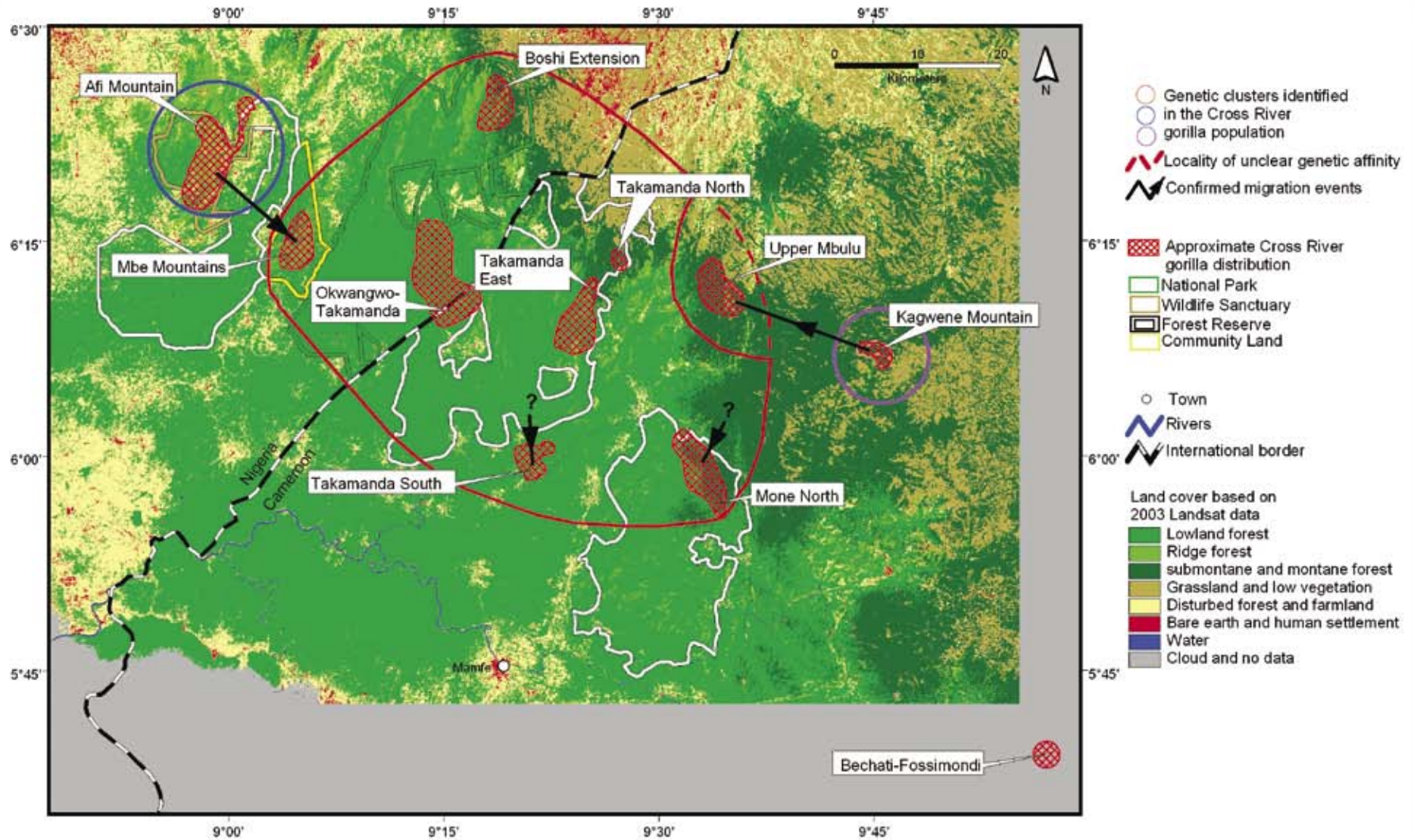
Data from satellite imagery indicate the presence of extensive forest across the Cross River gorillas' range and at least tenuous connectivity between most gorilla localities. Even localities such as Afi and Kagwene remain connected to other gorilla areas via narrow habitat corridors. Many of the more central Cross River gorilla localities

are connected by large tracts of lowland forest. The presence of habitat linkages and corridors supports the genetic findings of migration between localities. The presence of large areas of forest which are apparently not habitually occupied by gorillas also suggests that there may be as yet undiscovered groups of gorillas, or that the existing population has the potential to expand if these forests can be maintained.

### Technical Operational Unit (TOU)

It is now widely recognized that conservation planning is most effective on large spatial scales, such as eco-regions and landscapes. The Government of Cameroon has established a set of Technical Operational Units (TOUs) for landscape conservation with the dual objectives of conserving biodiversity and the environment, and improving local livelihoods through the sustainable management of natural resources. Within the range of the Cross River gorilla, a process to create a Takamanda-Mone TOU was initiated in 2004 and involves a multitude of partners (MINFOF, WCS, WWF, GTZ, DED) working collaboratively to create a landscape management system covering the areas of Takamanda, Mone, Mbulu and Kagwene. While a decree formally creating this TOU is awaited, work has commenced on creation of the management system, funded by the German development bank, KfW. In the Bechati-Lebialem area, a TOU is also being considered that would include the Bechati-Fossimondi-Besali forest, the northern portion of forestry concession UFA11002, and the Mak-Betchou forest.





**Map 3.** The three “genetic populations” of the Cross River gorilla identified by Richard A. Bergl, and the location of migration events between or into localities as deduced from DNA evidence. The origins of the migrants into the Takamanda South and Mone North localities are uncertain. The eleven known Cross River gorilla localities are labeled with white boxes. Map by Richard A. Bergl.

## Action Planning Process

**T**HIS DOCUMENT IS THE PRODUCT OF A SERIES OF three workshops held to exchange information about Cross River gorillas and to formulate strategies to improve their conservation prospects. The first meeting was held in April 2001 in Calabar, Cross River State, Nigeria. Planning for that first meeting began in 1999, when not only was the special nature of *Gorilla gorilla diehli* becoming apparent, but also the need for concerted action to protect this highly endangered ape. The meeting, organized by the Wildlife Conservation Society and the Nigerian Conservation Foundation, brought together for the first time government officials from Cameroon and Nigeria involved with gorilla conservation, as well as researchers, representatives of nongovernmental conservation organizations, and members of local communities. A two-day technical workshop was followed by a larger general meeting that was attended by a broader audience of interest groups and decision makers; the proceedings were published by Basse and Oates (2001).

The second meeting, designed to review progress since the 2001 meeting and to update its recommendations based on new findings in the field, was organized in Cameroon by WCS and the then Ministry of the Environment and Forestry (MINEF), and was held in Limbe in August 2003 (Sunderland-Groves and Jaff 2004). An important component of the second meeting was the participation of the environment ministers from the Government of Cameroon and Federal Government of Nigeria, who signed the final workshop communiqué endorsing the meeting's recommendations. That communiqué is reproduced here.

The third meeting, again in Calabar, took place in April 2006. A two-day workshop examined the recommendations made in the previous workshops and analyzed what progress had been made in implementation. The recommendations were then updated in the light of experience and new evidence, and presented to a conference session open to a larger audience. The final set of agreed recommendations is presented here, along with estimated costs of implementation over a five-year period.

### FINAL COMMUNIQUE

The second international conference on Cross River Gorillas was held in Limbe, Cameroon from 19<sup>th</sup> to 23<sup>rd</sup> August 2003 and hosted by the Wildlife Conservation Society and the Cameroon Ministry of Environment and Forestry. This meeting, building on that held in Calabar in April 2001, witnessed the participation of top officials of the Republic of Cameroon and the Federal Republic of Nigeria as well as experts from International Governmental and Non Governmental Organisations notably the Wildlife Conservation Society (WCS), GTZ and FFI.

After recalling the objectives of the **meeting namely:**

- Sharing knowledge on the status of the Cross River gorilla
- Reviewing the recommendations of the Calabar workshop
- and identifying the most important priorities to ensure the survival of the Cross River gorilla.

The conference took place in the form of plenary and working sessions guided by introductory presentations on:

- The biology and ecology of the Cross River gorillas and its habitat.
- The threats to the survival of the gorillas.
- And a review of existing conservation measures for the gorillas and the problems faced by management.

Participants engaged into a fruitful exchange of views, resulting in the following recommendations:

- 1) Establishing a trans-boundary protected area for the Takamanda-Okwangwo complex, in particular by upgrading the protection status of the Takamanda Forest Reserve.
- 2) As a matter of urgency strengthening protection and law enforcement measures for all Cross River gorilla populations.
- 3) Developing a Land-use plan for the Takamanda-Mone-Mbulu area in Cameroon, including a network of protected areas and corridors.
- 4) Developing a plan for the conservation of Afi-Mbe-Okwangwo area in Nigeria, including both a review of the management status for the Mbe Mountains and the maintenance of forested connections between gorilla habitats.
- 5) Maintaining and expanding basic research into the ecology, distribution and population biology of the gorillas.
- 6) Strengthening and expanding the conservation education and awareness programmes at all levels.
- 7) Reviewing and evaluating the impact of the road development programme in Cameroon.
- 8) Establishing Cross River gorilla management committees in Cameroon and Nigeria.
- 9) Building the capacity of relevant institutions in Nigerian and Cameroon (including Government departments, Universities, NGO's etc.)
- 10) Incorporating local community needs into the development of management strategies, including the study of alternative livelihoods options.
- 11) Reinforcing collaboration amongst all stakeholders
- 12) Delegating a working group to formulate more detailed recommendations based on the deliberations of the workshop.


In the course of the conference and workshop, the delegations from Cameroon and Nigeria led by their respective Ministers of Environment, held bilateral talks on Cross River gorillas in particular and other areas of mutual interest pertaining to environment and sustainable development.

The Ministers;

- Recognized the activities undertaken by Governmental and Non Governmental Organisations and Technical experts, including exchange of visits by officials of the Ministry of Environment and Forestry of Cameroon and National Park Services of Nigeria.
- Expressed their support on the visits and urged them to continue.
- Reaffirmed the decision reached at the third session of the Nigerian-Cameroon joint Commission held in Abuja on 30<sup>th</sup> September 2002 to set up a Joint Permanent Technical Committee on Environment and Sustainable Development.

*Done at Limbe on 24 August 2003*

  
**Chief TANYI-MBIANYOR C.O.**  
 Minister of Environment and Forestry  
 For The Delegation of  
 Republic of Cameroon

  
**Colonel BALA MANDE (Rtd)**  
 Federal Minister of Environment  
 For The Delegation of  
 Federal Republic of Nigeria

## Regional Non-Site-Specific Priority Actions

The 2006 Calabar workshop participants agreed to classify the following as Regional Non-Site Specific Priority Actions.

### Promoting Education and Awareness



Visitors watching gorillas at the Limbe Wildlife Centre, Cameroon.

© Limbe Wildlife Centre

CONSIDERING THE LARGE NUMBER OF PEOPLE living around and within the range of Cross River gorillas, raising awareness about the value of conservation in general and the uniqueness of these gorillas in particular must be a major component of a long-term conservation program. Education and awareness efforts already undertaken at a number of sites in Nigeria and Cameroon have contributed to a significant reduction of gorilla hunting. These initiatives have included regular radio broadcasts in the Bokyí language in Cross River State, Nigeria, the establishment of an “outreach” program in Cameroon, and the distribution of Cross River gorilla conservation posters in both Nigeria and Cameroon. These efforts need to be continued and expanded.

Priorities for Promoting Education and Awareness	Potential Implementing Partners <sup>1</sup>	Time Frame	Funding needed
<ul style="list-style-type: none"> <li>Further develop and expand conservation education and outreach programs throughout Cross River gorilla range based on school conservation clubs, use of radio and TV broadcasts, and conservation/ape films shown to local communities.</li> </ul>	NCF, WCS, DIN, TOCS, ERuDeF	5 years	\$160,000 <sup>2</sup>
<ul style="list-style-type: none"> <li>Develop locally made Cross River gorilla conservation film/DVD for use in local villages.</li> </ul>	WCS	1 year	\$2,000
<ul style="list-style-type: none"> <li>Update education materials, such as posters and leaflets, at regular intervals.</li> </ul>	WCS, WWF, ERuDeF	5 years	\$15,000
<ul style="list-style-type: none"> <li>Create regular newsletters on conservation issues and activities.</li> </ul>	WCS, MINFOF, NCF, ERuDeF	5 years	\$8,000

<sup>1</sup> This term refers to both appropriate government agencies and non-governmental organizations, which would work in partnership to implement the proposed actions.

<sup>2</sup> In Cameroon, KfW are currently contributing around €40,000 per year to conservation awareness activities in the 31 villages surrounding the proposed Takamanda National Park. This support is likely to extend only until the end of 2007.

#### The Role of Primate Sanctuaries in Education

Primate sanctuaries have played an important role in raising interest in monkeys and apes and their conservation. Sanctuaries established in Cross River State, Nigeria (by the Pandrillus and Cercopan NGOs), and in Limbe, Cameroon (by Pandrillus), have acted as havens for confiscated wildlife in this region and as education centers. With many thousands of people visiting these sanctuaries annually, Cameroonians and Nigerians have been afforded opportunities both to see face-to-face species that today they rarely, if ever, observe in the wild and to learn about the threats faced by primates and their habitats. The Limbe Wildlife Centre (LWC) houses a group of western gorillas and the only known Cross River gorilla in captivity; the LWC runs education outreach programs in South West Province which have collaborated with WCS outreach efforts.

Regional Non-Site-Specific Priority Actions, *continued*

## Promoting Community Participation in Conservation



Local support for Cross River gorilla conservation, Kakubok, Nigeria.

© Liz Macfie



A presentation about conservation education by the Wildlife Conservation Society to a school near Takamanda Forest Reserve, Cameroon.

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EARLIER PARTS OF THIS DOCUMENT HAVE HIGHLIGHTED the fact that the Cameroon-Nigeria border region is surrounded by a high human population which directly impacts Cross River gorillas and their habitat. There is also a large number of human settlements scattered through the gorilla's range, while demarcated village enclaves lie inside both the Okwangwo Division of Cross River National Park in Nigeria and the proposed Takamanda National Park in Cameroon. Much of the gorillas' range falls outside protected areas, on community-managed land with little or no formal protection status. Community support and involvement in conservation activities are, therefore, crucial to securing a safe future for the Cross River gorilla across its entire range.

Mutual understanding, trust and transparency among government, non-governmental organizations and communities are key factors in community participation, and community members should therefore be included in the development of protected-area management plans and in park management committees. Beyond this, communities may be assisted with livelihood improvements that are designed to reduce the direct impact of people on the gorillas and their habitats. To achieve this outcome, appropriate income-generating activities may be promoted, along with agricultural practices that have the potential to produce increased crop yields without further encroachment on forest habitats or the conversion of buffer zones; improved marketing techniques for agricultural produce should also be explored. These efforts may be assisted by developing community-based training centers. Donor-assisted development efforts tied to conservation projects need to make development assistance contingent on cooperation with conservation management systems.

Priorities for Promoting Community Participation in Conservation	Potential Implementing Partners	Time Frame	Funding Needed
<ul style="list-style-type: none"> <li>• <b>Outreach programs to raise awareness of the benefits of environmental protection</b> (e.g., watershed maintenance and erosion control).</li> </ul>	CRSFC, CRNP, DIN, MINFOF, TOCS, WCS, NCF, ERuDeF	5 years	\$50,000
<ul style="list-style-type: none"> <li>• <b>Develop the capacity of local people</b> to participate in and share responsibility for ecotourism and law enforcement.</li> </ul>	GTZ, WCS, NCF, DIN, ERuDeF, MMCA, FFI, WWF	3 years	\$60,000
<ul style="list-style-type: none"> <li>• <b>Develop alternative livelihood activities to reduce pressure on forest resources</b> (e.g., non-extractive resource use, and income-generating activities such as micro-enterprises).</li> </ul>	GTZ, KfW, NCF, DIN, ERuDeF, MMCA, FFI, WWF	5 years	\$1,000,000 <sup>1</sup>
<ul style="list-style-type: none"> <li>• <b>Enclaves: limit all human activities to existing boundaries</b> through the development of land-use plans; encourage resettlement outside protected areas.</li> </ul>	CRNP, TOCS, MINFOF, DIN, GTZ, WCS, FFI, WWF	5 years	\$150,000
<ul style="list-style-type: none"> <li>• <b>Promote land-use planning, improved agricultural practices and community forestry</b> in areas surrounding gorilla habitat to act as a buffer zone to core gorilla sites.</li> </ul>	DIN, GTZ, MMCA, ERuDeF, CRSFC, FFI, NCF	5 years	\$100,000

<sup>1</sup> The German Development Bank, KfW, have pledged a total of € 600,000 to implement development activities to support conservation in the Takamanda-Mone TOU. These funds will be disseminated over five years and focus on twenty-five communities.

Regional Non-Site-Specific Priority Actions, *continued*

## Transboundary Conservation Planning



The Magbe River, which forms the boundary between Cameroon and Nigeria. On the left is the Takamanda proposed National Park, Cameroon. On the right is the Okwangwo Division, Cross River National Park.

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**G**IVEN THE DISTRIBUTION OF AND THREATS faced by Cross River gorillas, a landscape-scale plan for their conservation is essential. This plan has to take account of the fact that the gorillas occur on both sides of an international border, and that cross-border conservation measures must therefore be developed. A clear transboundary approach can bring several benefits, including:

- Improvements in the control of threats that can cross boundaries, such as fire, pests, diseases, poaching, trade in bushmeat, timber and other forest products and wildlife trafficking.
- The interest of donors in transboundary protected areas.
- An increase in national commitment to conservation when this is seen as a component of international cooperation.
- The fostering of better cooperation and understanding between the nations concerned, both in conservation and in other spheres.
- The facilitation of more effective research.

Transboundary conservation measures have already been developed or proposed for a number of other protected areas that lie on either side of the Nigeria-Cameroon border. These are: (1) the Oban Division of Cross River National Park and Korup National Park; (2) Gashaka Gumti and Faro national parks and a proposed protected area at Tchabal Mbabo; and (3) Lake Chad and Waza national parks. Many of these areas share common management problems.

Priorities for Transboundary Conservation Planning	Potential Implementing Partners	Time Frame	Funding needed
• <b>Create and support national and binational transboundary conservation committees</b> to increase dialogue and information exchange and to develop strategies.	NNPS, MINFOF, WCS, WWF, GTZ, NCF	5 years	\$20,000
• <b>Initiate local-level activities between protected area managers and staff</b> to develop commitment to cooperative conservation (e.g., exchange visits and joint surveys).	CRNP, MINFOF, WCS, security authorities	5 years	\$30,000
• <b>Identification of a strategic framework</b> for transboundary conservation, with a lead organization appointed.	NNPS, MINFOF, WCS, WWF, GTZ	1 year	\$10,000
• <b>Develop a GIS database</b> as a planning tool for conservation.	WCS, WWF, GTZ	2 years	\$30,000
• <b>Seek international support</b> and investigate options for designation as a Transboundary World Heritage Site.	CRNP, MINFOF, WCS, WWF, GTZ, IUCN-WCPA, Peace Parks Foundation, UNEP	2–3 years	\$5,000

Regional Non-Site-Specific Priority Actions, *continued*

## Development of Ecotourism and Gorilla Viewing



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A small group of Cross River gorillas at Kagwene Mountain, a proposed gorilla sanctuary in Cameroon.



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The rugged terrain of Afi Mountain, Nigeria, where gorilla tourism is being considered.

**I**N CERTAIN SITUATIONS, APE-BASED ECOTOURISM can play an important role in raising conservation awareness and generating funds for conservation and development. The most successful great-ape tourism initiative is that built around East African mountain gorillas. Mountain gorillas have not been hunted for food, and their more open habitat can allow visual contact over hundreds of meters, so they have been relatively easy to habituate to close human presence. Lowland gorillas are generally much harder to habituate; they have experienced hunting and, because the vegetation in their habitat more often impedes vision, the animals and humans often detect each other only when they are in close proximity, provoking fear and stress in both gorillas and humans. Furthermore, habituation for tourism presents risks to gorillas including the introduction of human illnesses and loss of fear of humans, including hunters. Cross River gorillas present particular challenges for habituation. In addition to their wariness of humans because of a recent history of intense hunting, and the dense vegetation in their habitat, the small population is fragmented, and individual groups range over large areas in rugged and inaccessible terrain. Within the range of the Cross River gorilla, several ecotourism initiatives have already been developed that do not involve gorilla viewing (for instance, at Afi), and there are many opportunities for such tourism to grow.

During the 2006 Calabar workshop, participants discussed potential benefits and costs to Cross River gorilla conservation from developing ecotourism. Recommendations were agreed with the guiding principles being that

- (1) *ecotourism is not limited to gorilla habituation and viewing and*
- (2) *ecotourism should be seen as part of an overall tourism package that includes many aspects and services.*

Being mindful of these considerations, participants agreed on the following points:

1. **Ecotourism can bring benefits for conservation and development, but can also have negative impacts** on the environment and human culture, and can distract attention from core conservation needs.
2. **Because of the risks to gorilla health and survival from disease, stress, and vulnerability to hunting**, international concern has been expressed about the habituation of gorillas, especially Cross River gorillas, for the purposes of tourism.
3. **Participants agreed to endorse whatever recommendations may arise from an independent feasibility study** of gorilla-based tourism to be undertaken at Afi Mountain in 2006–2007.
4. **Participants will not endorse any further gorilla habituation efforts elsewhere in the Cross River gorilla's range** until any outcomes at Afi have been reviewed.

Regional Non-Site-Specific Priority Actions, *continued*

## Improved Legislation and Law Enforcement



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Opening of a new forestry post at Akwaya in Cameroon. Construction was supported by the international conservation community because of the proximity of Akwaya to key Cross River gorilla habitats in the nearby forests of Takamanda and Mbulu.

### Priorities for Improved Legislation and Law Enforcement

#### Cameroon

- **The government of Cameroon needs to invest more, both in terms of finance and human resources, in wildlife surveillance measures such as anti-poaching,** in addition to habitat protection.
- **The 1994 Forestry and Wildlife Law needs to be reviewed and updated** to take into consideration new wildlife management issues, and to re-categorize key species based on their current status.
- **Cameroon needs to more actively implement CITES measures** in order to reduce exploitation of apes, elephants, and turtles.
- **The government of Cameroon needs to improve procedures for the establishment of community hunting zones,** the granting of collection permits, and the development of management plans for protected areas.
- **The action plan of the new Caucus of Environmental Parliamentarians needs to be implemented** to facilitate the creation and implementation of regulations.

#### Nigeria

- **Both the federal and state governments of Nigeria need to commit more human, material and financial resources to the sustainable conservation of wildlife,** including the gorilla and its habitat.
- **More effort needs to be made by the government of Nigeria to review the Endangered Species Decree** and generally improve the implementation and enforcement of the law.
- **Nigeria needs to fulfill the requirements necessary to effect the withdrawal of the suspension of trade by CITES** in the shortest possible time.
- **A national gorilla conservation strategy needs to be elaborated at the federal level of government** in collaboration with relevant state government.
- **Revision of the wildlife laws of Cross River State needs to be completed, and the new law implemented.**



## Research Priorities

### Population Monitoring

Though the presence of gorillas has been confirmed at eleven localities in Nigeria and Cameroon, the total area habitually used by them remains unclear. Surveys in recent years have shown that the gorillas occupy significantly larger areas of habitat than had been assumed, but data from a number of sites, particularly in lowland areas, remain limited. Ongoing monitoring at all known gorilla localities is needed to better understand their ranging patterns, map core habitat areas, and evaluate the impacts of hunting and other human disturbance. A regular research presence at the gorilla sites would also contribute to protection, community outreach, and community benefits from employment.

### Distribution Surveys

The extent of the Cross River gorilla's range is still incompletely known. Recent surveys in Nigeria have confirmed the presence of gorillas in an area they were thought to no longer use (Olum Hill, near Afi Mountain). In Cameroon, gorillas were thought to be present in the southern portion of Mone River Forest Reserve, but field surveys failed to produce any evidence of their presence. Also in Cameroon, a population believed to have been extirpated (Bechati-Fossimondi-Besali) was recently re-discovered. Taken together, these findings serve to emphasize the need to expand our knowledge of the gorillas' range.

Systematically conducted, intensive surveys are needed to more precisely determine the full extent of the gorillas' distribution. Intensive surveys (i.e., employing multiple teams of field workers and of three or more weeks in duration) are necessary due to the

low density of gorillas typical of the region, steep terrain, and difficulties involved with detecting gorilla signs in the types of forest to be found in the Cross River area. Even in areas where they are known to exist, it is often difficult to locate any signs of gorillas. In particular, several areas stand out as needing further survey work:

1. Central and northeast Mone River Forest Reserve, and areas to the north and east of the reserve.
2. The southern portion of the Upper Mbulu forest, in the vicinity of Ashunda, Badshama, Ote, and Mbulu villages.
3. Other forests in the vicinity of Bechati-Fossimondi-Besali, and between Bechati and south-eastern Mone (including the Bamumbu Hills, the Nkong forest and the Mak-Betchou forest).



Recording gorilla nest site data, Kagwene, Cameroon.

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Priorities for Research	Potential Implementing Partners	Time Frame	Funding needed
• Continue socioecological research and population monitoring.	WCS, CRNP, CRSFC, MINFOF, NCF, MMCA, ERuDeF, FFI, ACF, RGBK, Universities, WWF	5 years	\$500,000
• Conduct gorilla distribution surveys.	WCS, NNPS, MINFOF, NCF, WWF, FFI, ERuDeF, ACF	2 years	\$100,000
• Conduct Cross River gorilla genetic tagging and population genetic analysis project.	WCS, NNPS, CRSFC, MINFOF, NCF	2 years	\$100,000
• Conduct ecological studies at new sites.	WCS, NNPS, MINFOF, NCF, Universities, WWF, ERuDeF	2–3 years	\$100,000

## Research Priorities, *continued*

4. The highland ridges west of the currently known Boshi Extension gorilla locality in northern Okwangwo Division of Cross River National Park.
5. The Okwa Hills in the Okwangwo Division of Cross River National Park.

### Further Genetic Analyses

Genetic analysis has provided valuable insights into the population structure of the Cross River gorillas, but has been limited by the availability of samples from all gorilla localities. Collection and analysis of additional samples would allow a more detailed understanding of population structure. More intensive genetic sampling would also allow more precise calculation of migration rates between localities. Such data could be used to identify effective habitat corridors and make future demographic modeling analyses more accurate.

Genetic analysis could also be used to address one of the most elusive but basic Cross River gorilla population parameters, population size. Analysis techniques that employ rarefaction or mark-recapture methodologies (genetic tagging) can be applied to genetic data to generate population size estimates. A pilot genetic tagging study of the Mbe Mountains is currently underway. If successful, this approach could be applied to the Cross River population as a whole.

### Cross River Gorilla Socioecology

The socioecology of the Cross River gorilla has been studied at two sites (Afi Mountain and Kagwene Mountain) that may not be representative of the population as a whole. Both sites are at the periphery of the gorillas' known range and have features that appear

to be somewhat different from the majority of the habitat occupied by *G. g. diehli*. Studying the feeding ecology of gorillas at one of the more central localities would allow an understanding of whether observations from Afi and Kagwene are characteristic of the overall population. Obtaining more data on the gorillas' habitat requirements could help identify the ecological factors which determine their present distribution in the highlands, and facilitate more accurate estimation

of whether currently unoccupied forest areas represent suitable gorilla habitat. Further research on Cross River gorilla feeding ecology could be complemented by botanical surveys. A better understanding of the relationship between the gorillas' diet and the floristic composition of the Cross River region would allow more accurate estimation of which areas represent good gorilla habitat.



Researchers collecting gorilla dung from a nest during a survey in Cameroon. Collection and analysis of additional samples would allow a more detailed understanding of the population structure.

## Priority Site-Based Actions—Nigeria

### Afi Mountain Wildlife Sanctuary (AMWS)



View of Afi Mountain from Buanchor, Nigeria. Although the steep mountainous slopes of the sanctuary have largely protected the Cross River gorilla habitat from logging, the forest is frequently damaged by dry-season fires.

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**M**ANAGEMENT OF AFI MOUNTAIN WILDLIFE SANCTUARY (AMWS) by the Cross River State Forestry Commission currently receives support from a number of NGOs including Fauna and Flora International, the Wildlife Conservation Society, Pandrillus and the Nigerian Conservation Foundation. Although levels of hunting have been reduced through the creation of a team of 23 rangers, there are estimated to be more than 600 illegal farms of various sizes within the sanctuary. Widespread illegal logging in the surrounding Afi River Forest Reserve (ARFR) and the spread of farms from the intervening Buanchor enclave threaten to sever the habitat corridor linking Afi to the Mbe Mountains in the east. Although the steep mountainous slopes of the sanctuary have largely protected it from logging, the forest is frequently damaged by dry-season fires and during the 2005–2006 dry season some of the gorillas left the confines of the sanctuary to feed in surrounding farms. Methods for mitigating potential gorilla-human conflict therefore need to be considered.

AMWS is currently the focus of an ambitious ecotourism drive by the Cross River State Government that includes a plan for habituation of the gorillas at Afi for the purposes of tourism. This habituation proposal is currently the subject of an independent feasibility study. The sanctuary is also the proposed site for the reintroduction of captive drills (*Mandrillus leucophaeus*) by the NGO Pandrillus.

Action Needed— Afi Mountain Wildlife Sanctuary	Potential Implementing Partners	Time Frame	Funding Needed
• <b>Conduct workshop to resolve issue of illegal farming</b> in the sanctuary.	CRSFC	1 year	\$3,000
• <b>Improve management infrastructure:</b> ranger posts, sanctuary headquarter buildings, radio network, trails.	CRSFC, FFI, NCF, Pandrillus, WCS	2–3 years	\$50,000
• <b>Enforce sanctuary laws</b> and organize effective anti-poaching patrols.	CRSFC, NCF, WCS, FFI, Pandrillus	5 years	\$125,000 <sup>1</sup>
• <b>Conduct training</b> to implement improved ranger-based monitoring.	CRSFC, NCF, WCS, FFI, Pandrillus	1 year	\$1,000
• <b>Survey, map and secure habitat corridors</b> between Afi-Mbe and AMWS-ARFR.	CRSFC, FFI, WCS, Pandrillus	2–3 years	\$10,000
• <b>Develop community-based land-use plans</b> for surrounding 'buffer zone' and corridors.	CRSFC, DIN, NCF	2 years	\$20,000
• <b>Complete ecotourism feasibility study.</b>	CRSFC, FFI, NCF, WCS, Pandrillus, CRS Tourism Bureau	1 year	\$10,000
• <b>Develop a management plan.</b>	CRSFC, NCF, WCS, FFI, Pandrillus, DIN	1–2 years	\$20,000
• <b>Conduct workshop to develop fire protection plan.</b>	CRSFC, NCF, Pandrillus	1 year	\$1,000

<sup>1</sup> Recurrent costs, of which CRSFC currently contributes around \$10,000 for ranger salaries per year.

Priority Site-Based Actions—Nigeria, *continued*

## Mbe Mountains



Mbe River at foot of the Mbe Mountains, Nigeria.

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A researcher inspecting a gorilla nest, Mbe Mountains, Nigeria.

© Naomi Cohen/WCS

•.....▶ **L**ACKING ANY FORMAL CONSERVATION STATUS, traditional ownership of the Mbe forest is claimed by nine surrounding communities. Despite recommendations to the contrary, the Mbe Mountains were excluded from the newly established Cross River National Park in 1991, and subsequent attempts by the federal government to incorporate the land into the park were unsuccessful. The nine communities have formed the Conservation Association of the Mbe Mountains (CAMM), and they intend to manage the area both for conservation and to provide benefits to community members. This process has been driven by a USAID-funded project known as SPACE (Sustainable Practices in Agriculture for Critical Environments) supported by a number of NGOs such as WCS and Development in Nigeria.

Monitoring of the gorillas by a local NGO, the Primates Preservation Group, and more recently by WCS, has resulted in a degree of informal protection for the gorillas. Despite the lack of any formal conservation status, wildlife does appear to be more abundant in the Mbe Mountains compared to nearby protected areas. However, the mountains remain under threat from logging, agricultural encroachment, and hunting. It is hoped that the newly created community conservation area will be able to reduce such pressures whilst maintaining local support, and that Mbe will continue to link Afi Mountain with Cross River National Park and the larger block of gorilla habitat to the east.

Action Needed— Mbe Mountains	Potential Implementing Partners	Time Frame	Funding Needed
• Provide necessary support and capacity building for the Conservation Association of the Mbe Mountains (CAMM).	DIN, WCS, CRSFC	2–3 years	\$30,000
• Explore lease option for sustainable conservation financing.	FFI, WCS, NCF	1 year	\$10,000
• Develop research station.	WCS, CAMM	2 years	\$10,000
• Support the development and implementation of an effective community patrol system.	CAMM, WCS, CRSFC, CRNP	5 years	\$50,000
• Conduct a workshop to develop fire protection plan.	CAMM, DIN, WCS, CRSFC	1 year	\$1,000
• Survey, map and protect corridor between Mbe and Cross River National Park.	CRSFC, CAMM, WCS	2–3 years	\$10,000
• Complete formal demarcation and legal gazettement of boundary.	CAMM, CRSFC, WCS	1 year	\$10,000
• Develop a management plan.	CAMM, WCS, DIN, CRSFC	1–2 years	\$20,000
• Develop a community-based land-use plan for surrounding 'buffer zone' and habitat corridors.	CAMM, DIN, CRSFC	2 years	\$20,000

Priority Site-Based Actions—Nigeria, *continued*

## Cross River National Park: Okwangwo Division



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Farming on the edge of Okwangwo Division, Cross River National Park, Nigeria.

.....→ **D**ESPITE THE EFFORTS OF PARK AUTHORITIES, high levels of hunting occur in most areas of the Okwangwo Division, driven by the lucrative bushmeat market. Consequently, large mammals are at very low densities almost everywhere.

A major unresolved problem for the park is the presence within it of three large enclaved villages. Two enclaves (Okwa and Okwangwo) were created to contain these villages during the establishment of the former Okwangwo Forest Reserve in 1930 and since that time the villages have increased greatly in population, clearing much forest for farming and expanding outside their enclaves. These farmlands threaten to divide the park in two and thereby isolate the forest and gorillas of Boshi Extension from the rest of the Okwangwo Division. Some low-intensity logging also occurs in Okwangwo, although this is probably not widespread.

Park boundaries also remain contentious: the official decree that established the park in 1991 adopted the boundaries of the former Boshi-Okwangwo forest reserves, rather than following the recommendations of park planning consultants in 1989–90. The boundaries of CRNP as a whole (both Okwangwo and Oban Divisions) need to be reviewed.

Action Needed— Cross River National Park: Okwangwo Division	Potential Implementing Partners	Time Frame	Funding Needed
<ul style="list-style-type: none"> <li>• <b>Continue enforcement of protected area laws</b>, especially anti-poaching measures.</li> </ul>	CRNP, WCS, WWF	5 years	\$250,000 <sup>1</sup>
<ul style="list-style-type: none"> <li>• <b>Training for CRNP staff</b> in anti-poaching measures and gorilla monitoring techniques.</li> </ul>	CRNP, WCS, NCF, WWF	1–2 years	\$20,000
<ul style="list-style-type: none"> <li>• <b>Review existing enclave relocation plans</b>, and explore funding options.</li> </ul>	CRNP, FGN	1–2 years	\$1,000
<ul style="list-style-type: none"> <li>• <b>Finalize management plan.</b></li> </ul>	CRNP, WCS, DIN, NCF	1 year	\$20,000
<ul style="list-style-type: none"> <li>• <b>Review of external boundary</b> including possible re-demarcation.</li> </ul>	CRNP, CRSFC	1 year	\$20,000
<ul style="list-style-type: none"> <li>• <b>Continue with efforts to build and equip new ranger posts.</b></li> </ul>	CRNP, WCS, BRD, Kolmarden Zoo	3 years	\$30,000 <sup>2</sup>
<ul style="list-style-type: none"> <li>• <b>Plan for broad-based ecotourism</b> and integrate with efforts by Cross River State Tourism Bureau.</li> </ul>	CRNP, CRS Tourism Bureau	1 year	\$1,000

<sup>1</sup> Recurrent costs currently provided by CRNP.

<sup>2</sup> CRNP could be expected to provide around 50% of these costs.

## Priority Site-Based Actions — Cameroon

### Takamanda Forest Reserve (Proposed National Park)



The Makone River in the Takamanda Forest Reserve, Cameroon.

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#### The Takamanda-Mone Landscape

The Takamanda-Mone forest landscape occupies the northern end of Cameroon’s South West Province and covers an estimated 4,400 km<sup>2</sup>. This landscape, which encompasses the forest areas of Takamanda, Mone, Mbulu and Kagwene, provides habitat to all but one of the known Cross River gorilla populations in Cameroon and forms an almost contiguous forest block that adjoins similar forests in Nigeria.

Though recognized as a biologically important area on a regional scale (Comiskey et al. 2003; Forboseh et al. in press), the Takamanda-Mone landscape has been somewhat neglected by conservation efforts. The area has inadequate numbers of forestry officers to monitor illegal forestry and hunting. To improve the survival prospects of the Cross River gorilla and other threatened animals, and to ensure that proposed protected areas are effectively conserved, this situation needs to be urgently remedied.

IT IS ESTIMATED THAT APPROXIMATELY 15,000 PEOPLE RELY on the forests of Takamanda for livelihood resources such as timber and non-timber forest products, particularly bushmeat, bush mango (*Irvingia* spp.), and the edible leaves of the *Gnetum* vine (“eru” or “salad”). The combination of increasing human population in the area and increasing accessibility by road is escalating pressure on the forests. Takamanda’s location adjacent to the international border provides additional trans-boundary challenges for enforcement of forestry and wildlife laws. The trafficking of bushmeat across the porous international border with Nigeria, as well as to other parts of Cameroon, is rapidly depleting wildlife populations.

Action Needed — Takamanda Forest Reserve (Proposed National Park)	Potential Implementing Partners	Time Frame	Funding Needed
• <b>Complete the upgrading of Takamanda Forest Reserve to Takamanda National Park</b> , giving it the same legislative status as Cross River National Park.	MINFOF, WCS, GTZ, WWF, KfW	1 year	\$20,000 <sup>1</sup>
• <b>Finalize a management strategy.</b>	MINFOF, WCS, GTZ, KfW	1 year	\$20,000 <sup>1</sup>
• <b>Demarcate the boundary of the National Park.</b>	MINFOF	2 years	\$30,000 <sup>1</sup>
• <b>Improve law enforcement</b> , including the recruitment of field-based eco-guards.	MINFOF, WCS	5 years	\$220,000 <sup>1</sup>
• <b>Establish a trans-border conservation committee.</b>	GOC, FGN	2 years	\$10,000

<sup>1</sup> KfW have pledged funds to support many activities related to the establishment of Takamanda National Park. Funding for the first four listed actions should be largely met by KfW .

Priority Site-Based Actions—Cameroon, *continued*

## Mone River Forest Reserve



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Construction of Mamfe-Akwaya road at Mbu, just west of the Mone River Forest Reserve. This road will allow greater access to, and facilitate habitat loss in, the forested areas that link Takamanda with Mone.

**M**ONE RIVER WAS CREATED AS A PRODUCTION FOREST RESERVE in the 1950s. Although there are no human settlements within the reserve boundaries, local people harvest timber, wildlife and other forest products unsustainably from the forest. In a 2003 review (*Plan du Zonage*) it was suggested that Mone River's status be upgraded to that of Wildlife Sanctuary. However, the future status of Mone is now in some doubt, and it is thought that government may consider assigning this area to commercial timber exploitation. There is an urgent need to develop a conservation plan that provides protection for the gorillas in Mone, while recognizing the needs of the local people. This is especially important given the possibility, suggested by genetic data, of continuing connections between the gorillas of Mone and other neighboring forests.

Action Needed— Mone River Forest Reserve	Potential Implementing Partners	Time Frame	Funding Needed
<ul style="list-style-type: none"> <li>• <b>Acquire and collate baseline biological and socio-economic information</b> in support of a review of conservation status of Mone River Forest Reserve.</li> </ul>	WCS	1 year	\$40,000
<ul style="list-style-type: none"> <li>• <b>Elaborate a conservation management strategy for the area.</b></li> </ul>	MINFOF, WCS, GTZ, KfW	2 years	\$20,000
<ul style="list-style-type: none"> <li>• <b>Re-trace the boundaries of Mone River Forest Reserve.</b></li> </ul>	MINFOF	1 year	\$25,000
<ul style="list-style-type: none"> <li>• <b>Improve law enforcement</b>, including the recruitment of enforcement staff and the establishment of regular patrols.</li> </ul>	MINFOF, WCS	5 years	\$200,000 <sup>1</sup>

<sup>1</sup> Recurrent costs including salaries are to be provided by MINFOF.

Priority Site-Based Actions—Cameroon, *continued*

## Mbulu Forest



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View from grassland ridge in Upper Mbulu forest above the village of Ashunda, East of Badshama, Cameroon. Kagwene Mountain can be seen in the distance. Gorillas routinely cross this grassland and occasionally nest there.

**M**BULU CURRENTLY HAS NO FORMAL MANAGEMENT STATUS and local people from the many communities scattered across the area use forest resources with few controls. The creation of a road from the town of Mamfe in the south to Akwaya in the north presents a further threat to conservation of the area. This road will allow greater access to, and facilitate habitat loss in, the forested areas that link Takamanda with Mbulu. Although forest continues to be eroded by farming, the main threat to the gorillas of this area is hunting. An infant female gorilla was caught in a snare and killed with a machete in 2001 and in early 2006 reports were received of another gorilla killed in this area. There is an urgent need to form a network of protected areas and corridors in Mbulu.

Action Needed— Mbulu Forest	Potential Implementing Partners	Time Frame	Funding Needed
<ul style="list-style-type: none"> <li>• <b>Acquire and analyze baseline biological and socio-economic information</b> to plan a network of conservation areas and corridors.</li> </ul>	WCS, MINFOF	1 year	\$60,000
<ul style="list-style-type: none"> <li>• <b>Complete gazettelement process for two potential protected areas</b> (Upper Mbulu, and Atolo).</li> </ul>	MINFOF, WCS, GTZ, KfW	2–3 years	\$75,000
<ul style="list-style-type: none"> <li>• <b>Demarcate protected area boundaries and elaborate management strategies</b> for new protected areas.</li> </ul>	MINFOF, WCS, GTZ, KfW	1 year	\$30,000
<ul style="list-style-type: none"> <li>• <b>Improve law enforcement</b>, including increasing numbers of enforcement staff and recruitment of Conservators for new Protected Areas.</li> </ul>	MINFOF	5 years	\$200,000 <sup>1</sup>

<sup>1</sup> Recurrent costs including salaries are to be provided by MINFOF.



Priority Site-Based Actions—Cameroon, *continued*

## Kagwene Mountain (Proposed Gorilla Sanctuary)



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Kagwene Mountain, Cameroon, showing research camp and cattle. A long history of pastoralism has converted large areas of these Bamenda Highlands from forest to grassland.

**K**AGWENE MOUNTAIN IS SURROUNDED BY NINE VILLAGE COMMUNITIES. INTENSE HUNTING on the mountain has resulted in the almost total extirpation of large and medium-sized mammals with the exception of gorillas, which have been afforded protection over the years by a traditional law forbidding their hunting. Therefore, the most pressing threat to the gorillas in this area is habitat loss. Pastoral cattle herders have converted large areas of the forest to grassland, while farming is creeping further up the mountain slopes. Communities around Kagwene Mountain are prepared to protect the habitat and its wildlife but their support is contingent on completion of the gazettement of the Gorilla Sanctuary. Since October 2005, a locally employed anti-poaching team has been active at Kagwene under the guidance of MINFOF, and has been successful in reducing the amount of trapping on the mountain.

Action Needed — Kagwene Mountain (Proposed Gorilla Sanctuary)	Potential Implementing Partners	Time Frame	Funding Needed
<ul style="list-style-type: none"> <li>• <b>Complete the gazettement process</b> of the Kagwene Gorilla Sanctuary and finish boundary demarcation.</li> </ul>	MINFOF	1 year	\$15,000
<ul style="list-style-type: none"> <li>• <b>Elaborate a management strategy</b> for the sanctuary, including fire-protection measures.</li> </ul>	WCS, MINFOF, WWF	1 year	\$5,000
<ul style="list-style-type: none"> <li>• <b>Continue law enforcement and anti-poaching activities;</b> finalize recruitment of MINFOF eco-guards.</li> </ul>	MINFOF, Min. of Livestock	5 years	\$110,000 <sup>1</sup>
<ul style="list-style-type: none"> <li>• <b>Employ a MINFOF Conservator.</b></li> </ul>	MINFOF	5 years	\$42,000 <sup>1</sup>
<ul style="list-style-type: none"> <li>• <b>Relocate livestock currently within the sanctuary.</b></li> </ul>	Ministry of Livestock	2 years	\$10,000

<sup>1</sup> Recurrent costs including salaries are to be provided by MINFOF.

Priority Site-Based Actions—Cameroon, *continued*

## Bechati-Fossimondi-Besali Forest



©Ymke Warren/WCS

Examining a Cross River gorilla nest during a survey in the Fossimondi forest, Cameroon.

**T**HE THREATS TO THE CONTINUED SURVIVAL OF CROSS RIVER GORILLAS in Bechati-Fossimondi-Besali are similar to those in other localities; they include subsistence and commercial hunting, habitat fragmentation, forest clearance for farming, road development and general lack of knowledge of wildlife laws. One pressing issue is that local communities are asking traditional rulers to allow re-farming of the steep mountain slopes of Fossimondi. Another concern is whether parts of the area might be assigned to production forestry. A concerted and collaborative effort is needed to set up a conservation plan for this area to mitigate the growing threats.

Action Needed — Bechati-Fossimondi-Besali Forest	Potential Implementing Partners	Time Frame	Funding Needed
<ul style="list-style-type: none"> <li>• <b>Acquire and collate baseline biological and socio-economic information</b> in support of creating a co-managed protected area and wildlife corridors between Bechati and Mone River Forest Reserve.</li> </ul>	ERuDeF, WWF, WCS, FFI, ACF, RBGK, Universities	5 years	\$100,000
<ul style="list-style-type: none"> <li>• <b>Produce a land-use map</b> and review and formalize the status of the Bechati-Fossimondi-Besali Forest.</li> </ul>	ERuDeF, MINFOF, FFI, WWF	2 years	\$55,000
<ul style="list-style-type: none"> <li>• <b>Elaborate a management strategy for the area</b> with the local Forest Community Association and village forest management committees; include demarcation of conservation area.</li> </ul>	ERuDeF, FFI, WCS, MINFOF, WWF	2 years	\$20,000
<ul style="list-style-type: none"> <li>• <b>Improve law enforcement</b>, including increasing numbers of enforcement staff and develop community-based wildlife law enforcement mechanisms.</li> </ul>	ERuDeF, LFPC, MINFOF, LAGA, FFI	3 years	\$40,000
<ul style="list-style-type: none"> <li>• <b>Develop livelihood alternatives</b> to minimize trade-offs due to the creation of a protected area.</li> </ul>	ERuDeF, GOC, FFI, WCS, MINADER	5 years	\$70,000
<ul style="list-style-type: none"> <li>• <b>Organize workshops on illegal farming in gorilla habitat.</b></li> </ul>	ERuDeF, MINFOF, FFI, WWF, MINADER	1 year	\$2,000

## Conclusions

**I T IS CLEAR THAT** *Gorilla gorilla diehli*, the Cross River gorilla, is in a precarious situation, and well deserves its IUCN Red List status as a Critically Endangered taxon. The total population of these gorillas in known localities is currently estimated at less than 300 individuals, concentrated in small nuclei across a broad landscape in a mountainous region straddling the boundary between Cameroon and Nigeria. The gorillas have been heavily hunted in the past, and they remain under threat from illegal hunting; their forest habitat has been steadily eroded by farming and pastoralism, and new roads are extending into their habitat. Bordering the landscape in which they survive are areas that support some of Africa's highest human population densities.

Ensuring the survival of Cross River gorillas will require sustained, committed and collaborative conservation efforts in both of the range countries. Yet despite the huge pressures these animals have been under for many decades, their outlook is far from hopeless. They have managed to persist in places where years ago their survival had seemed unlikely. Recent research has found that occasional migration events have retained connectivity between many of the gorillas' population nuclei, and that there are still

corridors of potential gorilla habitat, though sometimes tenuous, connecting the rugged hill areas where the gorillas primarily occur. Knowledge of the gorillas and local awareness of their importance has been steadily increasing since 1996 due to the coordinated efforts of scientists and conservationists working with government agencies and local communities in the region. As explained in this action plan, these efforts have received the endorsement of the Ministers in charge of wildlife from both range-state governments.

In this action plan we have outlined a set of recommended priority actions which were formulated during a series of expert workshops held in the region. These actions include the establishment of new conservation areas to protect Cross River gorilla population nuclei (as well as measures to safeguard habitat corridors between these areas), support for improved management of existing conservation areas, continuing research to learn more about the gorillas' basic distribution and biology, and expanded efforts to spread awareness of the value of conservation. Recognizing that conservation must have the involvement and support of local people to be effective, our recommendations also address issues of community livelihood, includ-

ing support for land-use planning that balances human needs with wildlife conservation. Because Cross River gorillas inhabit a region that is a biodiversity hotspot, in which there is high species richness combined with very high levels of endemism, measures that conserve the gorillas' habitat will protect many other range-restricted and endangered species. The gorillas thus act as both a flagship and umbrella species for the region.

Over a five-year period, the total cost of implementing the recommendations in this plan is estimated to be \$4.6 million. Some of that funding has already been committed by development agencies (notably KfW within the Takamanda-Mone landscape in Cameroon), and some is recurrent costs for the management of protected areas (such as staff salaries) that are likely to be met in significant part by government agencies. However, approximately two-thirds of the funding for the actions identified in this plan as necessary to secure the Cross River gorillas' future have still to be raised. We very much hope that this plan will assist both in raising those funds and in guiding conservation actions that will greatly improve the long-term survival prospects for these unique apes.

## References

**Because Cross River gorillas inhabit a region in which there is high species richness combined with very high levels of endemism, measures that conserve the gorillas' habitat will protect many other range-restricted and endangered species.**

- Allen, J. G. C. 1932. Gorilla hunting in southern Nigeria. *Nigerian Field* 1: 4–9.
- Anon. 1934. Notes on gorilla. *Nigerian Field* 3: 92–102.
- Bassey, A. E. and Oates, J. F. (eds). 2001. *Proceedings of the International Workshop and Conference on the Conservation of the Cross River Gorillas, Calabar, Nigeria, April 6–9, 2001*.
- Bergl, R. A. 2006. Conservation Biology of the Cross River Gorilla (*Gorilla gorilla diehli*). Ph.D. thesis, Graduate Center, City University of New York, New York.
- Bergl, R. A., Oates, J. F., and Fotso, R. 2007. Distribution and protected area coverage of endemic taxa in West Africa's Biafran forests and highlands. *Biological Conservation* 134: 195–208.
- Bergl, R. A. and Vigilant, L. 2007. Genetic analysis reveals population structure and recent migration within the highly fragmented range of the Cross River gorilla (*Gorilla gorilla diehli*). *Molecular Ecology* 16: 501–516.
- Comiskey, J. A., Sunderland, T. C. H., and Sunderland-Groves, J. L. (eds.). 2003. *Takamanda: The Biodiversity of an African Rainforest*. Smithsonian Institution Monitoring and Assessment of Biodiversity Program Series 8. Washington DC: Smithsonian Institution.
- Coolidge, H. J. 1929. A revision of the genus *Gorilla*. *Memoirs of the Museum of Comparative Zoology, Harvard* 50: 291–381.
- Fishpool, L. D. C., and Evans, M. I. 2001. *Important Bird Areas in Africa and Associated Islands: Priority Sites for Conservation*. Cambridge: Birdlife International.
- Forboseh, P., Eno Nku, M. and Sunderland, T. C. H. In press. The importance of five forests in Cameroon for large mammals. *Oryx*.
- Groves, J. L. 1999. Gorillas in the Takamanda Forest Reserve. *Gorilla Journal* 18: 17–18.
- Groves, J. L. 2001. Gorillas of Takamanda, Mone and Mbulu forest, Cameroon. *Gorilla Journal* 22: 27–29.
- Harcourt, A. H., Stewart, K. J. and Inahoro, I. 1989. Gorilla quest in Nigeria. *Oryx* 23: 7–13.
- IUCN. 2006. 2006 IUCN Red List of Threatened Species. From <http://www.iucnredlist.org>.
- March, E. W. 1957. Gorillas of Eastern Nigeria. *Oryx* 4: 30–34.
- Matschie, P. 1904. Bemerkungen über die Gattung Gorilla. *Gesellschaft naturforschender Freunde, Berlin* 45–53.
- McFarland, K. L. 2007. Ecology of Cross River Gorillas (*Gorilla gorilla diehli*) on Afi Mountain, Cross River State, Nigeria. Ph.D. Thesis, Graduate Center, City University of New York, New York.
- Myers, N., Mittermeier, R. A., Mittermeier, C. G., da Fonseca, G. A. B. and Kent, J. 2000. Biodiversity hotspots for conservation priorities. *Nature* 403: 853–858.
- Oates, J. F., Bergl, R. A., and Linder, J. M. 2004. Africa's Gulf of Guinea forests: biodiversity patterns and conservation priorities. *Advances in Applied Biodiversity Science*, number 6. Washington DC: Conservation International.
- Oates, J. F., McFarland, K. L., Groves, J. L., Bergl, R. A., Linder, J. M and Disotell, T. R. 2003. The Cross River gorilla: the natural history and status of a neglected and critically endangered subspecies. Pp. 472–497 in A. Taylor & M. Goldsmith (eds.), *Gorilla Biology: A Multidisciplinary Perspective*. Cambridge: Cambridge University Press.
- Rothschild, W. 1905. Notes on anthropoid apes. *Proceedings of the Zoological Society of London* 1904: 413–440.
- Rothschild, W. 1908. Note on *Gorilla gorilla diehli*. *Novitates Zoologicae* 15: 391–392.
- Sarmiento, E. E. and Oates, J. F. 2000. The Cross River gorillas: a distinct subspecies *Gorilla gorilla diehli* Matschie, 1904. *American Museum Novitates* 3304: 1–55.
- Stumpf, R. M., Fleagle, J. G., Jungers, W. L., Oates, J. F. and Groves, C.P. 1998. Morphological distinctiveness of Nigerian gorilla crania. *American Journal of Physical Anthropology, Supplement* 26: 213.
- Stumpf, R., Polk, J., Oates, J., Jungers, W., Heesy, C., Groves, C. and Fleagle, J. 2003. Patterns of diversity in gorilla cranial morphology. Pp. 35–61 in A. Taylor & M. Goldsmith (eds.) *Gorilla Biology: A Multidisciplinary Perspective*. Cambridge: Cambridge University Press.
- Sunderland-Groves, J. L. and Jaff, B. (eds.) 2004. *Developing a Conservation Strategy for the Cross River Gorilla. Proceedings of the 2nd International Workshop and Conference on the Conservation of the Cross River Gorilla*. New York: Wildlife Conservation Society.
- Sunderland-Groves, J. L., Maisels, F. and Ekinde, A. 2003. Surveys of the Cross River gorilla and chimpanzee populations in Takamanda Forest Reserve, Cameroon. Pp. 129–140 in J. A. Comiskey, T. C. H. Sunderland and J. L. Sunderland-Groves (eds.) *Takamanda: the Biodiversity of an African Rainforest*. Smithsonian Institution Monitoring and Assessment of Biodiversity Program Series 8. Washington DC: Smithsonian Institution.

## Acronyms

ACF	African Conservation Foundation	LFPC	Local forest protection committees
AMWS	Afi Mountain Wildlife Sanctuary	MINADER	Ministry of Agriculture, Cameroon
ARD	Associates in Rural Development	MINRESI	Ministry of Scientific Research, Cameroon
ARFR	Afi River Forest Reserve	MINFOF	Ministry of Forestry and Wildlife, Cameroon
BRD	Berggorilla & Regenwald Direkthilfe	NCF	Nigerian Conservation Foundation
CAMM	Conservation Association of the Mbe Mountains	NNPS	Nigeria National Parks Service
CBD	Convention on Biological Diversity	RBGK	Royal Botanic Gardens, Kew
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora	SPACE	Sustainable Practices in Agriculture for Critical Environments
CMS	Convention on Migratory Species of Wild Animals	SSC	Species Survival Commission
COMIFAC	Central African Forests Commission	TOCS	The Okwangwo Conservation Society
CRNP	Cross River National Park	TOU	Technical Operational Unit
CRS	Cross River State	UNEP	United Nations Environment Programme
CRSFC	Cross River State Forestry Commission	USAID	United States Agency for International Development
DED	Deutscher Entwicklungsdienst (German Development Service)	WCS	Wildlife Conservation Society
DIN	Development in Nigeria	WWF	World Wide Fund for Nature
ERuDeF	Environment and Rural Development Foundation		
FFI	Fauna and Flora International		
FGN	Federal Government of Nigeria		
GOC	Government of Cameroon		
GTZ	Gesellschaft für Technische Zusammenarbeit (German Technical Cooperation)		
IUCN	World Conservation Union		
IUCN-WCPA	World Conservation Union—World Commission on Protected Areas		
KfW	Kreditanstalt für Wiederaufbau—German Development Bank		
LAGA	Last Great Ape Organisation		



Forest and grassland mosaic on the northern edge of the Okwangwo Division of Cross River National Park, Nigeria, with the Sankwala Mountains behind.

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## Participant List

### Cross River Gorilla Technical Workshop and Conference, Calabar, Nigeria April 2006

ADELEKE, Alade, ARD-SPACE Project, Cross River State, aladeewi@yahoo.com

AGBOR, Chris, Permanent Secretary, Cross River State Forestry Commission, fc\_gorillas@yahoo.com

BASSEY, Tony, Cross River State Tourism Bureau, servetony@yahoo.co.uk

BERGL, Richard, CUNY Graduate Center, New York, richard.bergl@nczoo.org

DUNN, Andrew, WCS, Nigeria, adunn@wcs.org

EBAI, Takang Stephen, Cameroon Ministry of Forestry and Wildlife (GRASP Focal Point), ebait@yahoo.co.uk

EKOBO, Atanga, WWF, Cameroon, draekobo@yahoo.co.uk

ELLIS, Christina, WWF African Great Apes Programme, Cameroon, CELLIS@wwfcarpo.org

ENIANG, Edem, University of Uyo, edemeniang@yahoo.com

FOTSO, Roger, WCS, Cameroon, rfotsowcs@aol.com

GADSBY, Liza, Co-Director, Pandrillus, drill@hyperia.com

GREENGRASS, Elizabeth, WCS consultant, EJGreengrass@mac.com

HARUNA, Stephen, Director, Cross River National Park, Stephen\_haruna@yahoo.com

IMONG, Inaoyom, Research Officer, WCS, Nigeria, rimanson@yahoo.com

INAHARO, Ibrahim, Regional Coordinator, Nigerian Conservation Foundation, Calabar, ibrahiminahoro@yahoo.com

ITA, Philip, Director of Forestry, Cross River State Forestry Commission, fc\_gorillas@yahoo.com

JENKINS, Peter, Co-Director, Pandrillus, drill@hyperia.com

LEIGHTON, Mark, Co-Chair, Scientific Committee, GRASP, markleighton9@yahoo.com

MACFIE, Liz, Consultant, Imacfie@iwayafrica.com

MGBANG, Edward U., Cross River State Forestry Commission, eumgbang@yahoo.com

MSHELBWALA, John, Nigerian Federal Ministry of Environment, Housing and Urban Development, johnmshelbwala2@yahoo.com

NCHOR, A.A., University of Calabar, nchorayuk@yahoo.com

NICHOLAS, Aaron, WCS, Cameroon, sarkindaji1@yahoo.co.uk

NKEMBI, Louis, ERuDeF, Cameroon, Lnkembi@yahoo.com

OATES, John, Hunter College CUNY and WCS, joates@hunter.cuny.edu

OBOT, Emmanuel, Executive Director, Nigerian Conservation Foundation, Lagos, ncf@hyperia.com, eaobot@yahoo.com

OGAR, Gabriel, LENF, gabeogar@yahoo.ca

OKENYE, Mambo, GTZ Cameroon, okenyemambo@yahoo.com

OMENI, Fidelis, Nigerian Federal Ministry of Environment, Housing and Urban Development (GRASP Focal Point), fedelodomeni@yahoo.com

PARR, Zoe, Development in Nigeria, z.parr@aradin.org

PATTERSON, Graeme, WCS New York, gpatterson@wcs.org

PEWO, Victor, Cameroon Ministry of Forestry and Wildlife, vppewo@yahoo.fr

POUAKOUYOU, Daniel, Fauna and Flora International, Daniel.Pouakouyou@fauna-flora.org

RATIARISON, Sandra, Cercopan, Calabar, cercopan@compuserve.com

SIMPSON, Mike, One Sky – The Canadian Institute for Sustainable Living, mike@onesky.ca

SUNDERLAND-GROVES, Jacqueline, University of Sussex, takamanda@aol.com

SUNDERLAND, Terry, CIFOR, Indonesia, T.Sunderland@cgiar.org

TAKO-ETA, Philip Tabi, Provincial Delegate, Cameroon Ministry of Forestry and Wildlife, tabitakoetap@yahoo.fr

TURNER, Allen, ARD, aturner@ardinc.com

UBI, Sam, Conservation Coordinator, Afi Mountain Wildlife Sanctuary, ubisam@yahoo.com

WILLIAMSON, Liz, IUCN-SSC Primate Specialist Group, e.a.williamson@stir.ac.uk

YOHANNA, Saidu, Cross River National Park, yohannasaidu@yahoo.com

Conservation International  
2011 Crystal Drive, Suite 500  
Arlington, VA 22202 USA  
[www.conservation.org](http://www.conservation.org)

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