Studying the potential of gorilla-based tourism as a possible tool for the long-term conservation and management of the Afi Mountain Wildlife Sanctuary Cross River Gorilla population, Cross River State, Nigeria.

2007

Photo: Liz Macfie

Final Report

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- Cross River State Tourism Bureau (CRSTB) – Calabar, Nigeria

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Acronyms

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<th>Acronym</th>
<th>Description</th>
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<tr>
<td>ACDF</td>
<td>Afi Community Development Fund</td>
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<tr>
<td>CRSFC</td>
<td>Cross River State Forestry Commission</td>
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<td>CRSTB</td>
<td>Cross River State Tourism Bureau</td>
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<td>FFI</td>
<td>Fauna &amp; Flora International</td>
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<td>NCF</td>
<td>Nigerian Conservation Foundation</td>
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Executive Summary – Recommendations of the Study

The main recommendations of the study were presented and discussed at a final workshop held in Calabar on 11 June 2007. The workshop allowed the AMWS partnership and other invited stakeholders to discuss and comment upon the findings. The recommendations below represent the final study output following the workshop, and include any factual corrections provided by meeting participants as well as minor revisions following AMWS partnership review of the draft study report. These recommendations are based on synthesis, analysis, and critical evaluation of all information gathered and reviewed during the study, and as a result these recommendations are not re-stated in the body of the report.

The reader of this report should note that participants at the April 2005 conference on Action Planning for Cross River Gorilla Conservation agreed, among a number of other points relevant to ecotourism, to “endorse whatever recommendations may arise from an independent feasibility study of gorilla-based tourism to be undertaken at Afi Mountain in 2006-2007”, i.e. this study.

1. Overall Recommendations:

1a. Gorilla-based tourism in the Afi Mountain Wildlife Sanctuary (AMWS) should be considered a viable option to promote the self-sustainable conservation management of one small isolated Cross River Gorilla sub-population and its habitat. By enhancing the perception of the value of the gorilla and its habitat by local communities and political leaders, long-term support for the conservation of AMWS and its gorillas will be enhanced. However, before undertaking the development of this activity, data gaps and a number of critical issues must be addressed to mitigate current threats to gorilla conservation in AMWS, as detailed in sections 2 and 3 of these recommendations.

1b. Habituation has a number of advantages and disadvantages (see Annex 1, pg.34), all of which must be clearly understood by everyone involved in planning, managing, implementing, and utilising gorilla tourism at Afi. These issues should be kept in mind at all stages of development and implementation of the programme.

1c. A number of tourism support and impact mitigation activity programmes that are pre-requisites to gorilla-tourism development must be planned, and funded, to adequately set the stage such that the future tourism programme can be viable and rooted in the preservation, as opposed to the exploitation, of the Afi gorillas. These are detailed in recommendation sections 4 – 7.

1d. Once habituated, gorillas are more tolerant to human approach, making them potentially more vulnerable to poaching. If gorillas are habituated, the group and their home range must be monitored and protected on a daily basis by law enforcement teams with on-call veterinary backup. This must be carried in perpetuity, even during times of lower/no tourism. Planning and funding for this effort must be guaranteed before habituation is initiated.

1e. Gorilla-based tourism must not shift the focus of the Afi conservation programme away from its primary goal of protection of the gorillas and their habitat. Law enforcement must continue to be the priority, and in fact should be expanded to ensure heightened protection of gorillas under habituation. Sanctuary staffing and management must also be expanded to allow for tourism development, with recruitment of a senior tourism development coordinator and recruitment of new law enforcement rangers to replace those transferred to the tourism effort.

1f. Tourism earnings in AMWS, and specifically gorilla-tracking income, must first be used to support the cost of conservation and management of AMWS, with certain percentages of income to be approved as set-aside percentages for communities (revenue sharing), and oversight and marketing efforts specific to AMWS implemented by CRSFC / CRSTB. Only if and when AMWS budget requirements are met should any surplus income be transferred to support conservation efforts in other forests under CRSFC management.
1g. Expectations are very high with regard to gorilla tourism, and should be addressed and rationalised at all levels, keeping in mind that there is only a maximum of one Afi gorilla group potentially appropriate for tourism activities and therefore a maximum of 6 tourists tracking gorillas per day, and spending between 1 and 4 nights in the Afi area. This translates to a maximum of 2,190 gorilla tracking permits per year at 100% occupancy.  
   **Note:** Experience from other successful sites suggests that 100% occupancy is not possible, that 80% occupancy may be possible in the long run, but that it would be rational to expect not more than 60% occupancy (1,315 tourists annually) in the initial phase.

1h. Potential tourists to Afi will need to be of a high level of physical fitness. Not all interested tourists will be able to manage the physical requirements of reaching the Afi sanctuary and negotiating the difficult terrain. This will affect the potential market for the activity and should guide the content of marketing information distributed to potential tourists and tour operators.

1i. Gorilla tracking in Afi is likely to be a multi-day activity. Although at times day-excursions may be possible depending on gorilla group locations, it is likely that tourists will need to spend at least one night at camps within the sanctuary, due to the physical difficulty of the terrain. Booking and management systems, along with accommodation developments, will need to be developed accordingly.

1j. For the tourism programme to be viable, AMWS should look towards a two-phased approach to the market for its potential future gorilla tourism programme.
   - Phase 1 should target domestic tourism (including residents) and the adventure tourism markets that currently visit Nigeria (i.e. overland truck safaris), with a pricing structure and accommodation that encourages this market segment.
   - Only after successful implementation of the first phase should the potential market be expanded to include international tourists, and only then if security, services, and accommodation have been developed to an appropriate standard. At this stage, pricing for tracking permits could be reviewed based on experience in Phase 1.

1k. Expectations are extremely high within communities with regard to the potential benefits to be accrued locally from tourism. The AMWS partnership and State Government will need to work towards rationalising community expectations, and to ensure that tourism is developed with an emphasis on accrual of benefits locally, in order to retain community support for the sanctuary and to avoid a backlash that could jeopardise the survival of the gorillas.

1l. Local benefits should include revenue sharing programmes, emphasis on community-tourism initiatives and community eco-lodges, and fostering of community enterprises to add value from tourism at the local level.

1m. Expectations are very high within the hospitality / hotel sector in Cross River State. Care should be taken to prevent overdevelopment of tourism accommodation around Afi through zoning or concession agreements for high-end lodge/s while emphasising community-based tourism facilities and insisting on minimum requirements for community benefits from any other lodges.

1n. This study will provide a financial analysis of the costs of developing gorilla tourism in AMWS. Funding must be sourced and committed for the development and implementation of the programme before any habituation efforts are launched.

1o. Before tourism development goes ahead at Afi, the AMWS Partnership should develop a 5-year Tourism Development Plan, incorporating actions, funding requirements, and responsibilities for implementation of the wide range of actions needed to develop a diversified tourism programme.
   - Any donors for the Tourism Development Plan are likely to require, as standard, the conduct of external mid-term reviews and final evaluation.
   - The AMWS partnership should carry out additional reviews on an annual basis, to review progress and to ensure that critical impact mitigation efforts are implemented correctly and that impact monitoring data is being gathered to inform management.
2. **Information / Data Gaps:** These must be addressed before final decision made:

2a. **Expanded census of gorillas:** Undertake further research and/or more intensive census efforts in order to assess whether the gorilla group or groups in Afi are consistently of sufficient size to be acceptable for tourism with minimum risk of behavioural disturbance. Acceptable group sizes are only those with at least 7 gorillas over 1 year of age, and ideally would be group sizes of 10-19 (See Annex 2, pg. 37).

2b. **Crop-raiding:** Full understanding of how often Afi gorillas visit areas of their range that are outside AMWS borders, as tourism on community lands associated with crop-raiding activities will certainly exacerbate conflict between the sanctuary and local communities.

3. **Critical issues:** These must be addressed, whether or not gorilla habituation for tourism is developed:

3a. **Disease and Hygiene:** Disease prevention and hygiene must be improved within the sanctuary to minimise the risk of disease transmission to the gorillas, as the current standards pose a disease risk to the gorillas. Activities to include:
- Education / Hygiene for people working in and moving through the forest
- Improved management of rubbish, food waste and sanitation in camps

3b. **Veterinary Support:** Partners in the Cross River Gorilla regional area should consider in the medium- to long-term, the provision of a disease monitoring programme (including employee + immediate household health programme and environmental / community health monitoring / education) and veterinary cover for both routine or outbreak scenarios. Consider locating a donor/institution interested in developing a veterinary programme serving the entire CRG range (MGVP model) – Pandrillus is interested in moving into this role, with additional funding.
- In the short-term, emergency response will be provided by veterinary staff of Pandrillus, following specific training in field techniques, provision of relevant equipment, and cross-visits to other wild ape veterinary programmes

3c. **Addressing the issue of illegal farms within the sanctuary:** Revenue sharing accompanying gorilla tourism is a method to address costs to communities of losing access to forest exploitation. However this cannot be implemented where gorilla habitat is destroyed with impunity, so the issue of illegal farms must be resolved before habituation is initiated.

3d. **Improvement of Current Tourism:** Improvements in management of current limited tourism activities in the sanctuary:
- Financial management and improved systems to handle tourism income.
- A CRSFC ranger should be posted at or near Buanchor / Drill Ranch to be available to accompany tourists, especially in high season.
- Guiding by sanctuary staff only, or by registered community guides – all of whom are trained in guiding, tourism management, first aid, and regulations for cases where groups or individual unhabituated gorillas, chimps, or drills are encountered.
- Communications systems to ensure that sanctuary is aware of and can provide guiding and financial administration of tourist visits.
- Rangers or community guides must carry radios for emergencies.
- Trail improvements – main access trails to be developed with tourists in mind
- Evacuation / rescue protocols should be developed to respond to tourist injury / illness.

3e. **Provision of Critical Equipment:** Improvements in provision of equipment relevant to sanctuary management, especially for new office at Boje and to support rangers in the field:
- Communications: long-range (HF) and short-range radio systems required for management and development of tourism, along with power requirements (solar)
- Vehicles: At least one new vehicle required to ensure continuity of management support while the one existing vehicle is in Calabar.
- Administrative equipment for new AMWS office – communications (phone, radios, internet), computer, printer, photocopier, power (solar / generator).
- Field equipment for rangers: backpacks, tents, sleeping bags, sleeping mats
3f. Increase in Number of Ranger Posts:
   • New ranger posts: Although currently planned, these must be constructed / equipped in order to facilitate more effective law enforcement in the sanctuary, with rangers based at different points around the sanctuary, and at locations close to the boundary.
   • Communications equipment for new ranger posts: radios / solar power.

3g. Crop-raiding / Human-Gorilla Conflict: Development of plan to respond to any future gorilla crop-raiding incidents.
   • Gather baseline information on ranging of gorillas outside of AMWS boundaries
   • Discuss implications and develop action plan to include:
     1. Reporting systems to allow communities to report problems
     2. Development of response teams (monitor, verify, respond)
     3. Encourage gorillas back to the forest (with appropriate methods)
     4. Consider issue of compensation to farmers for damaged crops.
     5. Monitoring of gorillas when outside forest
     6. Consider means of protecting gorilla range outside AMWS boundaries, through AMWS boundary adjustment, land purchase, management easements, etc.

3h. Establish / Re-establish Corridor to Mbe Mountains: Address the isolation of the Afi population from the neighbouring forest at Mbe through support to maintaining all possible corridors between the two localities.
   Note: one animal per generation may be sufficient (see Bergl, 2006)

4. Initial Planning – Lessons Learned from Mountain Gorilla Tourism

4a. Cross visit to Rwanda / Uganda: AMWS planners and managers should participate in a cross visit to mountain gorilla tourism sites in Rwanda and Uganda, in order to better understand not only how successful gorilla tourism programmes are run, but also to observe lessons-learned in those sites, to avoid repeating their mistakes. Suggested candidates for this trip would include
   • AMWS Conservation Coordinator (1)
   • AMWS Wildlife Officers (3)
   • Representative from the CRSFC Headquarters (1)
   • Representative from CRSTB (1)
   • Pandrillus vet (1)
   • Other interested AMWS partners (self-funded)
5. **Impact-mitigation Prerequisites:**

A number of impact mitigation programmes must be planned, funded, and ready for implementation **before** gorilla habituation is initiated. The AMWS Partnership must be committed to develop and implement all of these programmes during the set-up phase, and to support implementation during potential periods of low/no tourism activity, in perpetuity:

5a. **Veterinary support / disease monitoring unit:** A system for disease surveillance and monitoring, and response to disease outbreaks or human-caused injuries, including diagnosis and emergency treatment of gorillas, must be in place. Special attention to be paid to disease outbreaks in local populations, including surveillance for critical emerging or re-emerging diseases such as polio, avian influenza, and ebola. Preventive measures also to be considered with respect to tourists.

5b. **Employee Health programme:** All partnership staff and researchers (and immediate households) whose jobs routinely take them into the AMWS to be enrolled in an employee health programme that addresses disease prevention, health monitoring, and treatment.

5c. **Development and implementation of habituation best-practice:** Utilising lessons learned from other sites, develop guidelines and standard procedures for habituation team in order to minimise the stress of habituation.

5d. **Development of visitor regulations:**
- Review research results on tourism impact in other sites (behaviour, disease, stress), and use these findings to guide visitor management at Afi.
- Draw up and agree rules for tourism activities for both sanctuary visits / nature walks and for gorilla tracking (can be adapted from other sites’ regulations)
- Printing and dissemination of visitor regulations to potential tourists and tour operators active within Cross River State.

5e. **Expansion of Law Enforcement teams in the Sanctuary:** Habituation of gorillas exposes them to additional risks, caused by loss of innate fear of humans. Before habituation is initiated, law enforcement efforts must be boosted to protect the gorillas from illegal activities. This is especially critical in an area like Afi with a history of gorilla hunting for human consumption. The law enforcement team should be expanded in number to address this.

5f. **Staff Compensation:** Payment of living wage or performance allowances to sanctuary rangers, to motivate standards of excellence and to reduce temptation towards un-regulated tourism activities in exchange for tips/bribes.

5g. **Tracking / trail cutting practices:** Develop standard practice for any activity requiring human movement through the forest (patrols/visitors/staff/researchers), to prevent or minimise disturbance to any patchy/rare plants, especially food species for gorillas/other animals.

5h. **Reputation of AMWS with respect to tourism development:** To mitigate any international or conservation concern about the development of gorilla tourism in Afi, disseminate a summary of the impact assessment to concerned institutions / individuals.
Executive Summary – Main Recommendations of the Study

Services that MUST be addressed before tourism can be opened (and efficiently implemented):

6. Tourism support services: A number of tourism management & support services must be planned, funded, and ready for implementation/development before gorilla habituation is initiated.

6a. Road improvements
   • Improvements of current roads that would provide access to the forest from the western side. The highest priority for improvement is from Katabang junction to Boje.
   • Consider whether access can be improved / access time shortened to departure points and potential tourism accommodation / eco-lodges in communities in the northern areas of the sanctuary (Kakubok / Esikwe).

6b. Trail Network
   • Develop a system of main access trails to allow future tourists to enter the sanctuary at the most logical points (including Buanchor, Boje, Kakubok, and Esikwe), and to access the areas most likely to be departure points or overnight camps for gorilla tracking.
   • Tourist trails to be developed with switchbacks etc. to reduce slope and to minimise erosion, while minimising impact on sanctuary vegetation, and to be routed to maximise understanding of the forest and exposure to scenic views.
   • Bridges across major rivers on access trails.

6c. Accommodation:
   • Tasteful low-impact accommodation developed at sites representing logical entry points to the forest – ideally with major benefit accruing to local communities (i.e. small lodges). Sites to be confirmed, but may include Buanchor-Pandrillus (existing), Boje, Kakubok and Esikwe. Maximum gorilla-tourism related beds per site need not be more than 12.
   • Develop / improve overnight sites within the forest for periods when gorillas located in areas in the sanctuary that prevent a one-day in-and-out visit. Maximum 12 “beds”.
     1. Upgrade current Base camp to include a tasteful low-impact “camp” adjacent to ranger accommodation.
     2. Develop similar camp at an existing alternate base camp site in northern section of sanctuary.
     3. Ensure camps within the sanctuary are not over-developed and are provided with environmentally appropriate hygiene and power (solar).
   • AMWS and the state government should develop and adhere to zoning plans and building regulations in order to prevent uncontrolled development of tourist lodges at tourist entry points. An acceptable scenario would be to have 4 community eco-lodge facilities at the entry points, supplemented eventually by one higher-end lodge each on the east (e.g. Kanyang) and west (Boje – Governor’s lodge?) sides of AMWS. Any lodge development should include attention to community benefits as a priority.
   • All infrastructure to be developed must be subjected to appropriate EIA regulations and to fit within zoning / building regulations for the area.

6d. Guiding services:
   • Registration of community guides, who currently accompany tourists who enter the sanctuary, and/or consider them for recruitment as CRSFC/AMWS guides for future tourism programme.
   • Training must be provided to all ranger-guides or community guides to cover tourist control techniques, Afi forest ecology, first aid, etc...
   • All guides must carry radios at all times
6e. Diversification and promotion of non-gorilla tourism activities
- To encourage longer stays in the AMWS area, develop other non-gorilla tourism activities in and around the sanctuary.
- All tourism activities must be designed with appropriate fee structures, management systems, and ranger-guides trained to accompany tourists.
- All tourism activities must be promoted / marketed to potential tourists in order to maximise their uptake.

6f. Maps
- Baseline maps – topo maps – trail maps –
- GPS based ground-truthing of boundary is necessary.
- GIS-based gorilla monitoring system – ranger-based monitoring.
- Road map for tourists accessing Afi – Drill Ranch

6g. Marketing:
- Working with and through the CRSTB, promote the AMWS as a destination in itself, and as a component of a CR State tourism circuit.
- To expand the tourism programme beyond the domestic market in the second phase, develop and disseminate information regarding the Cross River Gorilla as a very special animal.

6h. Tour operator services:
- During Phase 1, with a focus on domestic tourism, there may still be visitors requiring logistical support from tour operators who will provide transport, bookings and logistical support to visitors on arrival in Calabar.
- Independent operators to be encouraged in order to spread the benefits of tourism.

6i. Security services: community policing

In the run-up to Phase 2 inclusion of the International Market....

6j. Other tourism services to be addressed:
A number of other tourism services would need to be addressed / improved by partners external to the Afi partnership before the Afi gorilla tourism programme could expand to a second phase that successfully markets to and attract tourists originating from outside of Nigeria.
- Immigration: visa application process made easier
- Domestic flight bookings and confirmations to be made easier for external visitors
- Tourist access to the sanctuary – vehicle rental, public transport.
- Tour operator networks to provide transport, booking assistance, and logistics services to tourists a range of in-state, or in-country circuits that include an Afi gorilla permit.
7. Tourism Management prerequisites:

7a. Staffing structure: The development of gorilla-based tourism will require an expansion of sanctuary staff. Sanctuary staffing and management must be expanded to cover tourism development, and should include:

- At least 4-6 rangers should be assigned to the habituation effort at first. These rangers can transition to trackers upon opening of tourism, and with appropriate training could become guides.
- If gorilla tourism operates with early morning tracking to locate gorillas before tourist arrival, 2-4 additional rangers will be required.
- If any current law enforcement rangers are transferred to tourism, they must be replaced by new rangers.
- The sanctuary should have a senior tourism development coordinator position.
- Once tourism is operational, the sanctuary will require administrative / tourism staff to manage tourism reception at the sanctuary.

7b. Booking Systems: Development of booking systems for Afi gorilla tourism programme, with provisions for booking methods, time period for advance booking, payment deadlines, quotas for tour operators (if any), cancellations, refunds. This system must be reliable and flexible enough to handle the following:

- One gorilla visit per day – starting with 2 visitors per day for a minimum trial period of 2 months. If favourable outcome, increase to 4 permits a day for another 2 months, and finally expand to 6 permits a day.
- Booking and deposit / payment systems for:
  - Individual tourists (Nigerian / expatriate residents) living in Calabar
  - Individual tourists living in Nigeria, but not in Calabar – payment methods.
  - Overland safari companies – groups of up to 24 (minimum 10) – will need to stay in Afi area for a number of days to allow their full group to cycle through gorilla visits.
  - Other international arrivals – although not marketing the programme to them at first, there will be interest, and system must be able to handle them.
- Systems must prevent over-booking as this leads to disappointed tourists or temptation to break rules
- Booking systems must stipulate format for communication of bookings to tourism department at Afi, and of accommodation bookings to departure point (see below).

7c. Flexible management of accommodation booking system: flexible requirements for number of days spent in the Afi area due to location of the gorillas:

- Tourists will need to spend the night before entry into the sanctuary at the appropriate accommodation facility nearest to the departure point for the next morning.
- Day trips from more remote sites such as Ikom, Obudu, or Calabar will not be feasible due to time required to access the forest, track the gorillas, and return.
- Depending on location of gorilla group, tourists may either:
  - Track in and out in one day
  - Camp one night in the forest before tracking
  - And/ or camp one night in the forest after tracking
- Tourists are likely to spend one night back at accommodation facility nearest to departure point, before moving on to their next destination.

7d. Communication systems:

- Long range radio equipment: Provision of communication equipment on site: long-range radio between site of central booking system in Calabar, and sanctuary personnel.
- Short range radio equipment: Hand-held radios required for habituation teams and for tourism operations.

7e. Sanctuary tourism income management systems - Financial systems and administrative systems to manage current tourism income at the sanctuary. System for tourism revenues to be accrued to cover the operations of AMWS – with any surplus accruing to CRSFC.
7f. Financial and administrative mechanisms to convert AMWS to a separate financial cost/budget centre

- Develop and administer its own budget.
- Receive income from Calabar-based advanced booking system (gorilla permit purchase).
- Receive and deposit income receive on-site for entry fees, camping, guiding, gorilla permits sold on-site etc..
- Make local expenditures from income accruing to the Afi cost centre.
- Apply for, and receive, funding for budgeted recurrent costs above income from central forestry service funds, supplemented by funding support from the AMWS partnership.

7g. Benefit Sharing programmes with the 16 communities surrounding AMWS:

- Community participation in AMWS management: Development of a representative community committee capable of working on issues dealing with AMWS management, especially tourism revenue sharing, in a manner that is equitable to all 16 Afi communities. The community survey revealed that the Delegates Committee was almost unanimously rejected by communities as a possible mechanism for revenue sharing decision-making.
- Development of policies for revenue sharing programme to distribute an agreed % of gorilla tourism revenue to the 16 communities surrounding AMWS.
- Development of guidelines for implementation of tourism revenue sharing programme - the community groups around the AMWS are in a good position to effectively participate in and benefit from a benefit sharing scheme.
8. Associated Findings:

8a. Cross River Gorillas do not (yet) have the draw of mountain gorillas. It will not be possible to completely replicate the mountain gorilla tourism programme in Nigeria, for a number of reasons:

- Popularity of the East African safari circuit – ease of adding a gorilla sector to existing circuits that are efficiently marketed and very successful.
- Reputation of mountain gorillas (no Hollywood film ever made on CR gorillas!)
- Perception of Nigeria as a risky destination may discourage tourists of international origin, especially given travel advisories issued by governments, and recent frequent press articles on kidnappings, armed attacks, etc.. Even if events are at a distance from Cross River State, tourists tend to lump entire countries, and even regions into one “no-go” zone. For this reason, the Cross River State approach to prioritise domestic and regional tourism is a realistic approach that should also be applied to Afi gorilla tourism development and marketing, at least in the first phase.

8b. Regional Issues:

- The market may not bear more than one site for Cross River Gorilla tourism. As agreed at the April 2006 CRG workshop in Calabar, other sites should not be opened until the viability of the Afi programme has been tested and assessed for impact and success.
- A number of factors that led to the recommendation to explore gorilla tourism in Afi as a viable option would be affected by expanding tourist markets in Cameroon.
- Transboundary agreements and regional tourism circuits may enhance/mitigate market effects of developments in other sites in the region.
- A number of other western gorilla sites are developing or considering gorilla tourism, and the international market may not be robust enough to support many sites. The AMWS phase-one focus on domestic tourism is a healthy way to start with a smaller market without wasting time and effort on the international market, at least initially.

8c. The question of gorilla tourism in Afi / Cross River state is a contentious issue.

- Almost all stakeholders consulted have a very strong view on this issue, either completely for or against the development of gorilla-based tourism – almost nobody is “sitting on the fence”.
- This has a potential implication for generation of conflict in the partnership, which would jeopardise successful development of the tourism programme.
Main Report

A. Introduction

Whilst gorilla-based tourism has made a positive contribution to gorilla conservation in some areas (i.e. mountain gorillas in Rwanda, Uganda, and DR Congo), results of similar programmes in habitats for other gorilla subspecies have been mixed. In addition, due to the risks of tourism impact on gorilla health and reproductive status, both international and local concern has been expressed about the habituation of gorillas – and especially Cross River gorillas – for the purpose of tourism. Recently, interest has been expressed by Nigerian protected area authorities in exploring the potential for gorilla-based tourism, and the Afi Mountain Wildlife Sanctuary (AMWS) was earmarked as the best site to consider for gorilla tourism development. However, due to concerns over the risks of gorilla-based tourism, the members of the Afi Mountain Wildlife Sanctuary Partnership¹ (hereafter referred to as “the Partnership” or “Partners”) have agreed to commission an independent impact and feasibility study before any development of gorilla-based tourism is undertaken in the sanctuary.

To allow the partnership to conduct this study, a grant from the United States Fish and Wildlife Service was obtained, with FFI serving as lead agency for interactions with the donor.

This report is organised along the layout of the study design (see Annex 3 – Terms of Reference for the Study, pg. 38), and presents information and findings specific to the sections of the analysis. The recommendations that form the main output of the study were formed from a synthesis of the entire body of information and experiences during the study, and as a result they are not re-stated in the main body of the report. For these, the reader is directed back to the main recommendations as presented in the Executive Summary (pg. iii)

1. Study methodology:
   - The lead consultant coordinated the study.
   - The study was conducted through four trips to Cross River State to design and implement the study, and to present results to the partnership.
   - Field time was supplemented by desk-based preparation, literature review, analysis, and electronic exchanges with the partnership and other resource persons required for the analyses.
   - The AMWS Partnership provided significant technical advice and expertise to the study and assisted with field visits, as well as availing the consultant with relevant reports and publications to support the analysis.
   - Some sections of the analysis required additional external expertise in the form of consultancies for the community assessment and for the production of site and topographical maps. The findings of these consultancies are included (maps and topographical analyses) or summarised (community assessment) in this report.

2. Study Outputs:

The study outputs were intended to provide clear recommendations and analysis of:

(i) Whether gorilla-based tourism in the Afi Mountain Wildlife Sanctuary is both feasible and advisable.
(ii) A full analysis of the costs and benefits of gorilla-based tourism, both in the sense of economics and potential ecological impact.
(iii) If gorilla-based tourism is recommended, a detailed summary of the steps and process to be undertaken, and by which institutions.

These outputs can be found within the body of the Findings section B, below, with details relevant to each recommendation. There are a large number of recommendations, and as a result, these are listed in the Executive Summary on page iii, and in the body of the report are only referred to by number and basic topic.

¹ Membership of the AMWS Partnership consists of the Cross River State Forestry Commission (CRSFC) and its NGO partners, including the Nigerian Conservation Foundation (NCF), Pandrillus, the Wildlife Conservation Society (WCS), and Fauna & Flora International (FFI). By the completion of the study, the Cross River State Tourism Bureau (CRSTB) had been invited to join the partnership.
B. Results

1. Preparation

a. Stakeholder Consultations

In designing and setting up the study, consultations were held with the following stakeholders in the conservation of, and potential tourism development at, Afi Mountain:

- **AMWS Partnership:** The members of the partnership are a group of very dedicated and experienced conservationists working with either the forestry commission or a number of NGOs that support the conservation programme in the sanctuary. Many of these individuals have been involved in the programme at Afi for a number of years, and, as a result, they provided a wealth of information on the history, management, ecology, community, and local services in and around Afi. In addition to experience, the partnership membership provided their opinions on the gorilla tourism question with great enthusiasm, and it appeared from the start of the study that the partnership was deeply polarised around this issue. The significance of this is that the development and operations of any gorilla tourism programme will rely on the partnership for coordination and support. Conflict within the partnership over the issue of gorilla tourism could jeopardise not only the tourism programme, but also the partnership itself.

- **Cross River State Tourism Bureau:** At the start of the study, the CRSTB was not a member of the AMWS partnership. However, it has been actively promoting tourism in the state as a whole and has undertaken developments at Afi to promote tourism, such as the construction of the canopy walkway. The CRSTB has from the outset of this study expressed enthusiasm and optimism for gorilla-based tourism at Afi in order to broaden the scope of tourist activities in the Afi area and in the Cross River State as a whole, as part of the State’s tourism circuit. The CRSTB has been mandated by the State Government to become financially self-sufficient and although this may result in a perception of being overly enthusiastic about gorilla tourism, it does present an excellent opportunity for the marketing aspect of any further Afi tourism development.

- **Other government:** While the consultant did not communicate directly with the state government, other than through the CRSFC and CRSTB, it is clear from the history of tourism development in the state that the state government views tourism development as a key priority. Support from the governor’s office to the CRSTB and to the improvement of infrastructure and tourism services in the state go a long way towards promoting a climate that would support the growth of nature-based tourism in the state, including any gorilla tourism programme to be developed at AMWS.

- **Other NGOs:** In general, conservation NGOs view gorilla–based tourism with well-deserved scepticism based on concerns about risks to the gorillas inherent in ape tourism (disease, behavioural impact, habitat disturbance, risk of overdevelopment), and also concerns about over-exploitation and management consistency.

b. Literature review – Habitat and gorilla behaviour/ecology

The AMWS partnership provided the lead consultant with a list and copies of a number of references relevant to the study, covering aspects of Cross River gorilla ecology, behaviour, and habitat relevant to the potential development of gorilla-based tourism in the Sanctuary. This was supplemented by the consultant’s reference collection and literature searches, and included comparison literature from other gorilla sites. A full list of references consulted can be found in Annex 5 – Reference Material, pg.43.

c. Literature / Information review – Tourism Market

The CRSTB was a good source of information on tourism market information and analyses that have served as the basis for the programme to promote tourism in Cross River State. The Afi study budget had no funding to support market surveys specific to the Afi gorilla tourism question, but concurrently with this study, the CRSB was developing a tourism development plan. Although not complete during this study, interim figures and presentations were made available, and served to inform market analyses in the study.
2. Feasibility Analysis: “Could It Be Done?”

a. Physical habitat at the site (including mapping consultancy)

Objectives:
- Rapid appraisal of access to the area of Afi frequented by the gorillas, the forest/vegetation structure, and the general topography of the area.
- Based on the above, evaluate the potential for tourism access to the site, and the potential for habituation efforts, daily tracking, and visibility of gorillas. In addition, assess the impact of gorilla group movements outside this core area on tourism feasibility.

Methodology:
- Site visits.
- Literature review – habitat and site descriptions.
- Review of anecdotal information from past visitors to Afi.
- Mapping consultancy (conducted by Dr. Richard Bergl) to produce:
  - Contour map (and comparison maps of other gorilla tourism sites)
  - 3-D Topographical map (and comparison maps)
  - Slope map (and comparison maps)
  - Slope steepness profile of Afi and other gorilla tourism sites.

Figure 1: Steep Afi Terrain

Findings:

Trails and Access
Access into the gorilla home range within AMWS involves negotiating trails up and down very steep slopes. Current trails are old hunting trails that are used by rangers and have not been constructed or improved with tourists in mind. Even with significant trail improvements, accessing the sanctuary and moving around the gorillas' range will involve difficult hiking on steep slopes. When rangers and potential tourists are following gorilla tracks off the main trails, the terrain becomes even more difficult and will be a challenge to potential tourists. In addition, the low altitudinal range of the site results in high temperatures exacerbating the difficult nature of the hike. Records and anecdotal information show that a number of visitors to the sanctuary give up before reaching the core area where gorilla tracking is likely to be focused.

Topographical Analysis
Prior to this study, the maps available for AMWS were sufficient for the management and research work carried out to-date, but did not provide this study with sufficient quantity and quality of information with which to analyse topographical factors that affect tourism potential, including altitudinal range and slope steepness, and to allow for comparison with successful gorilla tourism sites. As a result, additional expertise was sought to conduct a mapping exercise, carried out by Dr. Richard Bergl and funded under the study. Utilising satellite imagery, three new maps were produced of Afi, as described below and depicted in Figs. 2 – 4 in the following pages. For comparison, similar maps were produced from two successful gorilla tourism sites, utilising data from the International Gorilla Conservation Programme (IGCP). Prior to the study, stakeholder opinions were divided between those who felt that Afi would be an easier terrain for potential tourists (due to lower altitude) and those who felt it would be more difficult (slope and temperature), so the study took a look at two successful gorilla tourism sites that seemed to offer the best comparisons in terms of terrain (see Annex 6). All maps were printed out in A1 format to allow participants at the final workshop to make their own comparisons.

A summary discussion of each map is described below. The Afi maps were left with AMWS management for future use in the field, and digital copies of the maps have been delivered in a CD containing the outputs of this study.
Potential of gorilla-based tourism as a possible tool for conservation management of AMWS gorilla population

Figure 2: Contour Map of the Afi Site with Estimated Gorilla Range (pg. 5).

- **Description:** This map shows the topography of the Afi mountain area with 50m contour bands for the site. The AMWS sanctuary boundary is outlined in yellow, and the approximate gorilla range is marked by the red dotted line, based on research and management data and agreed by AMWS management and partnership members currently working in the site.
- **Use:** The map allows for examination of current and potential trail routes and other infrastructure. While produced only for the needs of this study, and therefore containing only very basic information on altitudes and contours, this map will serve as a useful start for future elaboration of a base map for management and monitoring.
- **Findings:** This map demonstrates the gorillas’ range extending along the hills northward beyond the AMWS boundaries towards Kakwagon and the Olum hills. These are areas of existing and potential conflict with communities due to gorilla crop-raiding. This situation would also potentially lead to complications for tourism management if habituated gorillas range onto community land. AMWS must obtain full understanding of how often Afi gorillas visit areas of their range that are outside AMWS borders, as tourism on community lands associated with crop-raiding activities will certainly exacerbate conflict between the sanctuary and local communities.

Figure 3: 3-D Topo Map of the Afi Site with Estimated Gorilla Range (pg. 6).

- **Description:** This map shows a 3-D representation of the Afi mountain topography.
- **Use:** This map allows those not familiar to contour maps to gain an appreciation of the physical structure of the Afi area. It was utilised in the study results workshop in order to impress upon participants the difficult nature of the terrain. In future, this map could be adapted for use in the development of AMWF marketing materials.
- **Findings:** Existing access routes used by management follow old hunters’ trails that generally run perpendicular to contour lines and are therefore inappropriate for tourist access trails. Trails must be improved for tourism to be feasible.

Figure 4: Slope Map of the Afi Site with Estimated Gorilla Range (pg. 7)

- **Description:** This map provides a graphic presentation of the slope profile of the AMWS, especially within the gorillas’ range.
- **Use:** This map was presented at the study results workshop to further reinforce the appreciation of the difficult nature of the terrain, especially useful for any participants with pre-conceived notions that tourism in Afi would be similar to that in Rwanda and Uganda, in which the activity, although difficult, is a possibility for tourists of many different fitness levels.
- **Findings:** As this map shows very clearly, any potential gorilla tracking activity in this site will be physically very demanding due to the steep slopes that cover the mountain, especially in the core area where the gorillas range, in which much of the terrain is steep with slopes greater than 30° (57% slope). This will affect the physical strength and stamina required of the potential Afi gorilla tourist, and should guide marketing and planning efforts to target only the segments of the potential tourism market that could actually enjoy and succeed in the activity.
- **Further Analysis:** Using GIS based software, the mapping exercise further analysed the slope profile of the Afi area, and compared this with two other sites in which habitation of mountain gorillas, and daily tracking for tourism, has been possible: the Virunga volcanoes (Rwanda, the Democratic Republic of Congo, and Uganda) and the Bwindi Impenetrable forest (Uganda). Table 1 below (pg. 8) shows a comparison of the extent and percent of each site within different categories of slope steepness. Detailed examination of this data shows that the Afi area, and especially the gorilla range in Afi, is generally a much steeper habitat. More than 65% of the gorillas’ range falls within the slope categories of 20° and above, a slope that is steep enough to be considered “difficult” hiking. An additional comparison is provided in Table 2 below (pg. 8), showing how the 3 sites compare in their altitude profiles, as altitude also affects ease of hiking. In the case of Afi, although lower in altitude this may not necessarily be an advantage as it results in increased temperatures, making hiking less comfortable, especially for less-fit hikers.
Figure 2: Contour Map of the Afi Site with Estimated Gorilla Range

Afi Mountain Wildlife Sanctuary, Nigeria
Figure 3: 3-D Topo Map of the Afi Site with Estimated Gorilla Range

Afi Mountain Wildlife Sanctuary, Nigeria
Figure 4: Slope Map of the Afi Site with Estimated Gorilla Range

Afi Mountain Wildlife Sanctuary, Nigeria

Legend
- Estimated Gorilla Range
- Village
- Non-Obudu Road
- Sanctuary Boundary

Map prepared by P. Rong for the AMWS Partnership/FRR with funding from USFWS.
Table 1: Slope Profile Comparison of Afi Mountain with the Bwindi Forest and the Virunga Conservation Area

Note: colour bands in the table correspond to slope categories on the maps in Fig 4 above, and in Annex 6

<table>
<thead>
<tr>
<th>Slope (degrees)</th>
<th>AMWS (km²)</th>
<th>% of area</th>
<th>Afi Gorilla Range (km²)</th>
<th>% of area</th>
<th>Cumulative % - this slope and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°-10°</td>
<td>34.65</td>
<td>33.31 %</td>
<td>4.69</td>
<td>6.73 %</td>
<td>93.27 %</td>
</tr>
<tr>
<td>10°-20°</td>
<td>23.94</td>
<td>23.02 %</td>
<td>17.52</td>
<td>25.16 %</td>
<td>68.11 %</td>
</tr>
<tr>
<td>20°-30°</td>
<td>31.17</td>
<td>29.97 %</td>
<td>31.71</td>
<td>45.52 %</td>
<td>34.21 %</td>
</tr>
<tr>
<td>30°-40°</td>
<td>12.96</td>
<td>12.46 %</td>
<td>14.39</td>
<td>20.66 %</td>
<td>22.59 %</td>
</tr>
<tr>
<td>40°-50°</td>
<td>1.19</td>
<td>1.15 %</td>
<td>1.30</td>
<td>1.86 %</td>
<td></td>
</tr>
<tr>
<td>50°+</td>
<td>0.05</td>
<td>0.05 %</td>
<td>0.05</td>
<td>0.07 %</td>
<td>0.07 %</td>
</tr>
</tbody>
</table>

Afi Mountain Wildlife Sanctuary (Nigeria)

Bwindi Impenetrable National Park (Uganda)

<table>
<thead>
<tr>
<th>Slope (degrees)</th>
<th>BINP (km²)</th>
<th>% of area</th>
<th>Bwindi Gorilla Range (km²)</th>
<th>% of area</th>
<th>Cumulative % - this slope and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°-10°</td>
<td>101.13</td>
<td>31.06 %</td>
<td>26.80</td>
<td>31.58 %</td>
<td></td>
</tr>
<tr>
<td>10°-20°</td>
<td>146.01</td>
<td>44.84 %</td>
<td>34.08</td>
<td>40.16 %</td>
<td></td>
</tr>
<tr>
<td>20°-30°</td>
<td>71.43</td>
<td>21.93 %</td>
<td>20.10</td>
<td>23.69 %</td>
<td></td>
</tr>
<tr>
<td>30°-40°</td>
<td>7.08</td>
<td>2.17 %</td>
<td>3.88</td>
<td>4.57 %</td>
<td></td>
</tr>
<tr>
<td>40°-50°</td>
<td>0.01</td>
<td>0.00 %</td>
<td>0.00</td>
<td>0.00 %</td>
<td></td>
</tr>
<tr>
<td>50°+</td>
<td>0.00</td>
<td>0.00 %</td>
<td>0.00</td>
<td>0.00 %</td>
<td></td>
</tr>
</tbody>
</table>

Virunga Conservation Area (DRC, Rwanda, Uganda)

<table>
<thead>
<tr>
<th>Slope (degrees)</th>
<th>VCA (km²)</th>
<th>% of area</th>
<th>VCA Gorilla range (km²)</th>
<th>% of area</th>
<th>Cumulative % - this slope and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°-10°</td>
<td>215.76</td>
<td>47.64 %</td>
<td>122.76</td>
<td>65.78 %</td>
<td></td>
</tr>
<tr>
<td>10°-20°</td>
<td>153.31</td>
<td>33.85 %</td>
<td>50.06</td>
<td>26.83 %</td>
<td></td>
</tr>
<tr>
<td>20°-30°</td>
<td>59.77</td>
<td>13.20 %</td>
<td>11.38</td>
<td>6.10 %</td>
<td></td>
</tr>
<tr>
<td>30°-40°</td>
<td>21.15</td>
<td>4.67 %</td>
<td>2.36</td>
<td>1.26 %</td>
<td></td>
</tr>
<tr>
<td>40°-50°</td>
<td>2.76</td>
<td>0.61 %</td>
<td>0.05</td>
<td>0.03 %</td>
<td>0.03 %</td>
</tr>
<tr>
<td>50°+</td>
<td>0.16</td>
<td>0.03 %</td>
<td>0.00</td>
<td>0.00 %</td>
<td>0.00 %</td>
</tr>
</tbody>
</table>

Table 2: Altitude Profile Comparison of Afi Mountain with the Bwindi Forest and the Virunga Conservation Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Min</th>
<th>Max</th>
<th>Range</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afi gorilla range</td>
<td>184</td>
<td>1336</td>
<td>1152</td>
<td>710</td>
</tr>
<tr>
<td>AMWS</td>
<td>133</td>
<td>1336</td>
<td>1203</td>
<td>499</td>
</tr>
<tr>
<td>VCA</td>
<td>2001</td>
<td>3939</td>
<td>1938</td>
<td>2601</td>
</tr>
<tr>
<td>VCA Gorilla range</td>
<td>1932</td>
<td>4479</td>
<td>2547</td>
<td>2801</td>
</tr>
<tr>
<td>BINF gorilla range</td>
<td>1407</td>
<td>2302</td>
<td>895</td>
<td>1735</td>
</tr>
<tr>
<td>BINF</td>
<td>1232</td>
<td>2594</td>
<td>1362</td>
<td>1942</td>
</tr>
</tbody>
</table>

Notes:
- Altitude data derived from shuttle radar topography (SRTM) data.
- Some voids exist in the data set, particularly in high altitude area (i.e. mountain peaks).
- Maximum altitude for BINF and VCA may include some level of inaccuracy.
b. Gorilla ranging patterns

Objectives:
- Utilising historical ranging data, as well as current management data, analyse the distances travelled and range utilised by gorillas.
- Based on the above, assess the geographic scope of operating a potential tourism programme, and the associated variation in the potential tourist experience (including duration) and physical requirements.

Methodology:
- Literature review: habitat and site descriptions – key references:
  - Doctoral dissertation by Dr. Kelley McFarland.
  - AMWS management reports
  - WCS sweep census reports
- Site visits: field trips, with rangers and AMWS Coordinator, following old and recent gorilla trails.
- Mapping consultancy:
  - Approximate gorilla range plotted on maps
  - Slope and altitude of gorilla range analysed
  - Afi compared with other gorilla tourism sites

Figure 5: Gorilla Trail Sign

Findings:
- As habituation has not been undertaken in Afi to date, information on gorilla numbers and ranging patterns comes primarily from research and census efforts utilising trackers to follow daily trails and to count nests at nest sites. Gorilla tracks in Afi can be difficult to follow, especially in the dry season when leaf litter is very dry, and trails that are not very fresh may easily be lost. This has implications for interpretation of research/census results, as well as for any future gorilla tourism.

- The difficult nature of accessing AMWS and tracking the gorillas as they move through the sanctuary will require the choice of a number of “departure points” either on the edge of the sanctuary or within the sanctuary (i.e. one of the base camps), from which tourists will depart on foot on the morning of their gorilla visit. The choice of these will be made based on knowledge of the gorilla group movements, and will affect plans for length of time for the whole gorilla-tracking experience (access to Afi, overnight before entering sanctuary, +/- need to camp within the sanctuary the night before tracking, tracking day, +/- need to camp within the sanctuary the night after tracking, hike out of the sanctuary, +/- overnight before departing Afi area, depart Afi area).

- **Number of individuals**: Literature and management reports indicate that as many as 25-30 gorillas range through the Afi site.

- **Number / size of groups**: One medium to large-sized group of gorillas, with estimates on group size ranging from at least 10-11 and at times up to 22 individuals, has been found in a series of recent census efforts, which have also located a second group (or sub-group), making 4-5 nests. Results from Kelley McFarland’s longer-term research also show a wide variation in nest counts (mean of 18-19, range from 8 to 29). There is also a certain level of uncertainty expressed in successive recent census reports, and some partnership members feel that the gorilla group/s composition may change significantly, suggesting that further research needs to be undertaken to provide conclusive information on gorilla group numbers. In addition to knowing the exact number of gorillas in Afi, information is required on the existence of gorilla group/s which are consistently of sufficient size to be acceptable for tourism with minimum risk of behavioural disturbance. Acceptable group sizes are only those with at least 7 gorillas over 1 year of age, and ideally would be group sizes of 10-19 (see Annex 2, page 37). It will be extremely important to discover whether the larger group of gorillas is consistently this size (>9), in order to guard against investing time and funding, as well as exposure to habituation risks, for a group that is vulnerable to size reduction to the point that it is unacceptable for tourism.

- **Overall Range**: The gorillas utilise a range of approximately 70km², out of the total 100 km² area of the AMWS, basically avoiding the lower elevation areas to the west of the main range of hills (see Figure 3, pg. 6). The gorillas’ range extends along the hilltops of AMWS and includes hills
that are outside the AMWS boundaries. The extent to which the gorillas range outside AMWS boundaries is an issue that must be further analysed to address and prevent conflict with local communities, whether or not tourism is developed. The gorillas’ range includes the areas of steepest slope at the heart of the sanctuary, although excludes the near-vertical cliffs / rocky outcrops that are circumnavigated by both humans and gorillas.

**Home Range:** Information on gorilla home range size is detailed within Kelley McFarland’s doctoral dissertation. She reports annual home range sizes for the Afi gorillas from a minimum of 13.1km² to a maximum of 20.0km². The largest annual home range size recorded was 30.2 km².

**Daily path length:** Information from follows of daily gorilla trails also comes from Kelley McFarland’s doctoral research, which measured daily paths using both complete trails and partial trails. Results indicated a mean daily path length of 1.064km from complete trails (1.27km if partial trails are included), with a minimum of 0.061km to 3.006km (3.68km using partial trails). See notes below regarding partial trails.

**Notes:**

- It is significant that Dr. McFarland’s research noted it was often difficult to follow a complete day’s trail. This will be relevant for the management of tourism, as trails may be difficult to follow, especially if not fresh, and reinforces the need to implement what is standard practice in other gorilla tourist sites: the gorilla group must be tracked on a daily basis, whether or not tourists are present. If practice shows that difficulty in tracking is common, then sound tourism management may require early morning tracking by ranger-trackers in radio communication with ranger-guides, to facilitate tourist access to the group’s location.
- The difficulty of tracking gorillas will result in the need for very experienced trackers for the gorilla tourism programme.
- Comparison with lowland gorilla ranging data shows that Afi gorillas’ daily path length is shorter than in lowland sites. The possible explanations for this are discussed in Kelley. McFarland's thesis, and include dietary factors.
- In addition, topographical factors may affect daily path length, as research in Bwindi (Goldsmith and Moles, in prep) has shown that daily path length is negatively correlated with slope (i.e. shorter daily paths on steeper slopes), and that gorillas avoided steeper slopes.

**Conclusions:**

- Socio-ecological and ranging patterns of the Afi gorillas should allow for habituation and daily tracking to be feasible, given appropriate methodology.
- However, it is important that research and/or more intensive census efforts be undertaken to assess whether the gorilla group or groups in Afi are consistently of sufficient size to be acceptable for tourism with minimum risk of behavioural disturbance. Acceptable group sizes are only those with at least 7 gorillas over 1 year of age, and ideally would be group sizes of 10-19 (see Annex 2, pg. 37).
- Experience from other gorilla tourism sites with a history of crop-raiding suggests that tourism on community lands that suffer from gorilla crop-raiding will exacerbate conflict between the sanctuary and local communities. A full analysis of the extent of this problem must be carried out with a view to preventing conflict with any potential gorilla tourism programme

**c. Gorilla behavioural reaction to humans**

**Objective:** Working with Sanctuary staff and researchers, review behavioural data and ranging records to assess gorilla reaction to humans in and around the sanctuary in various scenarios, including:

- Sanctuary staff on patrol
- Tourists on nature walk
- Local community members outside the sanctuary – chance encounters; local community members during gorilla crop-raiding;
- Local community members inside the sanctuary – non-hunters; hunters inside the sanctuary

**Methodology:**

- Site visits
- Management reports
- Anecdotal information
• **Note:** Research and management activities in Afi have not to-date attempted habituation of gorillas. As a result, the only incidents of humans and gorillas coming into close proximity have included historical exposure of gorillas to hunters, which would make them very wary, and the occasional chance encounters between the gorillas and rangers on monitoring or law-enforcement patrols, or staff/guides accompanying tourists on excursions into the sanctuary. During this study, there was no attempt to contact gorillas, so no first-hand assessment can be made.

**Findings:**

• While the consultant could find no written reports of chance encounters between rangers and gorillas, interviews with rangers during the site visits suggest that there are times when they have been able to view gorillas, and that distances have on occasion been at what is reported to be 15-20 metres, although these estimates may be overly-optimistic.

• In addition, there is one lone male that frequently ranges in the area around the base camp, and he is reported to be slightly habituated. Given the need for improved sanitation and hygiene in and around this camp (see disease and infrastructure issues), this is a concern for disease transmission risk.

• Rangers appear to have adopted the no-habituation ethic that has been the norm in Afi to date, and may in the past have been reluctant to report cases of chance gorilla encounters, to prevent criticism. However, the opposite may also be the case, with enthusiasm for potential gorilla tourism encouraging overly optimistic accounts of proximity.

• There are only a handful of cases of tourists seeing the gorillas by chance while on excursions into the sanctuary. These are not significant in number and were only reported verbally, but consisted mainly of fleeting glimpses, as would be expected.

• Community members in general (other than past hunters) have not had interactions with gorillas. Crop raiding incidents have resulted in damage to banana and cocoa trees, but on plantations that are not located within villages and therefore it is more often the case that farmers report crop damage from gorillas, but not direct interactions with gorillas. There is only one case, which was reported a number of times during site visits, of a gorilla coming down into a village as far as a school on the west side of the sanctuary.

• Without observing any human-gorilla encounters first hand, the author cannot reliably assess the presence or absence of partial habituation, if any.

• Past research has suggested that Western gorillas are more difficult to habituate than Eastern gorillas, for which successful tourism and research programmes have been developed with humans approaching to distances of 10-20 meters following habituation efforts that require from 1-2 years. However, there are some lowland sites that have achieved habituation, and there are a number of factors that may affect ease of habituation, including habitat factors that affect speed and distance of gorilla group movements. This is particularly the case in flat habitats where gorillas can move very quickly and silently away from trackers, making even simple tracking, let alone habituation, difficult. However, both the physical habitat in Afi and the Afi gorillas’ feeding ecology differ in a number of factors that likely influence movement through the habitat, and therefore should make habituation potential more similar to other mountainous sites.

• One significant difference between the Afi gorillas and the potentially more easily habituated Eastern Gorillas is the history of the Afi population having been exposed to hunting in their lifetimes. As many of the Afi gorillas will have a living memory of hunting, this is likely to affect the time required for habituation. However, given that Afi management has achieved a significant reduction in hunting of gorillas, the lack of reinforcement of this negative association with humans should, over time, reduce the negative association with humans.

• Anecdotal reports of rangers’ chance encounters with gorillas demonstrate that appropriate, non-aggressive, behaviour on the part of humans when in proximity or visual contact with gorillas does not always elicit the flight response, and this is the basis on which a habituation programme can, and should, be built.

**Conclusion**

Based on all of the above, the study concludes that habituation of the Afi gorillas should be feasible, as long as appropriate methodology is used.
d. Current tourism infrastructure and services that support access to the Sanctuary

Objective:
- Working with the Cross River State Tourism Bureau and Partners with experience in tourism (CRSFC and Pandrillus), analyse the existing infrastructure (airports, roads, hotels, lodges) and services (immigration, flight booking, vehicle hire, tour operators, local guiding, sanctuary staffing, booking systems) that would support potential tourist access to the Sanctuary.

Methodology:
- Site visits
- Management information – reports and planning
- CRSTB tourism development planning information
- Examination of current tourism systems in place at Afi
- Quick assessment of current and planned accommodation facilities in and around Afi, or along circuits / access routes to Afi.

Findings:

Tourism-related Infrastructure

General: Regardless of the method of transport, reaching and entering the AMWS will be an enjoyable scenic experience, although time-consuming. All potential tourists will need to reach Afi and spend at least one night at an accommodation facility on the edge of Afi before entering the sanctuary, as road access will not be possible on the morning of any gorilla-tracking activity.

Air transportation
- Afi is located within Cross River State, which is easily accessed by air. It is possible to fly into Calabar or to the airstrip near the Obudu Cattle Ranch. However, both of these are at a distance from Afi, and will require at least a half-day drive to reach Afi. Therefore, tourists landing at Calabar should plan to sleep at least one night in Calabar before driving to Afi. Those landing at Obudu have a 3-hour drive to reach the edge of Afi, and should plan accordingly.
- Whether landing in Calabar or Obudu, it will not be possible to track gorillas on the same day as flight arrivals.
- The airport in Calabar is served by a large number of domestics flights on a daily basis, and it is very easy to reach Calabar from Lagos and Abuja, as well as Obudu.
- The airstrip near Obudu has recently been renovated and extended, and is served by domestic flights, although at the time of the study these were not every day.
- Domestic flights within Nigeria are easily reserved, but attention must be paid to ease methods of payment to confirm bookings, as online tickets for domestic carriers can only currently be bought within Nigeria, or from the UK or South Africa. This will affect potential tourists who may want to make their own travel plans while travelling within Africa, and/or those who do not use the services of domestic tour agencies.

Roads
- Access to Afi from Calabar. The drive from Calabar to Afi is a very enjoyable and scenic, and will take tourists 4-6 hours depending on the type of transport and number of stops, as well as on the site at which they will spend the night. Therefore it will be necessary for tourists to plan one day to reach the Afi area, and to spend the night before entering the sanctuary at the start of their gorilla tracking experience.
- Access to Afi from Obudu. The drive from Obudu Cattle Ranch to Afi takes at least 3-4 hours. Visitors to Afi who are staying at the Obudu Cattle Ranch will need to drive to Afi and spent the night before entering the sanctuary at the start of their gorilla tracking activity.
- Afi local roads:
  - Improvements to existing roads: The circuit of roads allowing access to Afi is in relatively poor condition and should be upgraded and maintained. At the time of the study the road from Kanyang to Buanchor and Drill Ranch was in very good condition, and this standard
must be maintained and extended to other roads around Afi if tourism is to be developed. The highest priority for improvement is the road from Kanyang to Boje, which is an important road for local government as well as being the main access for AMWS management to AMWS headquarters at Boje.

- **Road access to “departure points”:** The difficult nature of accessing AMWS and tracking the gorillas as they move through the sanctuary will require the identification of a number of “departure points” from which tourists will depart on foot, either the day before tracking if the gorilla location requires tourists to camp in the forest before their tracking day, or on the morning of their gorilla visit if the location allows for a day-return walk. Road access to these departure points, if possible, should be upgraded to allow all-weather access. Access on foot to potential departure points without current road access should be explored, and if road development is not possible without negative environmental impact, then foot trails should be improved or developed with tourists in mind.

- **Northern access:** In addition to Buanchor/Drill Ranch and Boje, two key trading centres that will likely be chosen as departure points are in the areas at the northern end of AMWS. Currently it is a long circuitous drive and/or hike to access Kakwagom and Essikwe, as well as the areas to the northeast of AMWS. AMWS management should prioritise improving access to these potential departure points, whether by road or on foot.

**Trails:**

- A large number of foot trails exist to allow AMWS staff to access and operate within the sanctuary. These are the trails that are currently used when visitors enter the sanctuary on a guided walk.
- The number of trails is sufficient to access almost all of the sanctuary. However, most of these are old hunters’ trails and as a result go straight uphill and downhill, perpendicular to the main fall line of the hillside slope. While sufficient for sanctuary staff use, these trails do not conform with recommendations for trail design to facilitate guest-use and to minimise erosion and other natural impact (USFS, 2007)

**Accommodation**

**General notes on accommodation:**

- Currently the accommodation available around Afi is very comfortable but may not appeal to all as it is self-catering and has shared toilet, shower, and cooking facilities.
- Some potential tourists might desire more luxury, but given that the gorilla-tracking experience is going to require that tourists be very hardy and adventurous, tourists with requirements for more luxurious accommodation might not be suited for the experience.
- Due to the difficult nature of the potential gorilla-tracking activity in Afi, any tourism development programme needs to incorporate a flexible approach to accommodation associated with the activity:
  - Only on rare occasions will it will be possible to enter the sanctuary, track the gorillas, and exit the sanctuary in one day. In this case, accommodation would only be required the evening before and the evening after gorilla tracking, with both nights at a facility outside the sanctuary.
  - Minimum total nights “on site” = 2
  - In most cases, tourists will spend one night outside the sanctuary, then enter the sanctuary and spend the night before tracking in the sanctuary at an improved base camp facility. If the location of the gorilla group permits, after gorilla tracking they will then hike out of the forest and spend the next night at a facility outside the sanctuary.
  - Likely total nights “on site” for a gorilla visit = 3
  - In some cases, tourists will also need to spend the night in the sanctuary both on the evening before and the evening after gorilla tracking. They will one night outside the sanctuary, then the nights before and after tracking at an improved base camp, then exit the forest and spend a further night at a facility outside the sanctuary.
  - Maximum total nights “on site” for a gorilla visit = 4
  - In addition, some tourists will want to spend additional nights in or around Afi, and therefore facilities should be able to offer the occasional extra night.
Potential of gorilla-based tourism as a possible tool for conservation management of AMWS gorilla population

- To further complicate the above, the location of the gorilla group will influence the location where tourists spend the nights associated with their gorilla tracking experience. The night before entering the sanctuary should be spent at a facility close to the departure point for the next morning.
- The complexity of all the above will require flexible booking systems for accommodation, and should suggest that each facility strive for capacity to accommodate up to 18 people (3 days' worth of gorilla tourists).

**Accommodation on the East side of Afi:**

- **Drill Ranch:** Currently there is one established tourism accommodation facility on the eastern side of Afi at Drill Ranch. This site includes a group of raised wooden-framed insect-screened cabins, called “eco-lodges”, with large verandas/decks oriented to provide scenic views of the forest, rehabilitant drill enclosures, or the nearby hills of the AMWS. The facility is very comfortable, with basic self-catering kitchen and lounging facilities that are shared with Drill Ranch staff, although plans have been made to develop separate tourist and staff facilities.

  Shared pit latrine and gravity-bucket showers are available for Drill Ranch guests and are more than adequate for most types of tourists. Drill Ranch has an additional area suitable for camping and this site is currently used very frequently by overland lorries passing through Nigeria on the trans-Africa route.

  The Drill Ranch facility also distributes a share of income (250 Naira per bednight) to local community projects and collects AMWS entry fees and organises local guides for its visitors that wish to take a guided walk into AMWS.

- **Planned Accommodation at Canopy walkway/CRSTB:** The CRSTB-owned and operated canopy walkway is only a short distance from Drill Ranch. Plans for this site include the development of additional “eco-lodges”, modelled on the Drill Ranch cabins. Given that accommodation at Drill Ranch is not currently fully booked, it would be wise for the CRSTB facility to be used only if Drill Ranch occupancy rates increase sufficiently to require additional beds. However, if gorilla tourism is to be developed and if, as expected, the Buanchor / Drill Ranch area serves as one of the main hubs/departure points, then CRSTB and Drill Ranch should coordinate to ensure that there is sufficient, but not excess, bed-availability.

**Accommodation on the West side of Afi**

- **Boje – Governor's Lodge:** In a development demonstrating the government's commitment to tourism development in the area, a local government-owned house at Boje has been handed over to the CRSTB and is currently being renovated and developed for potential use by tourists. It is the old “Governor's lodge" and consists of a rather imposing and grand two-story house that looks as if it belongs in a town, along with a very attractive single-story duplex structure that may have been designed as a guesthouse or staff quarters. These are located in an elevated site above the new AMWS headquarters at Boje and although the houses have been built to provide views over the town, there are also excellent views to the forest from the side/back of the structures.
• **Camps within AMWS:** The long history of research and law enforcement activities in Afi has resulted in the establishment of a number of camps used for occasional overnights or for long-term occupancy by researchers or rangers with support staff (camp and security).

  The most developed of these is the "Base Camp" used by Kelley McFarland during her research. The AMWS conservation programme has further developed this site with roofed open-sided camping and cooking shelters for rangers. This site is in a convenient south-central location in the sanctuary, with an adjacent year-round water source. It could serve as one of the tourist base camps for overnight stays in the sanctuary, as required. However, it would require significant upgrading of standards in both accommodation and hygiene, including separation of ranger and tourist campsites/shelters, and much improved sanitation facilities, to be acceptable for visitors. In addition, the sanitation and hygiene at current site must be improved urgently to prevent current hazard of disease risk to gorillas.

  A number of other camps exist within AMWS and are used by rangers, including some that are located in caves. These should be considered when developing the gorilla tourism programme, with a view to locating at least one other base camp, for use by potential gorilla tourists, with a north-central location within the sanctuary.

• **AMWS management infrastructure:** The recent renovation and installation of the new AMWS headquarters on the local government site at Boje will enable on-site residence of AMWS senior staff and office facilities. If power and communication equipment (phone, fax, internet, long-range and short range radio) are installed, this facility can serve as a central communications point for management of any potential tourism programme.

**Other Tourism Attractions**

• **Drill Ranch:** A number of visitors already visit Drill Ranch, a facility where groups of confiscated and captive-bred drills and chimpanzees are housed in near-natural fenced enclosures. The site is located within a natural forest bordering the boundary of AMWS and provides an extra buffer zone function for the conservation of the sanctuary. It is a pleasant site to visit and a large number of tourists do so every year, with numbers increasing and reaching around 300 annual, with seasonal peaks, especially in December (see Figure 9, below). Many of these visitors are domestic origin, but overland trucks passing through Nigeria on the trans-Africa route often visit Drill Ranch as it is conveniently near their route to the border with Cameroon.

![Figure 8: Base Camp cooking shelter](image)

![Figure 9: Drill Ranch Occupancy Data 1999 - 2005](image)
• **Canopy Walkway:** The CRSTB owned and operated canopy walkway is an excellent tourist attraction and already attracts a number of visitors. At the time of site visits for this study, entry fees were not yet being charged, as there were no guides on-site and the reception building/information centre was only just under construction. Once these are installed, and as long as the site is professionally managed and maintained, with appropriate fee structures and interpretive staffing/guiding, it should be a sustainable attraction that will hopefully fund its own operations and maintenance as well as contributing to the marketability of AMWS. The added attraction of visiting the walkway associated with a visit to Drill Ranch will jointly increase the number of days that potential gorilla tourists spend in the Afi area.

• **Obudu Cattle Ranch:** The extensive hotel and conference development at Obudu is within a 3 hour drive of Afi. It is a very popular site and has received a significant level of promotion and investment by the State and the CRSTB. Obudu is a potential source of visitors to tourism programmes in Afi. However, two factors must be taken into consideration before relying on Obudu clientele as potential gorilla tourists in Afi.
  - The first is the distance between the two sites – it will not be possible to make a day trip to Afi to view the gorillas, due to the distances involved and due to the fact that gorilla tourists would need to spend 2-3 nights at Afi on their way in and out of the forest.
  - The second factor relates to the profile of the visitor – currently the majority of guests at Obudu are domestic visitors on business or conference trips. The typical Obudu guest may not be physically able or willing to tackle the difficult hiking and camping conditions that will be required of an Afi gorilla tourism experience. Accommodation standards in sites outside the sanctuary would also need to be addressed.

• **Obudu Water Park and Cable Car:** The access to the Obudu Cattle Ranch facility takes tourists past a newly built facility with swimming pools and water slides, at the base of the scenic drive up the steep windy road to the hotel facility. Access to the water park from the hotel can be via a beautiful cable car ride. Given assurances of appropriate maintenance and operation standards, this will be another attraction for visitors to Obudu, and is a key feature on tourist circuits that include AMWS.

• **CRSTB tourism circuits:** The CRSTB has been very active in designing and promoting tourist circuits in the state. These combine a number of sites of natural beauty with sites of cultural or historical interest. The presence of additional high-quality tourist activities will complement any potential gorilla tourism programme at Afi and will encourage visitors to spend more time in the local area and in the state.

**Tourism Services**

• **Visas:** To encourage international tourism in Cross River State, and in Afi in particular, the process of obtaining a Visa for Nigeria must be examined and streamlined. The current requirement for a letter of invitation will not encourage tourists. Even the alternative requirement of a hotel booking confirmation will discourage the more adventurous individual/adventure tourist market, which is likely to be the prime support for initial gorilla tourism at Afi. This type of tourist will be more likely to use alternative accommodation (hostels, campsites, community lodges), for which booking documents will be more difficult to produce.
• **Accommodation in Calabar:** A large number of accommodation facilities exist in Calabar with a wide range of prices. Standards vary and many will not be appropriate for international tourists, but are of sufficient quality for domestic and lower budget tourists. The CRSTB has been working on standards for service and accommodation and improvements will be advantageous to the development of tourism circuits.

• **Tourism circuits:** The CRSTB had been actively developing and promoting circuits for potential tourists to visit and experience a number of natural, cultural, and historical sites within the Cross River State. This is very positive and will support the future of potential tourism at Afi, as the presence of a number of activities other than gorilla tourism will encourage visitors to the area, and will allow for the State to benefit more conclusively from any tourist who might only be tempted to the area by the presence of gorilla tourism, but while present will take advantage of other tourism opportunities available.

• **Tour operators:** Although a number of tour operators are active within Nigeria and specifically within Cross River State, it will important for operators to gear up their services to accommodate potential gorilla tourists, including the provision of reliable vehicles (current road conditions will require 4-wheel drive vehicles in wet seasons), knowledgeable driver-guides, and attention to the delivery of tourism circuits within Cross River State to encourage tourists to stay longer than the time required for a gorilla tracking experience in Afi.

• **Public transportation.** While public transport to Afi is possible, it may not be the best way for potential tourists to access the site. A combination of buses and local hire of a pickup or a motorcycle would allow an individual or small group of tourists to reach the site, but may not be a reliable means of ensuring that the visitor does not turn up late for their booking, unless they plan to arrive on site at least a day before their booking.

• **Tourism promotion and marketing:** The CRSTB has been very active in promoting and marketing tourism to Cross River State. This is very evident in the volumes of leaflets, advertisements, and other literature available locally and nationally in Nigeria. In addition, a number of high profile events and activities (i.e. the mountain race and the December Carnival) receive significant exposure and attract international interest. A very positive step for the development of tourism in Cross River State has been the programme of familiarisation trips for consular officers and other diplomats in Nigerian embassies/high commissions, at least in Africa. As a result of these, increasing awareness is creating a positive attitude to tourism development and tourism opportunities in the state. An indication of this development during this study was the high level of awareness and enthusiasm among High Commission staff in Nairobi towards Cross River State tourism development opportunities and this study.

• **AMWS tourism services:** Currently Drill Ranch is the main focal point for tourists visiting Afi. They visit the rehabilitant chimps and captive-bred drills and hear about the drill reintroduction plans, and then walk over to the nearby canopy walkway. Many visitors are content with this and spend the remaining time relaxing in the comfortable cabins with views up onto the Afi Mountain. A small number take this further and request a guided hike into the sanctuary, and some also wish to camp overnight, usually at Base Camp. Drill Ranch organises guiding by contacting community guides from the local area. However, these guides are not AMWS staff and are not equipped with radios or any other form of communication, and there is currently no means of alerting Afi staff that tourists are in the sanctuary. This is an issue for safety of tourists, as well as lack of management control over who is entering the forest, both tourists and local guides. This should be addressed in future elaboration of the tourism programme, as safety is essential and AMWS management should authorise, and ideally train and equips, any guides escorting visitors into AMWS. In addition, Drill Ranch collects and manages the AMWS entry fees.
Potential of gorilla-based tourism as a possible tool for conservation management of AMWS gorilla population

**AMWS fee structures:** The current fee structure at Afi is presented below. Fees are collected primarily at Drill Ranch.

<table>
<thead>
<tr>
<th></th>
<th>Non-National</th>
<th>National / ECOWAS</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entry Fee:</strong></td>
<td>1,000 Naira ($8)</td>
<td>500 Naira ($4)</td>
<td>200 Naira ($1.6)</td>
</tr>
<tr>
<td><strong>Overnight:</strong></td>
<td>500 ($4)</td>
<td>250 ($2)</td>
<td>100 ($0.8)</td>
</tr>
<tr>
<td><strong>Guide Fee (paid directly to guide):</strong></td>
<td>recommended amount is 1,000 Naira ($8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Note: casual labourers in the area are paid 500 Naira a day)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- These fees are very low and should be revised to optimise income, whether or not gorilla tourism is initiated. In addition, the management of these funds should be reviewed as currently Pandrillus collects these fees for CRSFC since the sanctuary doesn’t have any administrative/accounting staff or systems in place at Afi.
- Currently, income from Afi is combined with general CRSFC funds, but this is something that should be reviewed, especially if gorilla tourism is developed, as it will be important to demonstrate that Afi is self-funding through its tourism operations. Also, an important conservation message associated with gorilla tourism will be that it is a conservation tool appropriately developed to fund the protection of the gorillas and their habitat.

**e. AMWS as a potential tourist destination**

**Objectives:**
- In light of all of the above, and taking into consideration other attractions within the Sanctuary or along its boundaries, broadly assess the suitability of AMWS as a potential tourist site.

**Conclusion:**
- Afi Mountain Wildlife Sanctuary has a lot of potential to develop further as a tourism site, whether or not gorilla tourism is a component of the programme. It is an area of outstanding beauty, has a number of tourist attractions, and has the possibility to further develop the infrastructure and services required to support tourism in the sanctuary.
- However, given the difficult nature of the habitat, visitors who want to access and enter the sanctuary will require a high level of physical fitness and should be hardy and adventurous.
- This site should not strive to replicate the programmes of other successful gorilla tourism sites, but should rather focus on what is different and more adventurous about a visit to Afi, and design programmes accordingly, including the requirement for physical exertion to hike within the sanctuary, and the requirement for rustic camping on the nights before or after a potential gorilla visit.

**f. Potential market**

**Objectives:**
- Working with the Cross River State Tourism Bureau and the Forestry Commission, and with reference to recent work on the CR State Tourism Master Plan and other market surveys, rapidly appraise the potential market for gorilla-based tourism from the perspective of national, regional, and international tourism markets, providing information on the type of tourist, their potential expectations, and pricing issues.

**Methodology:**
- Site visits
- Meetings with groups currently travelling in the Cross River State area.
- Contacts with primate-focused tour operators in Africa
- Review of CRSTB work in-progress on market research and tourism plan development for the Cross River State as a whole.

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2 Note that the Nigerian Naira to US Dollar exchange rates used throughout this document are those relevant to the study period (2007) and will fluctuate. Study output financial models will show the impact of current/changing exchange rates.
• **Note:** Study funding was not sufficient to support a full market survey specific to the Afi gorilla tourism question. As a result, information on the potential market has been gained in non-structured interviews or written communication with potential sectors of the market.

**Findings:**

• There is a lot of interest in having high-quality “lowland” gorilla tourism sites in Western/Central Africa. Many tour operators that currently organise trips centred around mountain gorillas would like to have the opportunity to offer “lowland” gorilla visits to keen customers.

• Very few potential tourists or tour operators outside the local area and the scientific community are aware of the existence or special significance and status of the Cross River Gorilla as the most endangered sub-species of gorilla.

• As can be expected, international tourists express reluctance to visit Nigeria based on a perception of the risk of visiting the country gained through press coverage of high-profile kidnappings and corruption issues. Overcoming this bias is obviously a key goal that must be addressed by the country as a whole, and specifically if the Cross River State wishes to attract tourists from the luxury international market.

• However, there is a significant market for nature-based tourism in Nigeria to be sourced from adventure tourists (individual travellers and trans-Africa overland trucks), who are already visiting the area in significant numbers. Many of the overland trucks pass through Cross River State, and a number stop at Drill Ranch and so already spend time at Afi.

• There are at least 5 well-known overland companies that offer trips through West Africa, either as long “trans-Africa” routes, or sectors of the “trans” that tourists can join. Most of these companies offer two trips a year, with up to 25-30 passengers per truck, but not all of these trips will run, as they require a minimum of 10-15 passengers.

• While overlanders are essentially budget travellers, they are usually willing to spend for high-value attractions and many visit the mountain gorillas at the end of the trans-Africa route, even with the new $500 mountain gorilla permit price. They expressed interest in new gorilla-tracking opportunities in West Africa and, as it takes them months to complete the circuit, feel that many of their passengers would be willing to view gorillas in West Africa as well as tracking the mountain gorillas nearer to the end of their trips.

• However, there is a strong seasonality to the overland market as the two trips per year are scheduled around potential weather patterns that affect roads, with departures usually in November and March, passing through Nigeria in weeks 11-14. Therefore a tourism programme cannot rely on overlanders for year-round interest.

• Another healthy market segment that can be approached to sell potential gorilla tourism opportunities is the large number of expatriates resident within Nigeria, who are interested in excursions within the country, and who are enthusiastic about trips that offer a break from city and/or high-risk postings. Cross River State offers a number of destinations that are of interest to expatriates, and the addition of potential gorilla tourism will increase the interest in visiting the state.

• The CRSTB and other state bodies have expressed enthusiasm for the domestic market as a source of potential tourists interested in gorilla tracking. However, CRSTB market research results (see Gendel, 2007) suggest that the domestic market in general may not be interested in tourism opportunities that require physical exertion and camping. However, there may be an opportunity to focus a component of a gorilla tourism marketing effort on the subset of the domestic market that can be influenced to take part in what could become a flagship tourism destination and activity.

**Conclusions**

• Therefore, for the tourism programme to be viable, AMWS should look towards a two-phased approach to the market for its potential future gorilla tourism programme. Phase 1 should target domestic tourism (including residents) and the adventure tourism markets that currently visit Nigeria (i.e. overland truck safaris), with a pricing structure and accommodation that encourages this market segment.

• Only after successful implementation of the first phase should the potential market be expanded to include international tourists, and only then if security, services, and accommodation have been developed to an appropriate standard. At this stage, pricing for tracking permits could be reviewed based on experience in Phase 1
3. Impact Analysis: “Should It Be Done?”

a. Disease risk

Objectives:

- Utilising existing literature on the risks of disease transmission between humans and gorillas, as well as information from local medical authorities and community surveys (latter depends on funding) in the Cross River / Afi area, summarise the potential disease risks related to gorilla-based tourism.
- Draw up preliminary guidelines to minimise the disease-transmission risk should all other factors allow for habituation to go ahead, including recommendations for provision of disease monitoring and response protocols

Methodology:

- Literature review and consultant past experience
- Site visits - Note: study funding limits did not permit any health surveys.

Findings:

- A number of publications are available that document and summarise the risk of disease transmission between humans and apes. The reader is directed to key references on the subject for a full summary (Homsy, 1999; Woodford et al. 2002). These references describe the risk of transmission, and recommend extreme caution when approaching habituated apes, as well as preventing disease transmission via human contamination of ape habitats (and vice-versa).
- Diseases of concern include a number of bacteria, viruses and parasites of varying degrees of virulence. Although caution has always been advised regarding disease transmission, and especially regarding the large number of viruses that commonly circulate in human populations, until very recently there was very little direct evidence of transmission of a virus from humans to wild apes. A recent publication (Köndgen et al., 2008) has provided that evidence, and proves that human viral diseases pose a risk to the survival of great apes.
- The risk of disease transmission is significant in any programme that seeks to habituate great apes, whether for research or for tourism. However a number of prevention and control measures can, and must, be put in place to minimise that risk.
- As a pre-requisite to any gorilla habituation for tourism, a gorilla health monitoring and response system should be developed following the model of the regional Mountain Gorilla Veterinary Programme, and should include employee health programmes for all sanctuary staff and immediate households. This programme could serve as a regional service covering the full range of the Cross River Gorilla.
- The Pandrillus project, with a veterinary team already present in both Calabar and at Drill Ranch next to AMWS, as well as cross-border links and additional veterinary expertise at their facility in Cameroon, has expressed interest in being involved in gorilla health monitoring and response programmes. However additional equipment, staffing, funding, and expertise (through training) would be required to support this evolution of their role.
- If gorilla tourism goes ahead, tourism rules and regulations should be developed to prevent disease transmission. Rather than re-stating all of these in this report, 20 years of experience with mountain gorilla tourism can provide guidelines on disease prevention regulations which can be adapted to the Afi context. These regulations will also serve to reduce other negative impacts of tourism, such as behavioural impact and stress.
- Experience has also shown that training and marketing is continually required to maintain staff and visitor adherence to regulations (see Sandbrook & Semple, 2006).
b. Socioeconomic issues that may pose risks to tourism

Objectives:
- Utilising historical/management records and outputs of socioeconomic surveys, identify and analyse local factors that may pose a risk to gorilla-based tourism

Methodology:
- Management literature
- Site visits
- Community meetings
- Community assessment: a consultant (Gabe Ogar) was recruited to carry out a survey of the communities around Afi.

Findings:

Hunting and poaching risk:
- The level of hunting and poaching, especially of apes, within Afi appears to be on the decrease and much of this is due to the implementation of law enforcement programmes and community sensitisation. This is a very positive trend and AMWS staff should be commended for this achievement, especially given the context in which unarmed rangers are working to control the activities of armed hunters/poachers.
- The study’s community assessment found that it was only a very small number of individuals who benefitted in the past from hunting, and that communities now favoured alternative activities that will benefit the wider community, such as tourism.
- The community assessment also reported that less than 15% of the Afi community population still engages in hunting. While this is positive, it does suggest that hunting is still a risk and that management should maintain law enforcement efforts.
- However, it was clear during the study that a significant amount of community willingness to hand over community forest land to form the sanctuary, and the reduction in illegal activities in the forest, has been brought about through the delivery of a message that gorilla tourism will be developed and will more than compensate for the loss of other benefits. Expectations are extremely high within communities with regard to the potential benefits to be accrued locally from tourism. The expectation is that gorilla tourism will be developed and that the rewards will be significant in terms of development in the area. Although there is a certain amount of over-expectation of potential benefits of tourism, there is a serious risk associated with the “no gorilla tourism” option, as failed promises might result in community backlash against the sanctuary and its gorillas, and/or reduced support for ongoing conservation efforts. This risk figured prominently in the formulation of the study recommendations, as the risk of not doing gorilla tourism may outweigh the controlled risks of doing so.
- AMWS management reports that poaching/hunting has seasonal aspects and has developed heightened law enforcement systems during problem times (such as Christmas patrols), which appear to be very effective.
- The hunting history in Afi will affect the ease of gorilla habituation, as the gorillas have direct experience of having been hunted. However, this should diminish as hunting exposure decreases over time.
- Conversely, once habituated, gorillas are more tolerant to human approach, making them potentially more vulnerable to poaching. If gorillas are habituated, the group and their home range must be monitored and protected on a daily basis by law enforcement teams with on-call veterinary backup. This must be carried in perpetuity, even during times of lower/no tourism. Planning and funding for this effort must be guaranteed before habituation is initiated.

Expansion of farmland:
- Legal farms are present in the entire area around the sanctuary boundaries. Unfortunately there are also a number of farms that have been encroaching within sanctuary boundaries. AMWS management and the CRSFC have been attempting to prevent further encroachment and to prosecute those who have cleared illegal farms in the sanctuary.
• Given that the habitat within the sanctuary is finite, it is imperative that gorilla habitat be conserved and that it not be further fragmented. As a result, the issue of illegal farms must be resolved before gorilla tourism can begin. Revenue sharing accompanying gorilla tourism is a method to address costs to communities of losing access to forest exploitation. However this cannot be implemented where gorilla habitat is destroyed with impunity, so the issue of illegal farms must be resolved before habituation is initiated.

• **Conflicts between communities**
  - Conflicts within and between communities around Afi do occur, and these were evident during the study.
  - Impressions gained during community meetings demonstrated that although a level of cooperation is present between the communities adjacent to AMWS, there is also a sense of competition for limited resources. Although obviously not unique to this site, it suggests that during the development of the tourism programme, and its associated programmes for community benefits from revenue sharing and service provision, very careful attention must be paid to balancing the opinions from, and benefits to, the community as a whole, in order to prevent escalation of competition and conflict.
  - AMWS management needs to address community cohesion and conflict resolution within all of its outreach programmes, and those associated with tourism development will be no different.

• **Human-gorilla conflict from crop-raiding**
  - Afi gorillas have in recent years been reported to raid farms outside the sanctuary boundaries, especially in the northern areas where their mountainous habitat extends outside the sanctuary boundaries. The extent of damage in these cases can be small, but there is a risk of the development of serious conflict if not addressed appropriately.
  - Scientific opinion is divided on the extent to which habituation may exacerbate gorilla crop-raiding, and the picture is complicated by the progressive extension of human farming activities towards and into gorilla habitats. Therefore the question is whether habituation allows for range extension into farms, or whether it is simply that farms are extending towards or into gorilla habitats and that when gorillas lose their fear of humans, they don’t retreat as they might previously have done.
  - Whatever the proximate or ultimate causal factors, and whether or not habituation for tourism occurs, if farms contain food items or secondary growth that favour gorilla foraging or movement through the area, conflict with local communities will escalate.
  - If tourism is initiated to gorillas that are crop-raiding, then conflict will further escalate as there will be a perception that someone else is earning money from the gorillas that are causing crop losses to farmers.
  - Therefore it is an imperative to gain a full understanding of how often Afi gorillas visit areas of their range that are outside AMWS borders, before tourism is initiated, as tourism on community lands associated with crop-raiding activities will certainly exacerbate conflict between the sanctuary and local communities.

• **Negative attitudes toward the sanctuary and its staff, etc., and extent to which economic benefits of tourism may address this.**
  - As mentioned above, attitudes towards the sanctuary are surprisingly positive, especially given the recent history in which communities have given up access to harvesting resources from areas of the forest reserve at the creation of the sanctuary.
  - Much of this attitude appears to be due to the level of expectation of significant benefits from income and development associated with the gorilla tourism programme that has all but been promised. As a result, the actual delivery of tourism economic benefits will be extremely important.
  - This emphasis on delivering economic benefits to communities should underlie the development of all aspects of the tourism programme, including the development of a revenue sharing programme that distributes a share of gorilla tourism revenue in the form of support to community projects. It should also include a focus on community-tourism services, such as community lodges, and this may require re-focusing the
hotel/lodge development ideas in which Calabar business owners are hoping to operate medium to high-end hotels for gorilla tourists. This is not to say that high-end lodges are inappropriate, but rather that the focus in all cases should be on community benefits, and as such should consider bed-night fees and annual ground rent that is paid to the communities around Afi.

c. Socioeconomic issues that may support tourism

Objectives:
- Identify and analyse key socioeconomic indicators in Afi local communities that would help to rapidly assess the willingness and ability of communities to accept, provide support to, and benefit from, potential gorilla-based tourism,

Methodology:
- Management literature
- Site visits
- Community meetings
- Community assessment consultancy

Findings:

- Employment: Employment is a key area in which local communities can take an active role in the management of the sanctuary and any potential gorilla-based tourism. Currently with the exception of senior sanctuary management and senior wildlife officers, all AMWS junior staff members come from the local area. Half of these staff members are rangers employed by the CRSFC, with a similar number employed via recruitment through the AMWS partnership. Additional requirements for skilled field staff (rangers, trackers, guides) should easily be sourced from the local community as familiarity with the forest and its surrounding area is a key requirement. With appropriate training, staff recruited from the local community will make fantastic rangers and guides.

- Associations and community institutions: A wide variety of community institutions, associations, and other groups are active within the Afi-adjacent communities. Many are traditional associations (council of chiefs, age-grades, village councils), while others such as the Forest Management Committees (FMC) and the Council of Delegates, have been developed to serve particular functions. The study community assessment carried out a rapid assessment of all these institutions with a view to identifying the most appropriate community body that could serve as the mechanism through which to implement programmes for the sharing of tourism benefits, such as revenue sharing. However, although the council of delegates appeared at first to be a candidate for this function, as it was an elected body formed to address issues relevant to the conservation of AMWS, all communities interviewed were unanimous in saying that this committee did not have enough delegates (currently one from each community) to be credible and effective. However, the majority of communities favoured a consensus-based equitable benefit sharing formula, and suggested that the body to negotiate this process should include chairmen of all communities, representatives of women leaders, youth, and village heads of all communities. Conflict mitigation should be an additional responsibility for this body.

- Positive attitudes towards tourism: The community assessment found that all groups were very much in favour of gorilla tourism being developed in the area. This may relate to an over-expectation of benefits, as described above, but does suggest that tourism will find enthusiastic support in local communities. It is also relevant that the community assessment found that it was only a very small number of individuals who benefitted in the past from hunting, and that communities now favoured alternative activities that will benefit the wider community, such as tourism.
• **Ecotourism enterprises:** Contact with communities during this study suggested that awareness and understanding of the varied potential opportunities for earning revenue from tourism is quite limited. As tourism is developed in the area, the partnership, with possible input from private sector partners, will need to provide advice and support to communities to design and develop ecotourism related enterprises that will add value to tourism at the community level.

• **Current community support related to tourism:**
  - **Drill Ranch community development fund:** Drill Ranch currently distributes 250 Naira (approximately US$2) per bed-night to local community projects. Previously this fund was distributed in cash to the Buanchor community development fund, but recently this has been renamed the Afi Community Development Fund (ACDF) and the mechanism modified to require proposals for projects from any Afi community, which are then reviewed for funding.
  - **EDF funding:** Although not linked specifically to tourism, a couple of rounds of European Union funding for community projects around Afi have been processed. Community applications for this funding are reviewed and approved by the AMWS partnership. While this mechanism is more top-down than would be considered best practice in a potential tourism revenue sharing programme, it shows that a mechanism for communities to apply for funding linked to the conservation of the AMWS is already present, and this represents an opportunity for future elaboration of the programme.

• **Planned community support linked to tourism:**
  - **Community benefit from hotels / lodges:** While much enthusiasm has been voiced by both communities and tourism planners for community benefits from tourism in Afi, there is not much indication that mechanisms are in place to transfer benefits to tourism, other than via the bed-night fee from Drill Ranch described above. A number of hotel operators appear to be eyeing the potential gorilla tourism market, but it is not clear how luxury hotels developed adjacent to Afi could provide community benefits other than through the provision of employment and sale of goods and services. If tourism is to be developed, it should develop associated tourism infrastructure that maximises benefits to communities, ideally with community owned lodges. If private hotels are to be built, requirements should be made for at least a minimum level of employees recruitment from local communities, and ideally for a bed-night fee to be paid to communities, similar to revenue sharing from permit fees, as described below.
  - **Revenue sharing schemes:** During this study, the concept of revenue-sharing was discussed widely and all stakeholders expressed positive views on developing this type of programme alongside any gorilla tourism programme. Given the amount that could possibly be charged for gorilla tracking, even with permits limited to 6 a day, and with conservative estimates of occupancy rates, the amount that could be set aside to fund community projects would greatly enhance the Afi Community Development Fund (ACDF) that currently operates with Drill Ranch bed-night fees (see economic analysis below).

**d. Sanctuary management, staffing, gorilla monitoring, and law enforcement effectiveness**

**Objectives:**
- Working with Sanctuary staff and Partners, assess the ability of the sanctuary to absorb the added responsibility of operating an expanded tourism initiative, including:
  - requirements for additional staffing and infrastructure
  - assessing the ability of the Sanctuary to effectively protect the Afi gorillas and their habitat from encroachment, poaching, and unauthorised tourism.

**Methodology:**
- Site visits – meetings with sanctuary management
- Management reports and law enforcement info
Findings:

- **Staff**: The sanctuary currently has a very dedicated team of rangers supervised by wildlife officers and the conservation coordinator. CRSFC rangers form approximately half of the ranger team, with community rangers recruited by the partnership making up the other half. Many of these rangers have been working in Afi for a number of years and most are from the local area, and are very knowledgeable about the site. The conservation coordinator has been hired by the AMWS partnership and serves as the overall warden-in-charge of the site, supported by CRSFC wildlife officers. Additional core programmes for the sanctuary, including monitoring and community outreach, are provided by members of the partnership. The sanctuary staffing structure, with the additional positions/functions provided by the partnership, appears to be adequate for the current conservation programme. However, there is no capacity to absorb a new tourism development programme within the existing structure without negatively affecting other components of the programme – therefore the addition of tourism as a programme would require a number of new staff, including a team of habituation rangers, ranger-guides, camp staff, a tourism development supervisor, and ultimately all the administrative staff required to manage booking systems, income, and infrastructure. The addition of a tourism programme should not detract from core sanctuary conservation and protection services, and therefore staff numbers must be increased, and any skilled rangers transferred into tourism development / habituation must be replaced to ensure that law enforcement activities do not suffer as a result.

- **Infrastructure and equipment**: Sanctuary staff were residing in villages outside the sanctuary at the time of the study, with day/night or camping patrols scheduled as needed, and stepped-up during known hunting seasons. Communication equipment was sorely lacking at the time of the study, although improving this is already a key objective for the partnership. Infrastructure within the sanctuary would need to be much improved to be able to accommodate tourists. The current Base Camp and at least one other camp suitable for overnight stays would need to be re-developed with tourists in mind, either in terms of improved campsites or camping shelters, or possibly with 1 or 2 small cabins, as long as the style and standard is appropriate.

- **Law enforcement effectiveness**: From management reports and law enforcement data, it appears that the current system functions well to reduce hunting and poaching within the sanctuary. However, this performance will be sustained and improved with the planned improvements in infrastructure, especially the construction of ranger posts near the sanctuary boundaries, and the provision of communication equipment.

- **Encroachment**: The law enforcement programme is having a more difficult time addressing the problem of illegal farms encroaching into sanctuary boundaries. Management and the CRSFC are struggling to find the appropriate balance between legal processes and physical eviction that will prevent further expansion or increase in number of illegal farms, while at the same time building support for the sanctuary and preventing violent confrontation with local community members. This is a key issue that must be resolved with communities and local leaders, as the future provision of community benefits from tourism has to be linked to action on the part of communities that demonstrate support for the conservation of the gorillas and their habitat. Tourism cannot be developed in an area where gorilla habitat is being destroyed with impunity.

- **Unauthorised tourism**: The presence of a high-value tourist attraction will provide a temptation for unauthorised tourism, as the perceived financial benefits will be high. However, as with any other law enforcement problem, this must be addressed and prevented through incisive response to cases, and appropriate sanctions for infractions.

e. **Tourism impact on gorilla habitat**

**Objectives:**

- Utilising knowledge of habitat and ranging factors at Afi, assess the potential negative impact of tourism on the physical gorilla habitat (i.e. cutting trails or transects), and make recommendations on mitigation measures.
Findings:

- Afi is very similar to other sites where a conservation-focused tourism programme will always strive to minimise impacts of any activity or infrastructure on native fauna and flora. However, the Afi terrain is very steep, which will require attention to trail building and improvements to prevent problems with erosion.

- One area of particular concern for trail building and daily tracking activities is the patchy nature of gorilla food plants. Established trails should avoid areas with these known gorilla food items, and rangers should avoid cutting vegetation when tracking the gorillas, and always take tourists around food patches rather than through them.

- Gorilla tracking will utilise main trails as much as possible, and will not require the cutting of transects.

- Standard environmental impact reviews should be carried out to identify and mitigate the impact of tourist camps in the sanctuary, not only on gorilla habitat or food plans but also on any natural systems, including vegetation and water courses.

f. Gorilla crop-raiding, and potential impact on tourism

Objectives:

- Utilising management and community reports on recent damage to banana plantations adjacent to the Sanctuary, assess the impact of this development on the potential for tourism, and the impact of habituation on crop-raiding behaviour

Methodology:

- Literature review / management reports
- Community meetings

Findings:

- Afi gorillas have in recent years been reported to raid farms outside the sanctuary boundaries, especially in the northern areas where their mountainous habitat extends outside the sanctuary boundaries. The extent of damage in these cases can be small, but there is a risk of the development of serious conflict if not addressed appropriately.

- Scientific opinion is divided on the extent to which habituation may exacerbate gorilla crop-raiding, and the picture is complicated by the progressive extension of human farming activities towards and into gorilla habitats. Therefore the question is whether habituation allows for range extension into farms, or whether it is simply that farms are extending towards or into gorilla habitats and that when gorillas lose their fear of humans, they don’t retreat as they might previously have done.

- Whatever the proximate or ultimate causal factors, and whether or not habituation for tourism occurs, if farms contain food items or secondary growth that favour gorilla foraging or movement through the area, conflict with local communities will escalate.

- If tourism is initiated to gorillas that are crop-raiding, then conflict will further escalate as there will be a perception that someone else is earning money from the gorillas that are causing crop losses to farmers.

- Therefore it is an imperative to gain a full understanding of how often Afi gorillas visit areas of their range that are outside AMWS borders, before tourism is initiated, as tourism on community lands associated with crop-raiding activities will certainly exacerbate conflict between the sanctuary and local communities.

- Once baseline information has been gathered and analysed, an action plan should be developed to include reporting systems, response systems and actions, potential compensation, and monitoring of gorillas outside sanctuary boundaries.

- If areas outside sanctuary boundaries are consistently part of the Afi gorillas range, the viability of alternative mechanisms should be considered to protect these areas, such as management easements, land purchase, AMWS boundary adjustment, etc.
g. Economic analysis

Objectives:
- Utilising the market analysis, input from specialist gorilla-tracking tour operators, and experience from other sites, analyse the economics of developing gorilla-based tourism at Afi, presenting a full cost-benefit analysis in requirements for development and operations, as well as the potential income accrual at local, state, and national (+/- regional) levels. In addition, identify potential funding sources for development, and whether projected revenue will be sufficient to cover operation costs.

Methodology:
- Market information from CRSTB and other contacts
- Experience from other gorilla tourism sites
- Simple financial modelling spreadsheet to allow for income projections at various levels.

Findings: Simple financial modelling allows users to test the implications of various pricing and revenue management systems on income to be earned from gorilla tourism, as described below:

- **The model:** A spreadsheet model was developed to allow users to test the implications of changes in variables such as permit price and income allocations to CRFSC, CRSTB, and communities for revenue sharing. This spreadsheet has been delivered with the study report for use and adaptation by the AMWS partnership during planning for gorilla tourism. Exchange rates used in this study are relevant to the study period (2007) and will fluctuate.

- **Permit price:** Market information suggests that a reasonable price for gorilla tracking in Afi would be $200. This would cover in-park activities, except food, and would include any overnight camping required the night before and/or after tracking.
  - Note – permit price should not include food, which would be provided by the tourists themselves, and could provide additional income to accommodation facilities.

- **Revenue sharing:** The model assumes that a percentage of the gorilla tracking permit price would be shared with local communities, in the form of funding for community projects. The percentage can be modelled, and a suggested share is 20%.

- **Management fees – CRSFC:** A certain amount of the gorilla permit price should be allocated to CRSFC to cover administrative costs and centrally-managed expenditures. This is modelled at 20% in the examples below, but the amount should be adjusted based on the levels of expenditure, especially salaries, that are managed centrally vs. in Afi.

- **Marketing fees – CRSTB:** Marketing Afi as a tourism destination will require some financial outlay and therefore a percentage of gorilla revenue may be allocated to whoever is responsible for marketing. This has been modelled at 5% allocation to CRSTB.

- **Occupancy rates:** Occupancy rates for a gorilla-based tourism activity will take time to grow, and expectations would need to be managed at all levels to prevent disappointment.
  - Even though the most popular gorilla tourism sites operate at 100% occupancy in the high seasons, they almost never bypass an overall annual occupancy rate of 80%, so 100% is not likely to be a rational expectation. Therefore the model suggests that 80% is a realistic maximum occupancy.
  - In the development phase of gorilla tourism in Afi, lower occupancy rates would be expected. A rational expectation of occupancy goals would be around 60%.
  - To analyse income based on chosen values of variables, the model provides estimates of annual income at occupancy rates from 10% up to 100%.

- **Seasonality:** The seasonality of tourist arrivals in Afi will greatly affect overall occupancy rates, and therefore marketing efforts should focus on low-seasons. Domestic tourism will be highly correlated with weather patterns and holiday seasons, and overland truck arrivals will be correlated with trans-Africa route departure dates, which are clustered...
around November and March resulting in passage through south-eastern Nigeria in February and June.

- **Outcomes:**
  - Figure 10 on page 29 is an example of results from the income model based on permit price of $200 and income allocations of 20% each to community revenue sharing and to CRSFC for central expenditures, and 5% to CRSTB for marketing, leaving 55% of income at Afi to cover management and operations of the sanctuary.

- **Budget estimates:** Some estimated budget figures are included below for current operations (Figure 12), additional operating costs during habituation (Figure 13) and additional costs during tourism operations (Figure 14). Current operating budget figures for AMWS are in the range of $75,000 (up to $100,000 per year), and conservative estimates for increased staffing requirements, operation costs, and veterinary / employee health services required during habitation and tourism operations would increase this to $132,000 (habituation) and $165,000 (tourism operations).

- **Rational occupancy estimates:** Results for the rational expectation of a 60% annual occupancy results in an annual total income of $262,800, with allocations of $52,560 each for revenue sharing and for CRSFC, and $13,140 for marketing efforts by CRSTB. This results in income to AMWS of $144,540, and a combined total for AMWS and CRSFC of $197,000. This amount should be sufficient to cover the additional operating costs of tourism, while continuing to cover the costs of the core conservation and law enforcement programme.

- **Probable maximum occupancy estimates:** Results for what would be considered the likely maximum annual occupancy of 80% results in annual total income of $340,400 with allocations of $70,080 each for revenue sharing and CRSFC, and $17,520 for CRSTB.

- **Estimating occupancy:** Figure 11 on page 30 demonstrates a different way to model income based on estimated average monthly number of each type of tourist (domestic, regional, international). Based on these, the estimated occupancy rates and annual income are calculated, the latter again based on the permit price and allocations above. In this example, the estimated occupancy is 48% with annual total income of $208,800. However it is important to note that variations in the number of visitors in each category affects the overall total income, and significant local, national, and international marketing efforts will be required even to achieve this scenario.

- **Cautions and Funding Requirements:**
  - This is a very rough model and there are a number of variables that will be difficult to predict.
  - Costs will increase dramatically during habituation and no income will be earned during this process which can take up to 2 years. Outside funding must be sourced to cover this period.
  - Once tourism opens, there will be additional costs in terms of staffing and other supplies and services. It will take time to build up occupancy levels and during this period income will be lower than costs. Outside funding will need to cover increased costs during this period, and it would be wise to fundraise for operating costs to cover at least 3 years post opening.
  - Budgets used in this model do not cover capital investment. Implementation of the full tourism development plan will need to source funding for construction of tourism-related infrastructure, both owned by CRSFC/AMWS and for any community lodges that will be required.
Potential of gorilla-based tourism as a possible tool for conservation management of AMWS gorilla population

Figure 10: Financial Model – Income Scenarios for Afi Based on Selected Permit Price and Allocations.

<table>
<thead>
<tr>
<th>Groups Habituated:</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum permits/day:</td>
<td>6</td>
</tr>
<tr>
<td>Selected Permit Price:</td>
<td>$200</td>
</tr>
<tr>
<td>Selected Revenue Sharing Percent:</td>
<td>26%</td>
</tr>
<tr>
<td>Selected CRSFC-Calabar Percent:</td>
<td>26%</td>
</tr>
<tr>
<td>Selected CRSTB % for Marketing:</td>
<td>5%</td>
</tr>
</tbody>
</table>

--- % Retained by AMWS Conservation Programme: 55%

<table>
<thead>
<tr>
<th>Annual Income Based on % Allocations Chosen Above</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMWS Income for Conservation and Management</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Occupation Scenarios</td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>10%</td>
</tr>
<tr>
<td>20%</td>
</tr>
<tr>
<td>30%</td>
</tr>
<tr>
<td>40%</td>
</tr>
<tr>
<td>50%</td>
</tr>
</tbody>
</table>

Rational Expectation: 60%

<table>
<thead>
<tr>
<th>Realistic Maximum:</th>
<th>80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolute Maximum:</td>
<td>100%</td>
</tr>
</tbody>
</table>

5-Year Total Income at this Occupancy

<table>
<thead>
<tr>
<th>Occupancy Scenario</th>
<th>AMWS Income for Conservation and Management</th>
<th>Community Funding from Revenue Sharing</th>
<th>CRSFC Calabar Overhead</th>
<th>CRSTB Funds for Marketing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>40%</td>
<td>$481,800</td>
<td>$175,200</td>
<td>$175,200</td>
<td>$43,800</td>
<td>$676,000</td>
</tr>
<tr>
<td>50%</td>
<td>$902,250</td>
<td>$219,000</td>
<td>$219,000</td>
<td>$54,750</td>
<td>$1,095,000</td>
</tr>
<tr>
<td>60%</td>
<td>$722,700</td>
<td>$262,800</td>
<td>$262,800</td>
<td>$65,700</td>
<td>$1,314,000</td>
</tr>
<tr>
<td>70%</td>
<td>$843,150</td>
<td>$306,600</td>
<td>$306,600</td>
<td>$78,650</td>
<td>$1,533,000</td>
</tr>
<tr>
<td>80%</td>
<td>$963,600</td>
<td>$350,400</td>
<td>$350,400</td>
<td>$87,600</td>
<td>$1,752,000</td>
</tr>
</tbody>
</table>
Figure 11: Financial Model – Income Calculation Based on Project Numbers of Tourists from Different Sources
(using Pricing & Income Allocations chosen in Figure 10 above)

Users can estimate average expected numbers of different types of tourists to look at resultant occupancy and income implications.

<table>
<thead>
<tr>
<th>Potential Source of Tourists</th>
<th>Projected Number per month</th>
<th>Projected Number per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigerian citizens - Cross River State</td>
<td>5</td>
<td>60</td>
</tr>
<tr>
<td>Nigerian citizens - other states</td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>Nigerian diaspora</td>
<td>5</td>
<td>60</td>
</tr>
<tr>
<td>Expatriate residents in Calabar</td>
<td>10</td>
<td>120</td>
</tr>
<tr>
<td>Expatriate residents in neighbouring states</td>
<td>15</td>
<td>180</td>
</tr>
<tr>
<td>Expatriate residents elsewhere</td>
<td>15</td>
<td>180</td>
</tr>
<tr>
<td>Overland Truck Safari passengers</td>
<td>20</td>
<td>240</td>
</tr>
<tr>
<td>International Adventure Tourists (backpackers)</td>
<td>10</td>
<td>120</td>
</tr>
<tr>
<td>Other International Tourists</td>
<td>5</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total # Tourists:</strong></td>
<td><strong>1,044</strong></td>
<td></td>
</tr>
</tbody>
</table>

Occupancy % with this Scenario: 48%
Total Income Expected from These Tourists: $208,800

<table>
<thead>
<tr>
<th>Income Expectations Based on This Scenario for Potential Tourists</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Occupancy</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>48%</td>
</tr>
</tbody>
</table>
### Figure 12: Estimated Current AMWS Operating Budget

<table>
<thead>
<tr>
<th>Staffing</th>
<th>Number</th>
<th>Total annual cost per staff member in Naira</th>
<th>Total annual cost per category in Naira</th>
<th>Total annual cost per staff in Naira</th>
<th>Total annual cost per category in Naira</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rangers - Community</td>
<td>10</td>
<td>1,584,000 Naira</td>
<td>1,584,000 Naira</td>
<td>158,400 Naira</td>
<td>158,400 Naira</td>
</tr>
<tr>
<td>Rangers - FC - level 1</td>
<td>10</td>
<td>1,700,000 Naira</td>
<td>1,700,000 Naira</td>
<td>170,000 Naira</td>
<td>170,000 Naira</td>
</tr>
<tr>
<td>Wildlife Officer - Level B</td>
<td>1</td>
<td>320,000 Naira</td>
<td>320,000 Naira</td>
<td>32,000 Naira</td>
<td>32,000 Naira</td>
</tr>
<tr>
<td>Sr Wildlife Officer - Level 10</td>
<td>1</td>
<td>476,000 Naira</td>
<td>476,000 Naira</td>
<td>47,600 Naira</td>
<td>47,600 Naira</td>
</tr>
<tr>
<td>Administrative Assistant</td>
<td>1</td>
<td>246,000 Naira</td>
<td>246,000 Naira</td>
<td>24,600 Naira</td>
<td>24,600 Naira</td>
</tr>
<tr>
<td>Management</td>
<td>1</td>
<td>1,380,000 Naira</td>
<td>1,380,000 Naira</td>
<td>138,000 Naira</td>
<td>138,000 Naira</td>
</tr>
</tbody>
</table>

**Annual totals for all staff**

5,099,400 Naira $45,566

<table>
<thead>
<tr>
<th>Vehicle Operations</th>
<th>Units</th>
<th>Costs / unit</th>
<th>Units per month</th>
<th>Cost / month</th>
<th>Annual in Naira</th>
<th>Annual in US $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toyota Hilux pickup</td>
<td>km</td>
<td>80 Naira</td>
<td>3,000</td>
<td>198,000</td>
<td>2,250,000 Naira</td>
<td>$18,144</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>km</td>
<td>38 Naira</td>
<td>1,500</td>
<td>57,000</td>
<td>684,000 Naira</td>
<td>$54,722</td>
</tr>
</tbody>
</table>

**Total**

2,052,000 Naira $16,616

**Occupancy**

- Boje office - rent: 0 Naira
- Power - electricity: 16,000 Naira $1,440
- Generator fuel: 15,000 Naira $1,200

**Supplies**

- Communication: 20,000 Naira $1,600
- Office supplies: 12,000 Naira $1,000

**Grand Total**

9,932,400 Naira $75,163

### Figure 13: Estimated Increased Operations Budget During Habituation

<table>
<thead>
<tr>
<th>Staffing</th>
<th>Total Annual Cost in Naira</th>
<th>Total Annual Cost in US $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trackers - Community</td>
<td>460,200 Naira</td>
<td>$3,754</td>
</tr>
<tr>
<td>Trackers - FC</td>
<td>9,000 Naira</td>
<td>$408</td>
</tr>
<tr>
<td>Guides - undergoing training</td>
<td>1,065,400 Naira</td>
<td>$44,048</td>
</tr>
<tr>
<td>Sr Wildlife Officer - Level 10</td>
<td>478,400 Naira</td>
<td>$36,032</td>
</tr>
<tr>
<td>Casual staff - guard at camps</td>
<td>312,900 Naira</td>
<td>$2,502</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3,977,490 Naira</td>
<td>$316,199</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vehicle Operations</th>
<th>Units</th>
<th>Costs / unit</th>
<th>Units per month</th>
<th>Cost / month</th>
<th>Annual - Naira</th>
<th>Annual - US $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toyota Hilux pickup</td>
<td>km</td>
<td>55 Naira</td>
<td>1,000</td>
<td>65,000</td>
<td>750,000 Naira</td>
<td>$6,046</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>km</td>
<td>38 Naira</td>
<td>1,000</td>
<td>38,000</td>
<td>456,000 Naira</td>
<td>$3,808</td>
</tr>
</tbody>
</table>

**Occupancy**

- Boje office - rent: 0 Naira
- Power - electricity: 60,000 Naira $480
- Generator fuel: 60,000 Naira $480

**Supplies**

- Communication: 7,500 Naira $60
- Office supplies: 8,000 Naira $66

**Veterinary and Health Services**

- Employee Health Programme: 277,500 Naira $2,220
- Veterinary Response and Gorilla Health Monitoring: 2,027,500 Naira $16,220

**Total estimated extra annual costs during habituation**

7,086,900 Naira $56,655

**Estimated Overall Operating Budget for AMWS during habituation**

10,493,300 Naira $131,808
### Figure 14: Estimated Increased Operations Budget During Tourism Operations

**Further Costs Added for Tourism Operations**

<table>
<thead>
<tr>
<th>Staffing</th>
<th>Total Annual Cost in NaNs</th>
<th>US $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration - Receptionist</td>
<td>2</td>
<td>500,000</td>
</tr>
<tr>
<td>Accountants</td>
<td>2</td>
<td>700,000</td>
</tr>
<tr>
<td>Booking Clerk</td>
<td>1</td>
<td>300,000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1,500,000</td>
</tr>
</tbody>
</table>

**Vehicle Operations**

<table>
<thead>
<tr>
<th>Units</th>
<th>Costs / unit</th>
<th>Units per month</th>
<th>Cost / month</th>
<th>Annual - NaNs</th>
<th>Annual - US $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toyota Hilux pickup</td>
<td>km</td>
<td>63 NaNs</td>
<td>2,000</td>
<td>126,000 NaNs</td>
<td>1,012,000 NaNs</td>
</tr>
<tr>
<td>Motorcycles</td>
<td>km</td>
<td>36 NaNs</td>
<td>2,000</td>
<td>76,000 NaNs</td>
<td>612,000 NaNs</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td>2,424,000 NaNs</td>
<td>$18,392</td>
</tr>
</tbody>
</table>

**Occupancy**

<table>
<thead>
<tr>
<th>Units</th>
<th>Costs / unit</th>
<th>Units per month</th>
<th>Cost / month</th>
<th>Annual - NaNs</th>
<th>Annual - US $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office - rent</td>
<td>month</td>
<td>0 NaNs</td>
<td>0 NaNs</td>
<td>0 NaNs</td>
<td>0 NaNs</td>
</tr>
<tr>
<td>Power - electricity</td>
<td>month</td>
<td>5,000 NaNs</td>
<td>1</td>
<td>5,000 NaNs</td>
<td>60,000 NaNs</td>
</tr>
<tr>
<td>Generator fuel</td>
<td>month</td>
<td>5,000 NaNs</td>
<td>1</td>
<td>5,000 NaNs</td>
<td>60,000 NaNs</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td>120,000 NaNs</td>
<td>$800</td>
</tr>
</tbody>
</table>

**Supplies**

<table>
<thead>
<tr>
<th>Units</th>
<th>Costs / unit</th>
<th>Units per month</th>
<th>Cost / month</th>
<th>Annual - NaNs</th>
<th>Annual - US $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>month</td>
<td>7,500 NaNs</td>
<td>1</td>
<td>7,500 NaNs</td>
<td>60,000 NaNs</td>
</tr>
<tr>
<td>Office supplies</td>
<td>month</td>
<td>5,000 NaNs</td>
<td>1</td>
<td>5,000 NaNs</td>
<td>40,000 NaNs</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td>150,000 NaNs</td>
<td>$1,200</td>
</tr>
</tbody>
</table>

**Total estimated extra annual costs during tourism operations** | 4,194,000 NaNs | $33,552 |

**Cumulative extra costs** | 11,280,900 NaNs | $90,247 |

**Estimated Overall Operating Budget for AMWS during tourism operations** | 20,876,300 NaNs | $165,410 |
4. Recommendations: “Will It Be Done?”

a. Presentation of Analysis to Partnership and Stakeholders

Following the above analyses, the consultant developed a set of recommendations that were presented at a final workshop for the AMWS partnership and other interested stakeholders. This meeting was held on 11th June, 2007 in Calabar. The main recommendations were presented, along with the summary findings of the community and mapping consultancies. Attendees had a chance to discuss the findings and comment on the analysis. While absolute consensus is difficult to achieve on an issue as polarising as this, the members of the AMWF partnership endorsed the recommendations of the study.

b. Final Recommendations

The recommendations of the study, edited following the final workshop, are presented in the Executive Summary of this report (see pg. iii). In general the recommendation is that gorilla tourism should be developed in Afi, but only after a number of information gaps are filled, and after a number of prerequisites are developed, including the guarantee of funding for development of the programme, and the development of a number of services and infrastructural requirements that are pre-requisites to developing and operating a gorilla tourism programme in Afi Mountain Wildlife Sanctuary.
Annexes

Annex 1 – Summary of Advantages and Disadvantages of Habituation

A responsible assessment of habituation impact must consider all the potential advantages and disadvantages for the gorillas, the park authority, local communities, and the tourism industry. In all cases, even if the final decision is to go ahead with habituation, the assessment should carefully consider the potential impacts on both sides with a view to identifying all potential impacts, mitigating negative impacts, and maximising positive impacts of the decision. For example, when deciding to habituate a group, the disadvantage of disease risk must be considered, and actions must be taken to reduce this risk. On the contrary, deciding not to habituate might have a negative consequence as seen in the absence of an advantage, e.g. loss of political goodwill for the sanctuary.

Table 3: Advantages of Habituation for Tourism at Afi

<table>
<thead>
<tr>
<th>Advantage</th>
<th>Assumptions</th>
<th>Notes / Action Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring: Ability to approach gorillas</td>
<td>• Funding for monitoring programmes is secured</td>
<td>• Monitoring plan must be in place before habituation starts.</td>
</tr>
<tr>
<td>Monitoring: Ability to approach gorillas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veterinary surveillance and care:</td>
<td>• Funding for veterinary surveillance and response team is secured.</td>
<td>• Finalise health monitoring, treatment, and disease outbreak contingency plans</td>
</tr>
<tr>
<td>Veterinary surveillance and care:</td>
<td></td>
<td>before habituation starts.</td>
</tr>
<tr>
<td>Law Enforcement: Easier protection</td>
<td>• Security in the region allows Law enforcement monitoring.</td>
<td>• Increase enforcement presence in area before habituation.</td>
</tr>
<tr>
<td>Law Enforcement: Easier protection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resilience: Once habituated, after initial</td>
<td></td>
<td>• Literature search</td>
</tr>
<tr>
<td>Resilience: Once habituated, after initial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protected area / Sanctuary Revenue:</td>
<td>• Local, regional, international security situation allowing tourism to take</td>
<td>• Financial analysis of revenue from additional group is essential to impact assessment.</td>
</tr>
<tr>
<td>Protected area / Sanctuary Revenue:</td>
<td>place</td>
<td></td>
</tr>
<tr>
<td>Community benefits: Potential source of</td>
<td>• Tourists interested and willing to visit and take up permits.</td>
<td>• Develop / expand benefit sharing systems to absorb any increase in revenue.</td>
</tr>
<tr>
<td>Community benefits: Potential source of</td>
<td>• Tourism is well managed.</td>
<td></td>
</tr>
<tr>
<td>Community benefits: Potential source of</td>
<td>• Methods to ensure revenue streams to communities in place.</td>
<td></td>
</tr>
<tr>
<td>Community benefits: Potential source of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits to private sector: Tourism revenues</td>
<td>• Tourists interested and willing to visit and take up permits and to visit</td>
<td>• Marketing to enhance revenue stream that spin-off from gorilla permits.</td>
</tr>
<tr>
<td>Benefits to private sector: Tourism revenues</td>
<td>other attractions.</td>
<td></td>
</tr>
<tr>
<td>Community support: Increased support</td>
<td>• Private sector tourism industry well managed.</td>
<td></td>
</tr>
<tr>
<td>Community support: Increased support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political goodwill / National Pride and Image</td>
<td>• Political value of tourism revenue outweighs perceived value of land</td>
<td>• Decision not to habituate may result in loss of political goodwill / loss of support to park.</td>
</tr>
<tr>
<td>Political goodwill / National Pride and Image</td>
<td>conversion away from conservation.</td>
<td></td>
</tr>
<tr>
<td>Learning: Potential for increased knowledge</td>
<td>• Research, RBM, etc. providing data stream to central database.</td>
<td>• Research opportunities more limited in tourism groups</td>
</tr>
<tr>
<td>Learning: Potential for increased knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>International awareness and support:</td>
<td>• Tourism well-managed and seen as sustainable source of revenue.</td>
<td>• Document tourism impact analyses and distribute to international organisations.</td>
</tr>
<tr>
<td>International awareness and support:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 4: Disadvantages of Habituation for Tourism at Afi

<table>
<thead>
<tr>
<th>Disadvantage</th>
<th>Mitigation measure</th>
<th>Action point</th>
</tr>
</thead>
</table>
| **Poaching:** Habituated gorillas are more vulnerable to poaching, if not protected, through loss of fear of humans | • Once habituated the group must always be protected through daily monitoring / patrols in their range.  
• Protection for habituated or previously habituated groups by ranger surveillance patrols – in perpetuity  
• Assumption – management continuity. | • Further discussion required on potential for de-habituation: |
| **Disease - 1:** Habituating gorillas makes them more vulnerable to the introduction of disease during habituation process. | • Vaccination and/or other disease prevention activities for gorillas  
• Strict habituation team protocols  
• Mitigation, if possible to be discussed further with vet advisors | • Veterinary advice |
| **Disease – 2:** Habituation allows closer approach of humans to gorillas, therefore increases risk of disease transmission through ongoing disease exposure. | • Strict enforcement of rules and regulations on tourist / research visits to gorillas  
• Training and continual evaluation  
• Regular review of regulations in light of emerging research  
• Education of tourists pre-visit | • Design/implement visit evaluation programme to assess compliance.  
• Develop veterinary response and outbreak contingency plan  
• Distribute Homsy disease risk document to AMWS team  
• Continual analysis of morbidity/mortality data |
| **Cost Implications - 1:** Financial implications of the costs of habituation are high - up to 2 year timeframe. | • Financial support for habituation process must be guaranteed before launch | • Ensure adequate funding before habituation launch. |
| **Cost Implications – 2:** Operating costs (staff, equipment, infrastructure) high for tourism activities, and also for protection and monitoring of habituated groups in perpetuity. | • AMWS / CRSFC to ensure that there is a long term financial plan to cover costs even if there is a slump in the tourism market. | • Develop emergency support plan to cover operations in periods of unstable tourism market. |
| **Human-Gorilla conflict – 1:** Potential for increased conflict with humans and livestock if gorillas leave protected areas (even if ranged outside park before habituation) | • Sensitization  
• Revenue sharing  
• Human–Gorilla Conflict programmes  
• Community/livestock health outreach  
• Assessment of home range during group choice | • Additional research needed on whether habituation leads to increase in crop-raiding behaviour |
| **Human-Gorilla conflict – 2:** Conflict heightened if gorilla tourism conducted while crop-raiding on private land | • Explore idea of “entry” fee to community if tourism visit to be conducted on community land/farm | • Explore possibility of on-farm tourism fee |
| **Over-Habituation:** Long term habituation may lead to over-habituation, with potential for: more contact with humans  
• Injury to humans & gorillas  
• Increased disease risk through proximity or contact. | • Explore ways to reduce over-habituation  
• Enforce rules!  
• Deter approach of gorillas  
• Review guidelines for human behaviour when people are in proximity to gorillas | • Continued assessment of the effects of long-term habituation. |

---

3 Note the balance between disease risk and veterinary care: Habituation allows for increased veterinary / disease monitoring and enhanced opportunity for medical care. Leaving gorilla groups unhabituated results in reduced disease exposure but less/no opportunity for veterinary support.

4 Participants in the feasibility study workshop suggested that habituation in Afi may take longer than 2 years and that the Afi Tourism Development Plan should operate on a 5-year time plan.

5 Prolonged exposure may lead to establishment of hierarchy between humans and gorillas, resulting in potential injury.
<table>
<thead>
<tr>
<th>Disadvantage</th>
<th>Mitigation measure</th>
<th>Action point</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stress – 1:</strong> Habituation is a stressful process for gorillas - initial stress during habituation may potentially lead to increased vulnerability to disease, as well as reduced reproductive rates</td>
<td>• Develop and use “best practices” for habituation to minimize stress</td>
<td>• Distribute research results on stress hormone analysis.</td>
</tr>
<tr>
<td></td>
<td>• Research protocol for stress monitoring during habituation, following proven methodology.</td>
<td>• Contribute to / consult PSG-SGA Habituation Best Practice Guidelines.</td>
</tr>
<tr>
<td></td>
<td>• If new habituation undertaken, design appropriate monitoring programme to assess stress factors.</td>
<td></td>
</tr>
<tr>
<td><strong>Stress – 2:</strong> Chronic stress(^6) following habitation during operation of research or tourism activities. Stressful situations would include natural behaviours (e.g. fighting / interactions) and human interactions</td>
<td>• Strict adherence to reviewed regulations to attempt to minimise chronic stress.</td>
<td>• Review tourism management to minimise stress inducers.</td>
</tr>
<tr>
<td></td>
<td>• Review tourism management to minimise stress inducers.</td>
<td>• Develop monitoring plan.</td>
</tr>
<tr>
<td><strong>Behaviour change:</strong> Impact studies have proven a significant impact of tourism on gorilla behaviour.</td>
<td>• Design visit regulations in light of proven behaviour change.</td>
<td>• Synthesise and present research to tourism staff and decision-makers</td>
</tr>
<tr>
<td></td>
<td>• Strict adherence to regulations</td>
<td>• Review of tourism management and control to attempt to reduce impact on behaviour.</td>
</tr>
<tr>
<td><strong>Reduced reproductive success:</strong> behavioural impact, stress, disease, immuno-suppression may all lead to reproductive failure, with impact on population size over time.</td>
<td></td>
<td>• Ongoing research/ monitoring of habituated groups.</td>
</tr>
<tr>
<td><strong>International condemnation:</strong> Lack of support if perception is of excessive tourism</td>
<td>• Circulate synthesis of study report if habituation is chosen (make full report available to those interested).</td>
<td>• Research on habituation impact on reproductive behaviour(^7), maternal-infant care, infant mortality, etc.</td>
</tr>
<tr>
<td><strong>Habitat Impact:</strong> Negative impact of tracking activities on habitat – vegetation and other animals species</td>
<td>• Conduct tracking with only essential cutting of trails.</td>
<td>• Develop protocol for trackers / guides to minimise habitat impact.</td>
</tr>
<tr>
<td><strong>Knock-on Effect to other Cross River Gorilla Sites:</strong> Development of gorilla tourism at Afi will lead to requests/demands/expectations for gorilla tourism to be developed at other sites (e.g. Mbe, CRNP)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^6\) Acute stress vs. chronic stress – in chronic stress, even though no longer acutely stressed, stress hormone levels are still higher than pre-exposure.

\(^7\) Data shows a slight (non-significant) reduction in growth of Bwindi habituated groups vs. unhabituated groups (ITFC). Conversely during repeated census results in Virungas, the proportion of immature gorillas was higher in habituated than unhabituated groups. However, this may also be due to selection of these groups with more females and juveniles for habituation, and/or due to the fact that these groups are better protected.
Annex 2 – Recommendations on Whether Groups of Certain Size Should Be Habituated

A number of studies have been carried out addressing the potential for negative impact on gorillas from the presence of tourists and/or other human proximity. Consideration of many of these impacts has led to recommendations on group sizes that should not be exposed to tourism and/or research. When attempting to adapt these recommendations to the Afi context, it is important to remember that research on Cross River gorilla populations in Afi and other sites suggests that group size may fluctuate with fission / fusion. In addition, the entire Afi population is around 25 gorillas (+/- 5) in what may be one group (two maximum) that splits on occasion, and we are therefore evaluating the potential to expose the whole population to tourism. Therefore the rationale for the maximum tourism gorilla group size of 19 below (based on average group size in much larger populations) is less relevant in this context. However the recommendation that group sizes less than 7 are not appropriate for tourism does translate to the Afi context for all the reasons noted in the table below.

Notes:
1. Group size is based on every individual over 1 year of age – this is to help protect infants during their vulnerable 1st year.
2. Visitor group sizes – the recommended maximum number includes all tourists, staff, and research team.
3. This table assumes that for tourism, there is only one visit per day that lasts one hour, and adheres to all other tourism rules and recommendations on distance, disease prevention, and visitor behaviour. For more details, see gorilla tourism rules and regulations.
4. If research is being conducted on a tourism group, the researcher should not be an additional visitor to the maximum number of visitors. The researcher can use a tourist space or take the place of (or be) a staff member, and if so, must be competent in managing the tourist visit.

<table>
<thead>
<tr>
<th>Gorilla Group Size (Individuals ≥ 1 yr old)</th>
<th>Tourism?</th>
<th>Monitoring/Research</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 1 → 6 gorillas                            | No (0) tourists | 3 persons maximum for monitoring / research | • A small group is more vulnerable to stress & behavioural impact which, among other potential outcomes, could make the group unstable and lead to disintegration.  
• A group this small results in visitor dissatisfaction.  
• A group this small should not be chosen for a new habituation effort.  
• If a habituated tourism group loses members and reaches this small size, it should be closed to tourism. |
| 7 → 9 gorillas                            | 7 visitors maximum (6 tourists + one staff) | 3 persons maximum if a research group. | • Care should be taken in choosing a group this size for a new habituation, as there is a risk it might shrink and become too small (see 0-6 above).  
• Group composition should be critically evaluated to judge whether there are sufficient numbers of adult females to encourage group stability. |
| 10 → 19 gorillas                          | 10 visitors maximum (8 tourists + 2 staff) | 3 persons maximum if a research group | • This size of group is probably the most ideal choice for a new habituation effort.  
• 6 tourists recommended as optimum to minimise risks while maximising visitor satisfaction, especially in new tourist groups and in dense habitats.  
• Care should be taken if group is 18-19 size as close to maximum size. |
| 20 + gorillas                             | No tourists (No new habituation) | No new habitation 4 persons maximum for monitoring / research if group already habituated | • Gorilla groups of 20 or more represent large percentages of the overall population.  
• If a serious or fatal disease were to be introduced, it would result in risk to a significant percent of the population.  
• Further discussion needed regarding scenarios for group size growth. |

These recommendations are adapted from the Habituation Impact Assessment guidelines drafted by the Gorilla Management Technical Advisory Committee for the Virunga / Bwindi Transboundary Conservation Area based on 25 years of experience with mountain gorilla tourism.
Annexes

Annex 3 – Terms of Reference for the Study

Studying the potential of gorilla-based tourism as a possible tool for the long-term conservation and management of the Cross River Gorilla population at Afi Mountain Wildlife Sanctuary, Nigeria

Name of Consultant: Dr. Elizabeth J. Macfie

Reporting to: The Afi Mountain Wildlife Sanctuary Partnership through the FFI Programme Manager for Central Africa

Introduction

Whilst gorilla-based tourism has made a positive contribution to gorilla conservation in some areas (i.e. mountain gorillas in Rwanda, Uganda, and DR Congo), results of similar programmes in habitats for other gorilla subspecies have been mixed. In addition, due to the risks of tourism impact on gorilla health and reproductive status, both international and local concern has been expressed about the habituation of gorillas – and especially Cross River gorillas – for the purpose of tourism. Recently, interest has been expressed by Nigerian protected area authorities in exploring the potential for gorilla-based tourism, and the Afi Mountain Wildlife Sanctuary (AMWS) was earmarked as the best site to consider for gorilla tourism development. However, due to concerns over the risks of gorilla-based tourism, the members of the Afi Mountain Wildlife Sanctuary Partnership⁹ (hereafter referred to as “the Partnership” or “Partners”) have agreed to commission an independent impact and feasibility study before any development of gorilla-based tourism is undertaken in the sanctuary.

To allow the partnership to conduct this study, a grant from the United States Fish and Wildlife Service has been obtained, with FFI serving as lead agency for interactions with the donor.

The USFWS grant is entitled “Studying the potential of gorilla-based tourism as a tool for the long-term conservation and management of the Cross River Gorilla population at Afi Mountain”. The grant period is one year from the date of signing (April 2006), but the Partnership anticipates the study will be complete by the end of December 2006.

General responsibilities:

Under the general supervision of the Afi Mountain Wildlife Sanctuary Partnership, with the FFI Programme Manager for Central Africa as the main contact point, and in collaboration with all interested parties and particularly with the Cross River State Tourism Bureau, the consultant will organise and coordinate the specific activities listed below as part of the feasibility study for the possible habituation of Cross River gorillas at Afi Mountain Wildlife Sanctuary for the development of gorilla-based tourism in the Sanctuary.

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⁹ Membership of the AMWS Partnership consists of the Cross River State Forestry Commission (CRSFC) and its NGO partners, including the Nigerian Conservation Foundation (NCF), Pandrillus, the Wildlife Conservation Society (WCS), and Fauna & Flora International (FFI).
Specific responsibilities

1. Preparation

   a. **Stakeholder Consultations:** Consult with members of the Partnership, the Cross River State Tourism Bureau, other government, NGO, and local institutions and community groups, to gather views on tourism potential in the Sanctuary, and identify resources for gathering relevant information.

   b. **Literature review – Habitat and gorilla behaviour/ecology:** working with Partners and researchers who have studied Afi gorillas, gather and analyse / synthesise available information on all aspects of Cross River gorilla ecology, behaviour, and habitat relevant to the potential development of gorilla-based tourism in the Sanctuary, including seasonal variations in foraging, ranging and weather patterns, utilising information from research in Afi as well as other Cross River Gorilla sites and, where relevant, using comparison data from other gorilla subspecies. Identify information gaps and present to partners to guide further information gathering or research that may be possible during the study.

   c. **Literature / Information review – Tourism Market:** gather and analyse the available information on tourism trends in Nigeria and the wider region, and on the tourism development plans for Cross River State. Identify information gaps and work with Partners to plan a market review or other relevant analyses.

2. Feasibility Analysis: “Could It Be Done?”

   a. **Analysis of the physical habitat at the site:** Focusing on the Sanctuary area most frequented by gorillas (the “central sector”), where viewing is possible, rapidly appraise access to this core area, the forest/vegetation structure, and the general topography of the area. Based on the above, evaluate the potential for tourism access to the site, and the potential for habituation efforts, daily tracking, and visibility of gorillas. In addition, assess the impact of gorilla group movements outside this core area on tourism feasibility.

   b. **Analysis of gorilla ranging patterns:** Utilising historical ranging data, as well as current management data, analyse the distances travelled and range utilised by gorillas. Based on the above, assess the geographic scope of operating a potential tourism programme, and the associated variation in the potential tourist experience (including duration) and physical requirements.

   c. **Analysis of gorilla behavioural reaction to humans:** Working with Sanctuary staff and researchers, review behavioural data and ranging records to assess gorilla reaction to humans in and around the sanctuary in various scenarios. Scenarios will include reactions to: staff on patrol; tourists on nature walk; local community members outside the sanctuary – chance encounters; local community members during gorilla crop-raiding; local community members inside the sanctuary – non-hunters; hunters inside the sanctuary.

   d. **Analysis of current tourism infrastructure and services that support access to the Sanctuary:** Working with the Cross River State Tourism Bureau and Partners with experience in tourism (CRSFC and Pandrillus), analyse the existing infrastructure (airports, roads, hotels, lodges) and services (immigration, flight booking, vehicle hire, tour operators, local guiding, sanctuary staffing, booking systems) that would support potential tourist access to the Sanctuary.

   e. **Analysis of AMWS as a potential tourist destination:** In light of the above, and taking into consideration other attractions within the Sanctuary or along its boundaries, broadly assess the suitability of AMWS as a potential tourist site.

   f. **Analysis of the potential market:** Working with the Cross River State Tourism Bureau and the Forestry Commission, and with reference to recent work on the CR State Tourism Master Plan and other market surveys, rapidly appraise the potential market for gorilla-based tourism from the perspective of national, regional, and international tourism markets, providing information on the type of tourist, their potential expectations, and pricing issues.
3. Impact Analysis: “Should It Be Done?”

a. **Analysis of disease risk:** Utilising existing literature on the risks of disease transmission between humans and gorillas, as well as information from local medical authorities and community surveys (latter depends on funding) in the Cross River / Afi area, summarise the potential disease risks related to gorilla-based tourism, and draw up preliminary guidelines to minimise the disease-transmission risk should all other factors allow for habituation to go ahead, including recommendations (with estimated costs) for provision of disease monitoring and response protocols.

b. **Analysis of socioeconomic issues that may pose risks to tourism:** Utilising historical/management records and outputs of socioeconomic surveys, identify and analyse local factors that may pose a risk to gorilla-based tourism, such as:

- hunting and poaching risk – analysis of data on source and motivation of poachers; extent to which poaching currently affects gorillas; analysis of interaction of habituation with risk of hunting/poaching;
- expansion of farmland
- conflicts between communities
- human-gorilla conflict from crop-raiding (and extent to which habituation may affect crop-raiding)
- negative attitudes toward the sanctuary and its staff, etc., and extent to which economic benefits of tourism may address this.

c. **Analysis of socioeconomic issues that may support tourism:** Identify and analyse key socioeconomic indicators in Afi local communities (Boki local Government) that would help to rapidly assess the willingness and ability of communities to accept, provide support to, and benefit from, potential gorilla-based tourism, in the form of:

- community guides / scouts / rangers – employment in the Sanctuary
- cohesiveness and potential for Afi-wide community association/s to benefit from tourism revenue-sharing initiatives as a form of Payment for Environmental Service (PES)
- potential and willingness to undertake activities that would add value to tourism at the community level (e.g. community eco-lodge, community nature walks, handicrafts cooperative, ...)

d. **Analysis of Sanctuary management, staffing, gorilla monitoring, and law enforcement effectiveness:** Working with Sanctuary staff and Partners, assess the ability of the sanctuary to absorb the added responsibility of operating an expanded tourism initiative. This will include addressing requirements for additional staffing and infrastructure, as well as assessing the ability of the Sanctuary to effectively protect the Afi gorillas and their habitat from encroachment, poaching, and unauthorised tourism.

e. **Analysis of tourism impact on gorilla habitat:** Utilising knowledge of habitat and ranging factors at Afi, assess the potential negative impact of tourism on the physical gorilla habitat (i.e. cutting trails or transects), and make recommendations on mitigation measures.

f. **Evaluation of gorilla crop-raiding, and potential impact on tourism:** Utilising management and community reports on recent damage to banana plantations adjacent to the Sanctuary, assess the impact of this development on the potential for tourism, and the impact of habituation on crop-raiding behaviour.

g. **Economic analysis:** Utilising the market analysis, input from specialist gorilla-tracking tour operators, and experience from other sites, analyse the economics of developing gorilla-based tourism at Afi, presenting a full cost-benefit analysis in requirements for development and operations, as well as the potential income accrual at local, state, and national (+/- regional) levels. In addition, identify potential funding sources for development, and whether projected revenue will be sufficient to cover operation costs. This overall analysis should take into consideration the broader context of tourism development currently under implementation in Cross River State.
4. **Recommendations: “Will It Be Done?”**

   **a. Presentation of Analysis to Partnership and Stakeholders:** Following the above analyses, the consultant will present results at a meeting/workshop to be held near the end of the study. The implications of findings in all analyses will be presented and discussed to ensure that all key stakeholders understand the information on which the recommendations of the feasibility study will be based, and this process will be utilised to attempt to generate consensus/agreement with the recommendations being made by the consultant.

   **b. Formulation of Recommendations of the Feasibility Study – Assessment of the Conservation Value of Introducing Gorilla Tourism in the Sanctuary:** Utilising the results of all analyses, and discussion with stakeholders, the consultant will make recommendations on whether it would be both feasible and advisable to pursue the habituation of gorillas at Afi for gorilla-based tourism. The recommendations will include rough estimates of funding required and potential earnings, as well as recommendations on associated initiatives, such as the development of benefit-sharing and disease monitoring/control programmes that should be implemented if tourism were to be undertaken.

**Project methodology:**

- The consultant will act as the coordinator of the study as detailed above and will provide input through desk-based time, time in Cross-River State, and electronic exchanges with the partnership and other resource persons required for the analyses.
- The Partnership will provide technical advice and will contribute staff expertise to the study in guiding and participating in the study. The value of Partnership personnel time contributed to the study will be considered as matching funds to the donor budget for the actual study (the “project” budget), and should be tracked for reporting purposes.
- For some sections of the analysis, such as the socioeconomic and market analysis, consultants may need to be engaged (with project funds). Local consultants will be selected by the members of the partnership, and all consultants will be approved by the partnership before contracts are issued.

**Project outputs:**

The Consultant will produce a detailed report including all supporting documents and providing clear recommendations on:

- (iv) Whether gorilla-based tourism in the Afi Mountain Wildlife Sanctuary is both feasible and advisable.
- (v) A full analysis of the costs and benefits of gorilla-based tourism, both in the sense of economics and potential ecological impact.
- (vi) If gorilla-based tourism is recommended, a detailed summary of the steps and process to be undertaken, and by which institutions.
- (vii) If gorilla-based tourism is not recommended, a detailed reasoning and explanations of the key constraints and why such constraints cannot be easily mitigated in the current scenario and context.
### Annex 4 – Study Timeline

**Lead Consultant Timeline (including travel days)**

<table>
<thead>
<tr>
<th>Task</th>
<th>Date</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Study Design – Attending CRG Conference</td>
<td>April 2006</td>
<td>6</td>
</tr>
<tr>
<td>2. Study Design – Terms of Reference for Study – draft/review</td>
<td>April-June 2006</td>
<td>3</td>
</tr>
<tr>
<td>3. Literature review</td>
<td>July-August 2006</td>
<td>5</td>
</tr>
<tr>
<td>4. Preparation and Planning for Field Trip</td>
<td>October-November 2006</td>
<td>2</td>
</tr>
<tr>
<td>5. Field Trip 1</td>
<td>3-15 December 2006</td>
<td>13</td>
</tr>
<tr>
<td>6. Analysis / References</td>
<td>January 2007</td>
<td>2</td>
</tr>
<tr>
<td>7. Field Trip 2</td>
<td>February 2007</td>
<td>14</td>
</tr>
<tr>
<td>8. Analysis</td>
<td>March 2007</td>
<td>3</td>
</tr>
<tr>
<td>9. Mapping and Community consultancies – design/analysis</td>
<td>April-May 2007</td>
<td>4</td>
</tr>
<tr>
<td>10. Drafting Final Recommendations for presentation in Calabar</td>
<td>June 2007</td>
<td>3</td>
</tr>
<tr>
<td>11. Recommendations Workshop</td>
<td>11 June 2007</td>
<td>5</td>
</tr>
<tr>
<td>12. Final Recommendations – finalise, circulate and edit</td>
<td>June 2007</td>
<td>2</td>
</tr>
</tbody>
</table>

**Lead Consultant Total Days on Study (excluding Final Report write-up)** 62 days

**Additional Input from Community and Mapping Consultants**

<table>
<thead>
<tr>
<th>Task</th>
<th>Date</th>
<th>Days</th>
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</thead>
</table>

**Total Input from Other Consultants** 24 days

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10 Note – Number of days contracted was 35 – this is relevant for any other studies modelled on this one.

11 Additional input from mapping consultant including participation in final workshop was provided by the North Carolina Zoo
Annexes

Annex 5 – Reference Material for this Study


Annexes


Annexes


Annex 6 – Maps Comparing Afi with the Virungas and Bwindi

The mapping consultancy by Dr. Richard Bergl produced maps that allowed AMWS members and other participants in the final study results presentation workshop (June 2007) to compare Afi with two other sites in which habituation for gorilla tourism has successful, and where tourism has been developed and successfully implemented for at least 10 years. Prior to the study, stakeholder opinions were divided between those who felt that Afi would be an easier terrain for potential tourists (due to lower altitude) and those who felt it would be more difficult (slope and temperature), so the study took a look at two successful gorilla tourism sites that seemed to offer the best comparisons in terms of terrain. The maps have been delivered to the AMWS coordinator for use in the field. Full-page images of the Afi maps can be found in section B2a of this report (pages 5 - 7). Thumbnails of the comparison map sets are included in the following pages. Due to the wide altitudinal range, there is very little overlap in altitudinal colour bands, but attention to the map legends provides the detail, as does the altitude profile of the sites (see Table 2, pg. 8).
Annexes

Topographical Maps with (Tourist) Gorilla Range

Afi Mountain Wildlife Sanctuary, Nigeria

Bwindi Impenetrable National Park, Uganda

Virunga Conservation Area, DRC, Uganda, Rwanda
Annexes

Slope Maps