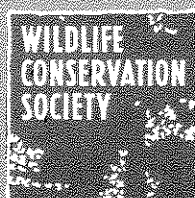


Chasse et Commerce de Gibier en Afrique Centrale:
Identifier les Lacunes et Développer des Stratégies

Hunting and Wildlife Trade In Central Africa:
Identifying Gaps and Developing Strategies



Taken by : Elizabeth L. Bennett



Rapport de L'atelier Tenu au Parc National de la Lopé, Gabon
Janvier 2003

Report Of A Meeting Held In Lopé National Park, Gabon
January 2003



**Hunting and Wildlife Trade In Central Africa:
Identifying Gaps and Developing Strategies**

**Report Of A Meeting Held In Lopé National Park, Gabon
January 2003**

Report compiled by Elizabeth L. Bennett and James C. Deutsch

Translated by Benoît Fontaine

WILDLIFE CONSERVATION SOCIETY

CONTENTS

Acknowledgements

Preface

1. Objectives of the retreat

2. Participants

3. Organization of meeting

4. Country and site summaries

4.1 Cameroon

4.1.1 National level

4.1.2 Mbam Djerem

4.2 Gabon

4.3 Republic of Congo

4.3.1 Northern Congo landscape

4.3.2 Nouabalé-Ndoki National Park

4.3.3 Kabo and Pokola

4.4 Democratic Republic of Congo

5. Strategy

5.1 Legislative framework

5.1.1 Cameroon

5.1.2 Gabon

5.1.3 Republic of Congo

5.1.4 Democratic Republic of Congo

5.2 Research needs

5.2.1 Cameroon

5.2.2 Gabon

5.2.3 Republic of Congo

5.2.4 Democratic Republic of Congo

5.3 Education and awareness

5.3.1 Cameroon

- 5.3.2 Gabon
- 5.3.3 Republic of Congo
- 5.3.4 Democratic Republic of Congo

5.4 Government capacity to manage hunting and wildlife trade

- 5.4.1 Cameroon
- 5.4.2 Gabon
- 5.4.3 Republic of Congo
- 5.4.4 Democratic Republic of Congo

5.5 Partnerships

Appendix 1: Substitutes for bushmeat. (Presentation by David Wilkie.)

Appendix 2: Maximizing results and learning across projects. (Presentation by Richard Margoluis.)

Appendix 3: Summary of discussion on potentially legalizing bushmeat trade in Gabon.

Appendix 4: Research methods used by different WCS studies on hunting in Central Africa.

Appendix 5: Strengths and weaknesses in components of an effective system for managing hunting and wildlife trade by country.

1. Legislation
2. Research
3. Awareness and education
4. National government capacity

ACKNOWLEDGEMENTS

This report is the proceedings of a workshop, and the information contained herein was gathered and written by all of the individual participants for the countries and sites in which they work, notably:

Kate Abernethy
Paul Elkan
Roger Fotso
Daniel Idiata
Fiona (Boo) Maisels
Richard Margoluis
Germain Mavah
Antoine Moukassa
David Nzouango
Malcolm Starkey
David Wilkie.

This report also consists of the compiled work of each of these; neither the workshop itself, nor this report, could have been written without the stirring efforts of every single participant. We would like to thank them greatly for this, and look forward to working with them on developing these ideas and implementing the action plans contained herein.

In addition, staff of the WCS program in the Democratic Republic of Congo (DRC) were unable to attend the meeting due to civil strife in their project area at the time. However, they still contributed substantially to this report to ensure that the information for DRC is included. We are deeply grateful to them for making this effort, and thereby making this report and the picture it portrays as complete as possible.

We would also like warmly to thank Kate Abernethy, Lee White, and the staff of the WCS Gabon Program for organizing the meeting so efficiently and in such good humor at all times.

Elizabeth L. Bennett and James Deutsch.

April 2003.

PREFACE

Hunting and wildlife trade are enormous and escalating threats to countless species of wildlife throughout the tropics. Much of the international spotlight is currently on the rain forests of west and central Africa and the "bushmeat crisis" there. Throughout tropical Africa, people have used wildlife for food and traditional medicines for possibly 100,000 years. But the vast increase in human populations, loss of wild habitats, and increasing access to those remaining habitats via rapidly-spreading roads and railways are leading to vastly increased consumption of wildlife, and concomitant population crashes of many species. As populations of large animals wink out across the landscape, hunters turn to smaller and smaller species, so the effect spreads throughout the biological community (Milner-Gulland et al., 2003).

Anyone who has spent significant time in central Africa knows that the crisis facing wildlife is acute. WCS has many successful projects in the region which address the issue of hunting and wildlife trade either directly or indirectly, but in the past they have largely operated independently of each other, so are not having the wider impact which they might if fully coordinated. Moreover, different organizations and authors differ significantly in the solutions which they propose, and how these should be attained. In January 2003, therefore, WCS held an internal retreat of its core staff working on hunting and wildlife trade issues in the field in central Africa. This report is on the meeting itself: its aims, core findings, and planned future directions. It is aimed primarily as an internal WCS working document, but because of the dearth of information on this important topic, it will also be distributed to key interested partners.

This is merely the first stage of a dynamic and ongoing process, and should be read in that context. Further reports and publications will be written by WCS staff both individually and collectively in future. We sincerely hope that the process started at this meeting will flourish, both within WCS and with all of our partners. This is crucial if the enormity of the problem facing wildlife in Africa as a result of hunting and trade is to be tackled on the scale necessary to ensure that Africa's wildlife remains in the wild, and is not all destined for a cooking pot.

Elizabeth L. Bennett and James C. Deutsch.

References

Milner-Gulland, E.J., Bennett, E.L. and the SCB 2002 Annual Meeting Wild Meat Group (2003). Wild meat – the bigger picture. *Trends in Ecology and Evolution (TREE)* 18(7): 351-357.

1. OBJECTIVES OF THE RETREAT

WCS has a broad portfolio of projects on hunting in tropical regions worldwide. We have made tremendous progress in conducting research on the effects of hunting on wildlife and local peoples, and in applying these results to policy at many levels. In spite of this, hunting across much of central Africa is currently unsustainable and the scale of the problem is still vast and acute. Recent estimates of the amount of wildlife hunted each year from central Africa are between one and five million tones (Wilkie and Carpenter 1999; Fa and Peres 2002). Even the lower figure means that hunting is about six times the maximum sustainable rate, and involves killing some 28 million bay duikers; 16 million blue duikers, 7.5 million red colobus, 1.8 million red river hogs, 34,000 leopards, 15,000 chimps, and 6,250 lowland gorillas each year (data derived from Fa and Peres, 2002). Drivers behind this include the spread of roads, the now-widespread use of wire snares and firearms, increased immigration into forest areas, commercial wildlife trade, and the exacerbation of many of these through the spread of the timber industry.

For some species in parts of west Africa, it is already too late; they are locally or regionally extinct. It is critical and urgent that WCS identifies a clear strategy to address the problem in central Africa if effective management is to be put in place across the region before further species are lost. To this end, we organized a retreat, inviting WCS staff who have either been involved with projects related to hunting and wildlife trade, or who are currently implementing such projects in central Africa.

The objectives of the retreat were four-fold:

- \$ to review the current status of hunting and wildlife trade in Africa, on a national and site basis;
- \$ to review past and ongoing projects by WCS and others that address hunting and wildlife trade in central Africa;
- \$ to determine what needs to be done to address problems effectively, to identify what is currently being done by WCS and others, and thereby to identify the gaps that need to be filled;
- \$ to determine how WCS can tackle the problem in central Africa, and to identify clear actions and players.

2. PARTICIPANTS

Cameroon	Roger Fotso and David Nzouango
Gabon	Kate Abernethy, Daniel Idiata and Malcolm Starkey
Republic of Congo	Paul Elkan, Gervais Mavah and Antoine Moukassa
WCS Living Landscapes Program	David Wilkie
Foundations of Success	Richard Margoluis
WCS New York	James Deutsch

Richard Tshombe of WCS's program in the Democratic Republic of Congo (DRC) was also due to attend, but had to withdraw at the last minute due to civil war in his home area. He and other members of the DRC program contributed substantially to this report, however, through completing the tables and contributing other information for their country after the meeting.

3. ORGANIZATION OF MEETING

The meeting lasted for four days. It started with presentations giving overviews of the scale of hunting and wildlife trade and the impacts on wildlife, both worldwide and specifically within central Africa. Following this, each participant provided an overview of current hunting and trade issues for the country or site in which he/she worked. This included summarizing the factors driving hunting and trade, legal frameworks, capacity to manage hunting and trade inside and outside protected areas, major constraints, and relevant WCS activities.

Relevant information for each country was then summarized in a series of tables (Appendix I), specifically:

- \$ Existing legislation
- \$ Research: What do we know?
- \$ Level of education and awareness
- \$ Government capacity.

These tables were then used to assess gaps: what needs to be done both nationally and regionally. The final part of the meeting was spent enunciating a strategy on how WCS can tackle the problem, and developing an action plan for how the strategy should be implemented.

4. COUNTRY AND SITE SUMMARIES

Each country representative gave an overview of current hunting and trade issues for the country in which he/she worked. Below are bullet points of the main issues raised in each talk.

4.1 CAMEROON

4.1.1 National level

- Extensive legislation aims to protect wildlife and regulate access to natural resources in Cameroon, but implementation of the laws and other regulations are weak. There is a need to clarify and improve the implementation of existing legislation; in this, NGOs such as WCS can play a major role.
- When considering management of wildlife and bushmeat, Cameroon can be subdivided into two major ecoregions: savannahs and forests. The productivity of large mammals (ungulates, primates and rodents) is higher in savannahs than forests. The main threats facing savannah wildlife are bush fire, competition from livestock for grazing and space, and hunting. In the forests, the core threat is hunting.
- Wildlife enjoys a level of protection only within the boundaries of protected areas, although people hunt even here. In general, wildlife populations are greatly depleted or locally extinct in areas of high human population density.
- Safari hunting is well developed in Cameroon, but control by the government is very limited.
- The large quantities of bushmeat for sale in the markets of large cities come from three regions: (i) the area around Mbam Djerem National Park; (ii) the south-east part of Cameroon; and (iii) the area around the Dja Wildlife Reserve bordering Gabon and the Republic of Congo.

- The Government at present is open to advice on how to improve wildlife regulations. This might include legal provisions to allow some level of bushmeat trade with quotas, and the creation of local community hunting zones.
- Organizations active in the field to address illegal hunting and the bushmeat trade include WCS, WWF, IUCN, ECOFAC, SNV (Dutch development aid) and GTZ (German technical development aid).
- There are plans to start controlling the transport of bushmeat along major access routes. For example, WCS is to work with Cameroonian Railways (CAMRAIL) to stop the transport of bushmeat by train; WWF with support from the EU aims to organize controls on major roads nationwide.

4.1.2 Mbam Djerem

- Mbam Djerem National Park was gazetted in January 2000. It covers an area of 4,165 km², lying between 5° 30' and 6° 13' N, and 12° 23' and 13° 10' E. The southern limit essentially consists of the Mbi and Mekie rivers, and the north is bounded in parts by the Djerem and Migiri rivers. The Yoko to Tibati road runs about 10 km from the western boundary of the park. The Merou River constitutes the eastern limit, and this is about 15 to 20 km from the Yaoundé to Ngaoundere railway line.
- Because of its location in the forest-savannah ecotone, Mbam Djerem National Park is diverse, encompassing dry forest, woodlands, gallery forest and grasslands. Overall, different forest types cover 50% of the park, and savannah the other 50%.
- This results in a very diverse fauna, comprising typical forest species, species of forest-savannah mosaics, and pure savannah species. At least 35 species of mammals have been confirmed as occurring in the park, including ten species of primates, one of which is the common chimpanzee. The presence of lowland gorillas inside the park has yet to be confirmed. To date, about 360 species of birds have been recorded in the park.
- The main threats to the wildlife of the park are hunting, and uncontrolled bushfires lit in the dry season by pastoralists in the north. The park and its surroundings are known to be a source of bushmeat which is transported on the train via Belabo, or along the Yoko to Tibati road, to be sold in the markets of Yaounde and Douala.

- The aims of the WCS research in Mbam Djerem are to collect qualitative and quantitative data on hunting patterns and wildlife populations. The ultimate aim is to develop strategies for the effective protection of the park, especially by reducing hunting pressure and bushmeat trade.
- It appears that commercial hunting is a recent development in the area, as the primary targets of hunters are large bodied mammals, e.g., buffalo, kob, bongo. The majority of hunters are non indigenous, and the main weapons used are wire snares and guns.
- Off-takes by 20 hunters were monitored from October 2001 to June 2002. During this period, these hunters sold about 18,850 kg of bushmeat. Ungulates constituted more than two-thirds of all bushmeat sold. The total price of the bushmeat sold was about FCFA 4,482,000, corresponding to an average monthly wage of FCFA 28,000 per hunter.
- Hunting is done all year, but peaks of hunting activities occur during the rainy season, and also around end-of-year celebrations.
- Access to the hunting zone is facilitated by the river system. Bushmeat from the region is largely transported by train to major markets, including in Yaounde and Douala. Some of the meat is sent by bush-taxi to the regional market Bertoua.
- In the past, taboos helped to regulate access by indigenous people to natural resources. These are now largely ignored by outside hunters, but also by local hunters who now are hunting to supply market demand.

4.2 GABON

- Gabon has the highest level of GDP in central Africa, a human population of only 1.2 million people, and large areas of the country still under forest. From the 1980s onwards, the spread of the Transgabonaise railway, and that of logging with its extensive road network, opened up many areas to hunting and bushmeat trade. In 2002, the creation of a national park system with 13 new national parks was announced by President Bongo.
- A study of the bushmeat market system in Gabon was conducted. Markets which supply about 70% of Gabon's population were studied, comprising 16 markets in ten towns across the country. They involved about 400 market sellers and transporters, and six to 18 months of data collection per market. Within the study period for each market, details of all sales of wild meat were recorded every day. Prices of domestic meats

were recorded every week. Trading is daily in every town in the country. In addition, a detailed study of rural hunting patterns was conducted in seven villages around Koulamoutou.

- Results showed that per capita consumption of bushmeat is much higher in villages than in large towns. The total quantity of bushmeat consumed is also greater in rural than urban areas. However, urban consumption is not negligible.
- Bushmeat prices are lower closer to the source of production and increase with transportation costs, i.e., bushmeat in villages is less expensive than in urban areas far from the source of wildlife. Conversely, poultry in urban areas is less expensive than in rural areas far from the supply.
- 105 species of wildlife were hunted and sold in markets in Gabon, including 34 protected species. Six species contributed 75% of the overall biomass, with blue duikers and brush-tailed porcupines being the most important in terms of numbers, and bush pig and red duikers the most important in terms of biomass.
- Hunting is an important source of income for many rural households, but it is only the most important source for a few households. However, hunting revenues are important in allowing rural households to cope with short-term problems, e.g., illness, unemployment.
- Alternative employment that is village-based, part-time and does not compete for labor or provide immediate revenues, is integrated with hunting and does not replace it. Full-time jobs, especially out of the village, do replace hunting.
- When planning for future studies, this program showed that it is feasible to conduct a national survey of bushmeat sales and consumption in central Africa within 12 months.
- There is currently a lack of capacity, both personnel and resources, for all aspects of managing the bushmeat trade, especially law enforcement. Anti-poaching efforts should be intensified, and there is a need to raise awareness about the hunting laws and the reasons for them. Alternative sources of employment and protein that are compatible with conservation should be explored.
- Management plans that have been developed for protected areas, and private sector enterprises in the rural sector should be applied in practice. Parties which do not abide by agreed management plans should be

penalized.

- Other steps needed are: (i) improved collaboration between all relevant actors (e.g., Ministerial Departments, local administrations, NGOs and the private sector); (ii) active management of the new national parks by putting management infrastructure in place; (iii) creation of a multi-sectorial, mobile brigade of *Eaux et Forêts* agents charged with law enforcement; (iv) finalizing of the '*Decrets d'application*' for the wildlife aspects of the new forestry code, and their application in practice; (v) support for trans-frontier conservation initiatives; (vi) establishment of a monitoring network to evaluate the effectiveness of actions.

4.3 REPUBLIC OF CONGO

4.3.1 Northern Congo landscape

- Ndoki-Likouala Landscape Conservation Initiative is a WCS initiative, the aim of which is to conserve biodiversity across the landscape through protection of the Nouabalé-Ndoki National Park (4,200 km²), community based controlled management of the Lac Télé-Likouala Aux Herbes Community Reserve (5,000 km²), and wildlife conservation in forest concessions (16,000 km²) through the *Projet de Gestion des Ecoystemes Peripheriques au Parcs* (PROGEPP).
- The program develops, implements, and monitors integrated conservation and management strategies across a mosaic of land-use zones. WCS has a range of core programs in this area. The main ones relevant to hunting are monitoring and management of hunting in the two villages closest to Nouabalé-Ndoki National Park, and extensive research and management programs in the logging concessions adjoining the park. These have started initially in Pokola and Kabo to the south of the park, and will be moving north as the logging extends along the eastern and eventually northern boundaries of the park.

4.3.2 Nouabalé-Ndoki National Park

- The two villages closest to Nouabalé-Ndoki National Park were selected for conservation action, to avoid any negative effects which they might have on the Park. Characteristics of the villages were that they: (i) were very small; (ii) were in a landscape where there was much less than one person/ km²; (iii) had no immigration; and (iv) had no other commercial or industrial source of income except the conservation project in the park.
- Conservation rules aimed at ensuring that hunting levels were

sustainable were agreed with the villagers. They were that: (i) no wire snares could be used; (ii) hunting could not be done at night; (iii) endangered species would not be hunted; (iv) no bushmeat would be exported from the villages.

- The offtake and price structure of bushmeat was recorded in both villages for four years. In one of the villages, the availability and spatial distribution of the key hunted species was monitored over the same period.
- In Bomassa, the human population has remained stable from 1994 to 2001, at between 200 and 250 people. The conservation project is the sole source of employment. Data showed that there was no change in hunting offtake, price of bushmeat, abundance or distribution of prey species during the study period. The number of guns decreased from 14 in 1995 to between five and eight in 2000 to 2002.
- In Makao, the human population remained stable at around 400 people until 2001. At that time, a logging company arrived, adding about 250 families or 1000 people to the local population. This resulted in social changes, rises in the price of bushmeat and other goods, a change in number and proportions of animals hunted, and a crash in offtake in the fifth year. By the end of that time, no large mammals could be found within 6 km of the village. The number of guns increased from 20 in 1999 to 30 in 2002, not including those owned by the timber prospection company.
- All of these changes were much more rapid than had been expected, and showed that the conservation village model is only sustainable if the four characteristics listed as (i) to (iv) above remain stable. If any of them change, the model will no longer work. Most villages in central Africa are in logging and/or mineral extraction concessions, or will be within the next ten years. Hence, conservation efforts should be proactive, working with local communities, industries and governments to assure effective controls and policies; those controls should be in place before the arrival of companies to an area.

4.3.3 Kabo and Pokola

- In 1999, WCS and the Government of Congo began working with a private timber company (Congolaise Industrielle des Bois) to improve wildlife conservation and management in the Kabo and Pokola concessions adjacent to Nouabalé-Ndoki National Park. Actions included company-based wildlife regulations in support of national laws, education and awareness programs, research into and establishment of systems to

provide alternative protein, zoning into hunting and no-hunting areas, and stringent enforcement.

- From 1999 to 2001, data were collected on wildlife harvests, protein consumption, human population pressures, large mammal populations, and return rates of law enforcement efforts. The results were fed into management decisions.

- Two species of duiker (*Cephalophus calyptopus* and *C. monticola*) made up 56% of the total animal biomass hunted. In Pokola town, over time the proportion of the diet comprising fish increased, and that comprising bushmeat decreased.

- Results indicate that snaring had been reduced. Wildlife conservation measures were extended to more than 700,000 ha of community hunting and protected zones, ensuring protection of important populations of gorilla, chimpanzee, elephant, bongo, and other rare and endangered species.

- Human population increases at industrial sites required the company to facilitate large-scale importation of alternative protein. Domestic meat consumption increased dramatically following these efforts.

- Road access and industry infrastructure placement are critical factors limiting ability to manage wildlife. Law enforcement was more difficult in Kabo than Pokola (the latter having a higher human population density) as indicated by confiscation rates of shotguns and snares. Company drivers were most frequently involved in commercial bushmeat violations, and non-employees were involved in the majority of arrests for elephant hunting.

- The approach of working collaboratively with governments and logging companies can increase the land area for wildlife conservation in tropical forests significantly, and engage private industry in improved environmental management. A comprehensive approach is necessary, including law enforcement, education, alternative activities, and research. One cannot be undertaken without all of the others. Replication of this model requires trained and disciplined law enforcement personnel, technical support in program design and implementation, and transparent monitoring.

4.4 DEMOCRATIC REPUBLIC OF CONGO (DRC)

- Recent civil wars, combined with large numbers of foreign troops and refugees from neighboring countries, have meant that both studying and managing hunting have been extremely difficult.
- War has meant that large human populations have been displaced to areas close to parks (e.g., Kahuzi Biega National Park, Garamba National Park, Virunga National Park). Often without humanitarian aid from the outside, hunting became critical to survival. War has also resulted in large numbers of firearms entering the country, which have increased hunting of elephants and primates throughout the war zone. Elephant meat is commonly sold in markets in areas with numerous soldiers (e.g., in Mambasa-Ituri in late 2002 and early 2003).
- A series of village-level studies was conducted, including sampling areas near Beni close to the forest edge, through to areas more than 100 km into the forest. Only small mammals and some primates were commonly caught near the forest edge, whereas blue, bay, and red duikers were often caught further into the forest. In the eastern part of the Okapi Reserve, villagers follow pygmy net hunts for at least a day's walking distance to trade starch staples for meat. Roads are in such a poor state, however, that transport of meat to distant markets is very limited.
- Until now, most studies of hunting have been locally focused. For example, during the past 20 years, studies of bushmeat in markets have frequently been conducted for theses at the University of Kisangani. No attempt has been made, however, to compile the results of different studies. This is necessary to obtain a national overview of the issue.
- Laws related to hunting were passed in 1982, but the capacity to enforce them is low, both inside and outside protected areas.

5. STRATEGY

5.1 LEGISLATIVE FRAMEWORK

No country discussed has perfect legislation for managing hunting and wildlife trade. Bearing this in mind, participants at the meeting reviewed whether current legislation in each country is adequate to allow hunting and wildlife trade to be managed effectively, or is it a major factor limiting what can be done. More details of the relevant legislation in each country are in Appendix 1.

5.1.1 Cameroon

The 1994 law contains some contradictions, and some points in it are unclear. Hunting by any means and for any purpose in protected areas is illegal. Licenses are required for bushmeat and trophy hunting, although species other than those fully protected can be hunted for subsistence without a license. At present, all commercial bushmeat trade is illegal, but the government is considering legalizing it: (i) for species other than fully protected species; and (ii) if it is limited to community hunting zones.

WCS action required: WCS Cameroon Program to provide information and advice to help the government to amend and clarify the text of the 1994 law, thereby facilitating its implementation and ensuring that it still allows for proper protection and management of wildlife.

5.1.2 Gabon

New laws were passed in December 2001, and the relevant decrees are being prepared. Laws regarding rights to hunt in different categories of land, especially in relation to *Terroir Coutumier* (Customary Territories) are unclear. Commercial sales of bushmeat are currently illegal, and current Government thinking is to move towards a legal, regulated bushmeat trade. Hunting is illegal in any form in protected areas. Hunting of certain species is legal, although snares, high powered rifles, dogs and nets, and poisons cannot be used, and there are seasonal and bag limits.

WCS action required:

- (1) Raise awareness among legislators of the results of current research and the policy implications thereof, especially in the context of the ongoing revision of wildlife laws.
- (2) Seek clarification of laws concerning *Domaine Rural*, *Domaine de Production* and *Terroir Coutumier*, especially as they relate to hunting.
- (3) Raise awareness of the research and legal issues, and the implications thereof, among local government and *aménagistes* (local and private sector managers), via workshops and production of user-friendly summary materials.

5.1.3 Republic of Congo

Current laws have flaws, but are basically workable. Revisions to improve them have recently been proposed officially to the Government. Hunting in national parks is illegal. Elsewhere, sport and traditional hunting are allowed according to bag limits and closed seasons, although these are

not based on any scientific information, and are impractical. Small game can be sold locally, but large scale commercial hunting is illegal, and the Government consistently opposes any opening up of commercial trade.

WCS action required: WCS Congo Program to work with Government to amend legislation, particularly to: (1) re-examine classing of species (e.g., protected, partially protected), including placing turtles on List A of protected species; (2) change the policy on closed seasons to reflect the biology of species and the seasonal differences between north and south Congo; (3) ban commercialization and exports of wildlife; (4) gazette community hunting zones.

5.1.4 Democratic Republic of Congo

Law number 82-002 of 28th May 1982 regulates hunting in DRC. This creates provision for nine types of hunting permits, namely: six ordinary permits (*permis sportif de petite chasse, permis sportif de grande chasse, petit permis de tourisme, grand permis de tourisme, permis rural de chasse, permis collectif de chasse*) and three special permits (*permis de capture commerciale, permis scientifique, permis administratif*). The law contains specific hunting regulations, namely permitted hunting areas, closed seasons, and types of technologies which cannot be used. In addition, it makes provision for totally protected and partially protected species. Hunting inside totally protected areas is prohibited in law, although the law on subsistence hunting is ambiguous, and it is often tolerated in practice.

5.2 RESEARCH NEEDS

In many countries in the region, the problem of over-hunting and unsustainable wildlife trade is acute, and immediate management actions must and already are being taken. Bearing this in mind, the research needs for each country were reviewed, to allow management to be based on sound information, and to provide baseline data for future monitoring and adaptive management.

5.2.1 Cameroon

National Level: No national-level data exist on the scale of hunting or commercial trade. Sport hunting quotas are set by the Government, but are probably exceeded so the true offtakes are unknown. Records are kept of the species and amounts of bushmeat confiscated by the Government at roadblocks. Source areas for bushmeat are known to be

those generally with low human populations and areas of recent logging. Bushmeat is known to be transported by road and by Camrail, with Yaounde and Douala known to be the primary destinations.

WCS action required:

(1) To assist in establishing a center of expertise in the Ministry which has the capacity to gather, analyze and report on nation-wide hunting data.

(2) To initiate market surveys in major towns to gather information. This would be to: (i) provide data for the Ministry central database; (ii) monitor trends; and (iii) generate information to support the environmental education and awareness programs.

Banyang-Mbo: Good baseline data on hunting are available, showing that it is mostly for subsistence and local sale, with little export outside the area. In spite of that, offtake rates are unsustainably high.

WCS action required: To monitor trends in hunting patterns in villages surrounding the reserve.

Mbam Djerem: Preliminary data on hunting patterns from the east of the park are available, showing that the primary hunters are buyers from outside the area. Hunting is almost entirely for commercial sale, with bushmeat being transported from the area on Camrail. Preliminary estimates of the amounts being hunted are that they are unsustainably high.

WCS action required: To extend the research and monitoring to other parts of the park.

5.2.2 Gabon

An extremely thorough series of studies on subsistence and commercial hunting, including quantities, price structures, and dynamics, has been conducted. Analysis is underway, and results will soon be published. The only significant gaps in data are on hunting in the south-west of Gabon, and exports from the country. In addition, sustainability of hunting for most species is unknown because surveys of the hunted species in the wild have not been conducted in most source areas; the exceptions are the great apes, for which hunting is currently unsustainable in most areas.

WCS action required:

(1) To analyze already-collected data on commerce and socioeconomics, and to use those results to devise a monitoring program.

(2) To continue research on public health aspects of bushmeat consumption and trade.

(3) To study markets in Port Gentil and south-west Gabon.

(4) To conduct research on densities and sustainability of hunting of duikers and other key traded species, especially porcupines, in relation to specific management options.

(5) To evaluate the amount of cross-border trade, especially at the Gabon-Cameroon and southern Gabon-Congo borders.

5.2.3 Republic of Congo

National level: Studies of subsistence hunting have been done in and around some of the protected areas where WCS has programs. A study of the bushmeat trade in Brazzaville was conducted in 1995 before the war, but has not been repeated since. In 2001, studies of bushmeat traffic in Impfondo and Ouessou were completed, including species, quantities, source areas and price structures. National and international trade routes for both bushmeat and ivory are known, although the volume of such trade is not.

WCS action required:

- (1) To conduct studies of bushmeat trade in regional and national capitals.
- (2) To continue village hunting studies and monitoring in and around protected areas managed by WCS/Ministry of *Eaux et Forêts*, as well as in their buffer zones, and to initiate such studies in areas where they do not yet exist.

Nouabalé-Ndoki National Park: Studies of subsistence hunting, including offtake rates of different species, sources of hunted animals, and price structures, have been conducted in the two villages closest to the Park – Bomassa and Makao. Due to the advent of logging company employees, the situation in Makao is changing rapidly (see 4.3.2), and information will quickly become out of date.

WCS action required: To continue hunting studies in Bomassa and Makao, and to disseminate widely the results of the Makao work to influence management there and in other areas.

Kabo-Pokola-Loungoudu-Mokabi logging concessions: Very comprehensive studies of hunting have been conducted, including who hunts what, how much, destinations and use of hunted animals, effects on populations of different hunted species, dietary importance of bushmeat among different consumer groups, and use and potential acceptability of alternative sources of protein.

WCS action required:

- (1) To continue socio-economic and ecological research and monitoring of hunting in buffer zones, to initiate them in new areas as the logging frontier expands, and to monitor cross-border traffic from the concessions.

- (2) To Initiate an in-depth investigation of spatial manipulation and source-sink dynamics in relation to wildlife management within the Kabo concession.
- (3) To conduct an in-depth investigation of fisheries management, with the aim of exploring freshwater fish as an alternative protein option.
- (4) To conduct a detailed study of the ecology and exploitation of the dwarf crocodile, to determine if exploitation is sustainable, and management measures required.
- (5) To train company management plan officers to collect, analyze, and integrate wildlife survey information into forest management plans.

5.2.4 Democratic Republic of Congo

National level: Very little information is available on the scale and dynamics of hunting and wildlife trade. Apart from work at Ituri (see below), one study of hunting around Beni, northern Kivu province, is occurring. A significant bushmeat trade is known to exist throughout DRC, and elephants are known to be hunted, often by soldiers, for their ivory which is exported from the country. Details on the scale and dynamics of both of these trades are unknown.

WCS action required: To compile data from all of the existing studies to date, and to catalyze further research by WCS and others.

Ituri Faunal Reserve: Studies of hunting were conducted in the southern and central Ituri, showing a change from subsistence to market hunting, and the implications on sustainability of hunting on the different prey species. The subsequent destination and use of the meat have not yet been studied.

5.3 EDUCATION AND AWARENESS

5.3.1 Cameroon

Overall awareness that hunting and wildlife trade are problems is high amongst senior Government officers and all are aware that it is illegal, although Government field staff might not realize that unsustainability is a real issue. Urban consumers are also less likely than rural consumers to be aware that it might not be sustainable. Donors are highly aware that bushmeat trade is a major conservation concern.

WCS action required:

- (1) Dub or subtitle the existing English drama on wildlife conservation into French, and arrange for its use on national television.
- (2) In and around Mbam Djerem, strengthen environmental education and

awareness programs at many levels.

5.3.2 Gabon

Government officials at all levels are aware that hunting and bushmeat trade are problematic. Rural communities' awareness varies across the country, and not all are familiar with details of the law. Similarly, urban communities are aware of the issues, but not always of the scale or immediacy of the problem. Conservation-oriented donors are familiar with the issues, but other donors are much less so.

WCS action required:

- (1) Communicate results of recent and current studies at many levels throughout the country.
- (2) Establish a core group of educators to co-ordinate and standardize environmental education efforts and direct resources to those active in the field. This would involve creation of at least one permanent post.
- (3) Integrate animal biology and hunting topics into environmental education programs.
- (4) Devise and distribute materials (leaflets, cassettes, videos) in local languages that explain hunting laws and the reasons for them. These should include local people reporting their experiences of wildlife declines.
- (5) In the longer term, programs of advertisements and documentaries on bushmeat issues should be developed for national television and radio. These should include positive publicity for alternatives and conservation initiatives.
- (6) Conduct exchanges from villages where hunting has recently increased to those in areas where hunting-induced wildlife declines have already occurred. This should be done in the context of particular projects, e.g., management of specific protected areas.
- (7) Develop programs for schools to visit national parks, especially Lope, Pongara and Akanda.

5.3.3 Republic of Congo

Across the country as a whole, including among government officials at all levels, awareness of the problem is generally low. Exceptions are for villages around Nouabalé-Ndoki National Park (although with immigration into Makao, this is changing), and the Kabo, Pokola and Loundougu logging concessions around it where WCS has been working for several years. In those areas, awareness raising has been a result of multi-faceted campaigns, from community dialogues to local TV programs, education programs for schools, hunters and local communities, through to meetings with unions and a long-term advisory role to company

managers.

WCS action required:

(1) At national level, a primary school curriculum on protected species education to be published, adopted, and integrated in national programs. Findings of research, as well as the laws and lessons learned from successful actions should be disseminated nationwide through films and other media. Urban areas such as Brazzaville, Pont Noir, Ouessou and Impfondo should be targetted.

(2) In the Kabo, Pokola, Lound and Mokabi logging concessions, to expand existing education programs. Logging company representatives and authorities in surrounding concessions (Ipenza, Lopola and IFO) should also be included in such programs.

(3) To continue education programs for villages around Nouabalé-Ndoki National Park.

5.3.4 Democratic Republic of Congo

Awareness of the problems caused by hunting and bushmeat trade is low across the country, and in all sectors of government and society. This is largely due to the lack of data; hunting and bushmeat trade have never been treated as a central theme in conservation in DRC. The exception is among local communities in and around the Okapi Faunal Reserve. The Bambuti in particular have expressed concerns about the depletion of wildlife, and requested the authorities to impose regulations.

WCS action required: To develop a comprehensive approach to the issue. The landscape approach would allow WCS to do so at a significant scale, with research feeding into awareness and education programs. As a first step, a pilot study could be conducted in and around Beni town.

5.4 GOVERNMENT CAPACITY TO MANAGE HUNTING AND WILDLIFE TRADE

Capacity in this context was defined as having two components

(a) *technical* : field staff having the necessary knowledge and skills to do their job effectively; and

(b) *physical*: the government management agencies having the necessary numbers of staff and equipment to allow the job to be done effectively.

5.4.1 Cameroon

National level: Within protected areas, staffing levels and logistical support are very limited but, most importantly, staff do not have the political

support of their superiors to enforce the law. Each logging concession has a *chef de poste* from the *Ministere d'Eaux et Forets* (MINEF), but he relies on the company for logistical support so is usually ineffective. MINEF sporadically enforces the law in some markets, but not in any regular or systematic way. Their capacity to conduct education programs, research and monitoring is extremely limited, and is only done effectively in areas where NGOs are working.

WCS action required: Move into a key role in training programs for MINEF staff involved in law enforcement, research and monitoring, communication and reporting.

Banyang Mbo: Enforcement capacity within the protected area is low, but WCS back-stops and facilitates the political support to allow for law enforcement. MINEF does sporadically enforce the laws in markets, but again not in any regular or systematic way. Education and research programs have been conducted mainly by WCS; MINEF capacity is low.

WCS action required: Through the Forest Management Committee, strengthen the ability of village level institutions to patrol the forest and prevent illegal hunting.

Mbam Djerem: MINEF capacity to enforce the law in both the protected area and adjacent logging concessions is extremely limited. Moreover, staff do not have the support of their superiors to do so. Law enforcement in markets is sporadic, not systematic. Initial education and research programs have been conducted by WCS; MINEF capacity for these is low.

WCS action required: Recruit and train project staff. They will then assist MINEF in law enforcement, monitoring, communication and reporting.

5.4.2 Gabon

Government capacity to enforce laws in protected areas is low. Although logging companies have trained staff, they are not used for enforcing wildlife regulations, and the government has little capacity to ensure that companies comply. Staffing to enforce laws in markets exists in some larger towns, e.g., Libreville, but even there, motivation is low so effectiveness is very limited. Sales can be controlled to some extent in markets near to protected areas if they have warden posts. Conservation education has only been done by NGOs, in a sporadic and uncoordinated way. The government does have the technical capacity to conduct research and monitoring in markets and in the field, but financial and logistical support is lacking.

WCS action required:

- (1) Establish a monitoring program and accessible databases in the DFC.
- (2) Integrate management training into courses at ENEF, the WCS training

center and USTM.

5.4.3 Republic of Congo

The government's technical capacity to enforce laws in protected areas is high to medium, depending on whether NGO support is available, but the staffing numbers and infrastructure are generally low. In logging concessions, however, capacity tends to be high if working with an NGO, and moderate otherwise. Both technical and staffing numbers for market enforcement are generally high, although the willingness to enforce is often weaker. Technical ability to conduct education programs is good, although programs are often hampered by insufficient staff numbers. Research and monitoring capacity is variable, although is often low unless technical support is provided by an NGO.

WCS action required:

- (1) To develop and teach both short courses and semester-long courses on protected areas and biodiversity, and hunting and wildlife management, at IDR (*Institut Develop Rural*).
- (2) Within logging concessions, to conduct training in law enforcement, wildlife management and monitoring for concession staff – for Government officers nationwide, and ecoguards for selected areas. In addition, senior Government and company managers should be trained to develop, implement and monitor wildlife management programs.
- (3) To identify and obtain funding for graduate training of selected individuals in both research and conservation project management.
- (4) At Nouabale-Ndoki, to continue on-the-job training long-term for park staff, and to identify funding and training institutions for higher level training of selected individuals.

5.4.4 Democratic Republic of Congo

National level: Technical ability of protected area staff is high; indeed, ICCN (Institut Congolais pour la Conservation de la Nature, the government para-statal in charge of protected areas) is one of the best conservation agencies in Sub-Saharan Africa. However, there is a shortage of staff at all levels. Staff are either under-paid or unpaid, and depend on international support for their salaries. Capacity to enforce regulations in logging concessions and markets is non-existent. Technical abilities to conduct education programs are good, but they are not put into practice effectively without a national framework for doing so. Overall capacity to do research and monitoring is also high, but again a clear vision and national framework are needed before effective programs are developed.

WCS action required:

To assess the country's capacity to enforce the law in logging concessions, and work with the relevant agencies to put a program into place on the ground.

Okapi Faunal Reserve: Through training by WCS and Gilman International Conservation (GIC), and funding by UNESCO World Heritage Sites Program, this reserve has the highest number of well trained staff of any protected area in the country. This has allowed illegal coltan and gold miners to be expelled, and elephant poaching to be stopped. Since September 2002, however, managers no longer have guns to enforce the law, and the number of staff is only 60 when it should be 216. For logging concessions, ICCN's Center for Training and Research in Forest Conservation (*Centre de Formation et de Recherche en Conservation Forestière*, CEFRECOF) is supported by WCS, and has the technical capacity to provide information on logging, which is crucial for law enforcement. Enforcement capacity for markets is non-existent, although Kisangani in theory could provide it. Research capacity in the Reserve is high.

WCS action required:

- (1) WCS and CEFRECOF to use information on wildlife in logging areas to train law enforcement officers, and to work with them to develop, implement and monitor a management program.
- (2) To assess the technical and physical capacity of staff in the Ituri area to conduct research and monitoring in town markets. If their capacity is low, the university in the forest city of Kisangani could be requested to provide personnel.

5.5 PARTNERSHIPS

The scale of the problems posed by hunting and bushmeat trade in central Africa are so great, WCS cannot tackle them alone. We must work with partners. The core, central partner in every country in Africa where we work is the government, at central and, where appropriate, provincial levels.

In addition, we can be more effective in many cases by working with non-government partners. Current and potential partners include:

- CEFRECOF
- DABAC (a program run by Veninaires sans Frontiers)
- ECOFAC
- GTZ
- Logging companies
- National NGOs
- SNV
- US Fish and Wildlife Service
- WWF.

APPENDIX 1. SUBSTITUTES FOR BUSHMEAT

Presentation by: David Wilkie

Economic theory suggests that providing consumers with access to acceptable and affordable substitutes may help to reduce unsustainable hunting and enhance wildlife conservation. Others believe that eating bushmeat is an immutable cultural tradition little influenced by income and prices. New research results suggest that consumption of wild meat changes as its price increases in absolute terms and relative to the price of substitutes such as beef and chicken. In Gabon as you travel further from the capital city and deeper into the forest, transportation costs mean that the price of imported meat rises and the price of wild meat falls. Consumer choice reflects these relative price differences, with wild meat contributing to 6% of meals containing meat consumed by households in Libreville and 88% in isolated forest villages. Comparable results from rural communities in Honduras and Bolivia show that as the price of wild meat rises consumption falls, and as the price of beef falls consumers switch away from eating wild meat. In Bolivia, a 10% decline in the price of beef was associated with a 74% decrease in consumption of wild meat (Wilkie and Godoy, 2001).

Economic theory also suggests that, as household income increases, consumption of a commodity will rise if it is a necessity (i.e., has no substitutes), or is considered superior relative to substitutes. Consumption of an inferior good falls with rising income. Kuznets (1955) argued that consumption of many goods should exhibit an inverted U pattern with rising income. Consumption initially increases until income reaches a certain level, at which point consumers switch to now-affordable substitutes. Depending on a family's income, economic development could either drive their consumption of wild meat up or down. The shape of the Kuznets' curve will determine the rate of change in consumption as incomes rise with economic development. New data show that the shape of the curve for a rural forest community in Bolivia is relatively flat and that wild meat is a necessity ($E = 0.04$) for families with average incomes less than \$1041/year, but becomes an inferior good ($E = -0.14$) when incomes rise above an average of \$4646.

These data suggest that wild meat consumers are price sensitive, and that when substitutes are available and affordable people will switch to eating something other than wildlife. The challenge, therefore, is to find ways to provide wild meat consumers with access to substitutes. Ubiquitous trypanosomiasis and abundant and accessible wildlife have militated against the incipient development of livestock raising for food throughout the forests of Central Africa. In South America, stocking rates are typically less than one cow for every five hectares of pasture, and in the case of family farms, labor constraints often militate against maintaining areas of pasture large enough to support an economically viable herd of cattle. Although chickens and goats can be found in most forest villages,

they are typically kept as savings or used as insurance when illness or disasters strike.

One approach to ameliorating the crisis associated with the unsustainable use of wildlife as food is to promote consumer access to substitute sources of protein. A number of projects have been started to domesticate and raise selected wildlife species (e.g., cane rats, duikers, bush pigs), under the assumption that families in the region like the taste of wildlife so much that only by raising and offering for sale captive bred wildlife will the need to hunt wild animals decline (Rahm, 1962; Tewe and Ajaji, 1982; Codjia and Heymans, 1990; Zongo *et al.*, 1990). Unfortunately, the logic behind captive breeding of wildlife species is flawed for several reasons, and thus is unlikely to significantly reduce the demand for wildlife or decrease the hunting of wild animals for food.

First, there is little if any evidence that families in the region would not shift their preferences from wildlife to other sources of protein if they were both available and cheaper. Indeed, outside urban areas people appear to eat wild meat because it is almost always the cheapest source of meat in markets (Barnett, 2000). Furthermore, preliminary evidence from Bolivia and Honduras (Wilkie and Godoy, 2001) shows that consumers are very price sensitive, and that as the price of wildlife substitutes drop, consumption of wildlife meat declines even more rapidly.

Second, captive breeding of wildlife makes little sense for low productivity species such as large antelope, primates, and most reptiles. Even production rates of cane rats (*Thryonomys swinderianus*), with a gestation period of five months, and 6-13 months to reach an adult size of 4-5 kg (Houben, 1999), are considerably lower than for domestic pigs and chickens (Delfi Messinger, pers. com.). Raising molluscs and reptiles as a staple food is unlikely to be cost-effective as they are slow to reach slaughter size and inefficient at transforming food into meat. For example, a green iguana consumes as much food as a chicken but requires three years instead of four months to reach a slaughter weight of 3 kg (Werner, 1991). Similarly, Smythe (1991) calculated that captive raising of pacas, although feasible, was economically irrational as the meat would have to be sold for over \$20/kg to cover costs. Feer (Feer, 1993) argues that in terms of meat productivity, the cost effectiveness of raising animals to slaughter weight per kg is: pigs > zebu cattle > cane rat > duikers. Consequently, increasing the supply of meat through husbandry of truly domesticated livestock (e.g., pigs, goats, chickens, ducks) that have been selectively bred for over 5,000 years to convert feed into meat efficiently, makes considerable more sense in productivity terms than attempting to raise wildlife in captivity – which is merely the first step in the long process of domestication. Lastly, the American Zoo and Aquarium Association has published numerous articles that convincingly shown how difficult and expensive it is to raise wild animals in captivity.

Small-livestock production (NRC, 1991; Branckaert, 1995; Hardouin, 1995) such as rabbit raising has been adopted by households in Cameroon in areas where wildlife is already scarce (HPI, 1996). Raising small domesticated animals such as rabbits and chickens is attractive in that methods of husbandry and veterinary care are well known. Small animal raising has been shown to be viable in peri-urban areas that are close to sources of demand, and where proximal wildlife species populations have already been depleted (Lamarque, 1995). That said, pig or rabbit rearing as an alternative to wildlife hunting is only likely to be successful, however, when the labor and capital costs of production are less than the costs of wildlife hunting and marketing (i.e., when wild meat becomes too scarce to be worth searching for and transportation costs are not prohibitive). If domestic production of meat only becomes economically viable after wild animals have become so scarce as to be unprofitable to hunt, the strategy is clearly ineffective as a conservation measure. In some cases, it might be necessary to subsidize the price of substitutes as a direct payment to communities who agree not to hunt particular species that are both at risk of extirpation and important sources of dietary protein.

References

- Barnett, R. (2000). *Food for Thought: the Utilization of Wild Meat in Eastern and Southern Africa*. TRAFFIC/WWF/IUCN, Nairobi, Kenya.
- Branckaert, R.D. (1995). Minilivestock: sustainable animal resource for food security. *Biodiversity and Conservation* 4: 336-338.
- Codjia, J.T.C., and Heymans, J.C. (1990). Experimental breeding of giant rats (*Cricetomys gambianus*, *C. emini*). *Nature et Faune* 6: 62-66.
- Feer, F. (1993). The potential for sustainable hunting and rearing of game in tropical forests. In: *Tropical Forests, People and Food: Biocultural Interactions and Applications to Development* (eds. C.M. Hladik, A. Hladik, O.F. Linares, H. Pagezy, A. Semple, and M. Hadley), pp. 691-708. UNESCO, Paris.
- Hardouin, J. (1995). Minilivestock: from gathering to controlled production. *Biodiversity and Conservation* 4: 220-232.
- Houben, P. (1999). Elevage d'aulacodes au Gabon. *Canopée* 15: 7-8.
- HPI (1996). *Boyo Rural Integrated Farmer's Alliance, Cameroon: Project Summary*. Heifer Project International, Little Rock, Arkansas.

- Kuznets, S. (1955). Economic growth and income inequality. *American Economic Review* 445: 1-28.
- Lamarque, F.A. (1995). The French co-operation's strategy in the field of African wildlife. In: *Integrating People and Wildlife for A Sustainable Future* (eds. J.A. Bissonette, and P.R. Krausman), pp. 267-270. The Wildlife Society, Bethesda, Maryland.
- NRC (1991). *Microlivestock: Little-known Small Animals with A Promising Economic Future*. National Academy Press, Washington, D.C.
- Rahm, U. (1962). L'elevage et la reproduction en captivite de l'*Atherurus africanus* (Rongeurs, Hystriidae). *Mammalia* 26: 1-9.
- Smythe, N. (1991). Steps toward domesticating the Paca (Agouti - *Cuniculus paca*) and prospects for the future. In: *Neotropical Wildlife Use and Conservation* (eds. J.G. Robinson and K.H. Redford), pp. 202-216. University of Chicago Press, Chicago.
- Tewe, G.O., and Ajaji, S.S. (1982). Performance and nutritional utilization by the African giant rat (*Cricetomys gambianus*, W.) on household waste of local foodstuffs. *African Journal of Ecology* 20: 37-41.
- Werner, D.I. (1991). The rational use of green iguanas. In: *Neotropical Wildlife Use and Conservation* (eds. J.G. Robinson and K.H. Redford), pp.181-201. University of Chicago Press, Chicago.
- Wilkie, D.S. and Godoy, R.A.. (2001). Income and price elasticities of bushmeat demand in lowland Amerindian societies. *Conservation Biology* 15:1-9.
- Zongo, D., Coulibaly, M., Diambra, O.H. and Adjiri, E. (1990). Document on the breeding of the giant African snail *Achatina achatina*. *Nature et Faune* 6: 62-66.

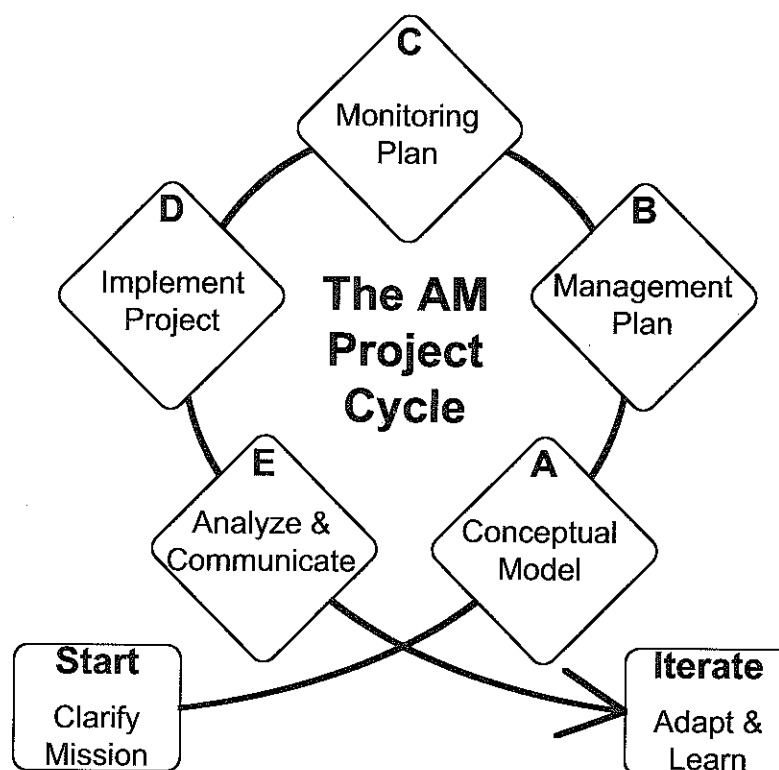
APPENDIX 2: MAXIMIZING RESULTS AND LEARNING ACROSS PROJECTS

Presentation by Richard Margoluis.

Conservation takes place in complex systems. One approach to improving the chances that our conservation interventions will be successful within these complex systems is adaptive management which incorporates research into conservation action. Specifically, it is the integration of design, management, and monitoring systematically to test assumptions in order to be able to adapt and learn.

Adaptive management can be used at both project and program levels. At the project level, it involves working through the project cycle and using analysis from monitoring and evaluation to adapt and learn (Figure 1).

Figure 1: Project Level Adaptive Management



At the program level, multiple projects can work together in a portfolio to test the conditions under which specific strategies work or do not work (Figure 2). A learning portfolio is a network of projects that use a common conservation action and work together to achieve three goals:

- to implement more effective conservation projects;
- to learn about the conditions under which this conservation action works, does not work, and why;
- to improve the capacity of the members of the portfolio to do adaptive management.

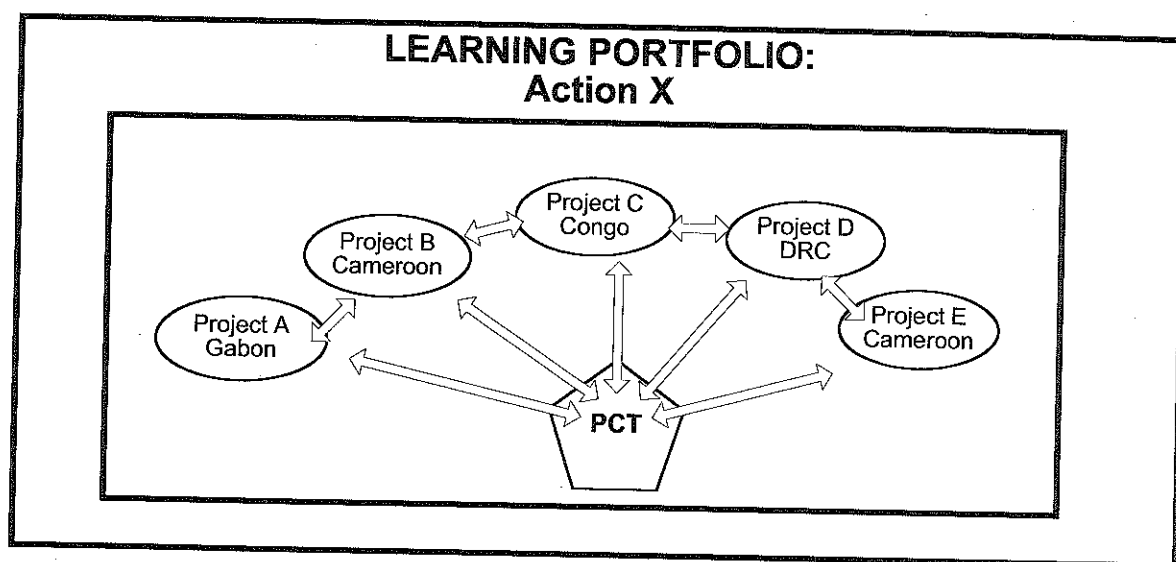


Figure 2: Learning Portfolio Structure

From an analytical perspective, projects in the portfolio that are not successful in implementing the strategy become as important as projects that are successful. By looking at both successes and failures across projects, we can learn about what works, what does not, and why.

Taking a portfolio approach to learning has a number of benefits including:

- it helps us *improve* the implementation of our projects;
- it promotes the development of *networks* of projects and cross-project learning;
- “failures” become *learning* opportunities; and
- it provides a framework for *evaluation*.

APPENDIX 3: SUMMARY OF DISCUSSION ON POTENTIALLY LEGALIZING BUSHMEAT TRADE IN GABON

Setting the scene

Gabon's hunting laws are currently quite strict, with closed seasons, protected species, bag limits, hunting method restrictions, and protected areas all limiting access to the resource. Commercial sales of bushmeat are illegal, except for exchanges of hunted animals within a subsistence community.

The creation in 2002 of a large national network of National Parks and other protected areas has led to some popular feeling that the remaining land (mainly timber production forests and rural areas) should become more accessible to people, and that some commercial hunting in such areas should now be allowed. This position is largely supported by local politicians, namely the elected deputies in the *Assemblée Nationale*. International opinion and donor aid is largely against such a move.

Points for discussion

WCS-Gabon has a potentially complex role to play. We have to decide:

- What should we advise the Government on the technical points to consider before taking a decision to legalize commercial bushmeat trade?
- Do we have good data to illustrate the different possible outcomes?
- What is our stance on this, as a conservation NGO?

The Government position for opening some commercial hunting

The recent 'Code Forestière' laws, published on 16th March 2002, state that "the management of wildlife and forests in Gabon is done to add value to and conserve the forest ecosystems with a view to their sustainable use". If commercial hunting is totally banned, it is hard to see for what sustainable use the Government is protecting wildlife.

Most Gabonese people feel that hunting has traditionally been important to the people of the region, and it has cultural ties which nobody wants to lose.

The Government currently makes no money from the wildlife in Gabon. If bushmeat trade were to be legalized and taxed, the State would have some compensation for protecting particular areas and species.

Currently, the law enforcement capacity of *Eaux et Forêts* is very limited. Despite

the strict laws, hunting and wildlife trade are more or less freely practiced. Other law enforcement sectors of the State (police, gendarmerie, military) do not liaise with *Eaux et Forêts* to enforce wildlife laws. The problem is one of manpower, but even in areas of existing manpower, motivation amongst staff is very low, as local opinion is that: (i) hunting and wildlife trade laws are poorly known or understood; (ii) when they are known, they are viewed as too strict. Thus, officers are fearful of enforcing laws. If some legal trade were to be opened, public opinion would be less entrenched against law enforcers and would thus enable them to enforce key laws for protected areas and species more effectively. Their meagre resources would also be directed to key targets rather than squandered against an insurmountable problem.

Any proposed legal trade would:

- respect protected species and protected areas;
- continue to regulate hunting through permits, restricted hunting methods and maybe seasons;
- set quotas for hunted species;
- issue and control permits for hunters, vendors, transporters and restaurant owners;
- provide veterinary controls on hunted wildlife before transport and before sale;
- provide for licenced sale venues only;

Other points which the Government is considering are:

- subsidising producers of well-managed game harvests. This would allow them to gain market share;
- using private companies to help with law enforcement.

Discussion points raised by WCS staff

1. An open market for a limited resource is economically unmanageable as demand can far outweigh possible supply. If transport and commerce to large urban centres are allowed, the potential for over-exploitation is huge.

Supporting evidence: Multiple economic studies of commodity use provide reasonable evidence that this would be the case.

2. Wildlife populations are part of the national heritage and should perhaps be protected *without* a vision of sustainable use.

Supporting evidence: Gabon has adhered to various international conventions and has shown major political will by protecting the new National Parks. (But note: Sustainable use outside protected areas is not contrary to this vision.)

3. Hunting can only be managed effectively when access to the resource is closed. Currently, this is not the case anywhere in Gabon. Possible exceptions might be within logging concessions when companies themselves become law

enforcers. Without restricted access, offtake rates or quotas are impossible to manage.

Supporting evidence: Data from Makao, near to Nouabalé-Ndoki National Park in Republic of Congo, show how the opening up of the area by a logging road led to a rapid slide to unsustainable hunting (see 4.2.3). Other studies in Latin America and Asia have shown that open access prevents harvest management.

4. An unambiguous ban is less likely to lead to a flourishing black market than are flexible laws and open markets.

Supporting evidence: (i) The ivory and drug trades suggest that the most favorable conditions for developing an uncontrollable black market are when there is some flexibility in the law, rather than total ban; (ii) Cameroon's illicit parrot trade illustrates the relative ease of dodging a permitting or quota system.

5. The returns from taxation of this resource are unlikely to exceed the costs of collecting them.

Supporting evidence is not well organised, but a simple calculation of a 20% tax (current sales tax level) on the estimated commercial harvest of bushmeat sold at \$1.40/kg in Gabon gives a revenue of <\$100,000 per year. This is vastly insufficient for the number of taxation officers that would be required to manage the trade effectively.

Problems to be surmounted in Gabon before the vision of a regulated market could be tenable

1. The current land access laws are very unclear. Enforcing or influencing them would require in-depth collaboration with various ministries and private land managers. This would be slow, and might jeopardize wildlife populations in the short term.

2. The capacity for law enforcement is currently weak. It is unlikely that more complex laws would be enforceable in the short term, and current international opinion is against financing trade in wildlife. The message that some commerce is legal might translate into a flood of trade that would drive some species to extinction before management could be effective.

3. The resource is limited; we cannot manufacture bushmeat to match demand. Transport routes are key to managing demand. Currently they are not controlled, even though laws exist that allow for this to happen. Such management will require collaboration and signed agreements between *Eaux et Forêts* and private companies, as well as the Ministries of Interior and Transport. This will take time and finances.

4. Few robust data exist on wildlife population densities outside protected areas.

It will be impossible to set quotas until these data are gathered, and this would take an absolute minimum of one to two years. No funds currently exist for this, and capacity to carry out surveys across the country is grossly inadequate.

5. It is difficult to identify the species or origin of smoked and dried meats. Legal commerce of some species might hide commerce in other species.

6. Currently, *Eaux et Forêts* has no capacity in wildlife veterinary health. Inter-ministerial agreements with the Ministry of Agriculture or with private practitioners would be required if adequate public health controls for legal bushmeat markets are to be ensured. No finances currently exist for this.

7. International opinion is currently very favorable to recent environmental initiatives taken by Gabon. A move to develop a commercial trade without adequate controls might be viewed very negatively, and jeopardize international aid.

Conclusions

The debate did not reach definite answers to the three questions raised at the beginning. No definitive policy statement was attempted, although the feeling of the meeting seemed generally to be that opening of any commercial trade was premature, and that effective management in the immediate future would not be possible. The clearest role of WCS Gabon seems to be to continue to amass and make available relevant data for the decision makers, and to help facilitate the various partnerships and agreements that would be necessary for effective management, should the decision to legalize trade be taken.

Immediate actions suggested were:

- Production of a working paper in French that clearly shows: (i) the trends in bushmeat consumption in Gabon; (ii) the social, economic or biological reasons for them; (iii) the experience of others worldwide in trying to manage these trends; and (iv) possible policy options to combine popular wishes with attainable management goals.
- Publishing an economic analysis of the potential for taxation of the resource based on current market data and prices, salary levels for government staff and predicted quantities in a legalized trade.
- Publication of high quality scientific and policy papers to make the international community aware of this debate and the arguments for and against.
- Continued engagement with Government committees responsible for the process of legal revision to ensure they have the best information available to them.

APPENDIX 4: RESEARCH METHODS USED BY DIFFERENT WCS HUNTING STUDIES IN CENTRAL AFRICA

Hunting off-take rates by local people	Bushmeat markets	Estimating and monitoring abundance and density of wildlife	Questionnaire on bushmeat consumption in households	Household Consumption of meat and revenue
<p>Mbam-Djerem, Cameroon (D. Nzouango)</p> <p>Objective: Preliminary assessment of nature of bushmeat traffic from Mbam Djerem along two transport axes.</p> <p>The main points of the study were:</p> <ol style="list-style-type: none"> 1) people were suspicious, so we had problems at the start; 2) we worked with 10 hunters in each village (n=2) closest to Park. On Southern border, many refused to cooperate. The non-original citizens did not want to work with us and influenced locals; 3) data collection: local name, date, weight (most of the meat went out in canoes, but the observer entered boat to weigh the meat), species, where hunted, destination, condition of meat (smoked, etc.); 4) for 8 months, a WCS researcher visited each month; 5) data were collected every day by one assistant per village; 6) we had good cooperation from the 10 hunters surveyed in 	<p>Gabon (K. Abernethy)</p> <p>Objective: Estimate total mortality of animals throughout the country, in order to develop management strategies.</p> <p>This is done by assessing a known %age of markets, and extrapolating to the whole.</p> <p>The study included these components:</p> <ol style="list-style-type: none"> 1) obtaining statistics on the economy; 2) determining the quantity of and price of meat sold; 3) knowing all of the people involved in the trade chains; 4) realizing that it was better to sample whole days, not parts of them; 5) factoring in sales peaks in the middle and end of each month, and at holidays; 6) randomly selecting and stratifying across weekends, normal days, and holidays; 7) collecting data in 16 markets in 10 different towns across Gabon; 7) focusing on a set of 4-5 	<p>In and around Nouabalé-Ndoki NP, Congo (F. Maisels)</p> <p>Objective: Monitor the relative abundance of large mammals</p> <p>The main methods were:</p> <ol style="list-style-type: none"> 1) data were collected by walking along roads and looking for live animals, tracks and signs; 2) data collected: species, distance along road, time, days since rain; 3) the same methods were used at Wali Bai and in the north of the park-Mokabi survey; 4) GPS, georeferences, and ARCVIEW analyses were used in relation to pressures, habitat, etc.; 5) methods to minimize inter-observer bias included using the same observers and guides in different surveys. <p>In future, species-specific research on production levels of core hunted species (pigs, porcupines and duikers) is needed.</p>	<p>Gabon villages Gabon (M. Starkey)</p> <p>Objective: To determine hunting patterns in rural communities in Gabon.</p> <p>The study included these components:</p> <ol style="list-style-type: none"> 1) asking of all hunters after each hunt what they had hunted, and how much; 2) asking overall questions on products consumed; 3) verifying information by talking to children; 4) recording the date, local name of the hunted animal, cut of meat, price per unit, its origin (zone), method of hunting, destination of the meat; 5) questions about the household were posed to heads of households; 6) people's memories became unreliable after two days, so data recording took that into account; 7) surveys were done every day; 8) use of an assistant was important to collect reliable information. <p>Libreville (M. Starkey)</p>	<p>Household consumption of protein in northern Congo (A. Moukassa and G. Mavah)</p> <p>Objective: To determine if our management activities have an impact on bushmeat consumption and diets of the community.</p> <p>The study involved :</p> <ol style="list-style-type: none"> 1) a census of all households, each of which was given a number ; 2) determining what was consumed, at what price, and what influences consumption ; 3) at each of 4 sites, 20 households were selected, namely : 12 CIB staff, 4 non-working Pygmies, and 4 non-working Bantu; 4) each household was visited on 10 randomly selected days in a month; 5) we asked their permission to visit and investigate, but did not tell them on which days the visit would be; 6) if they refused, a coin was used to choose the left or right neighbor instead; 7) effort was concentrated in the villages and camps; 8) visits were made during meal times to observe what was consumed ;

each village.	<p>tables in each market;</p> <p>8) collecting data on: time of sale, number of traders, species sold (sometimes unknown), age (4 categories), quality, hunting technique, number of units sold, price, type of client.</p>	<p>Objective: Assess consumption of bushmeat in relation to standard of living of household.</p> <p>The study included these components:</p> <ol style="list-style-type: none"> 1) recording the person's nationality; 2) asking questions on revenue of the family, and the sources of that revenue; 3) they were given a table to fill in to choose their income category, allowing them to maintain privacy since the table gave wide ranges; 4) the assets of the family were assessed, by listing their material assets on a form. The overall value was calculated, and prices verified in shops; 5) data on bushmeat and domestic meat were recorded for that day and the two previous days. This included recording type of meat, species, quantity, quality (e.g., frozen, fresh,) and its origin. 	<p>9) information collected included: how bushmeat was obtained, for what price, from whom, from where, species, occupation of head of household, ethnic group, how they obtained the meat (e.g., exchange, gift), comments on situation (rain, vacation, no vehicles, etc);</p> <p>10) sometimes people did not want to share information. In those cases, children assisted with investigations by looking into pots and pans and the garbage;</p> <p>11) data collectors conducted surprise visits. Also, supervisors visited and checked assistants' reports by visiting the household and double checking data, and also assessing the attitude of people towards assistant to ensure that he was doing his work;</p> <p>12) data showed: (i) prices of bushmeat in relation to domestic meat; (ii) proportion of fish:bushmeat: domestic protein over time in relation to management;</p> <p>13) results were used to advise CIB on their importation system to provide non-bushmeat sources of protein for their staff.</p>
---------------	---	--	--

APPENDIX 5: STRENGTHS AND WEAKNESSES IN COMPONENTS OF AN EFFECTIVE SYSTEM FOR MANAGING HUNTING AND WILDLIFE TRADE BY COUNTRY.

1. LEGISLATION

PA = protected area.

NB. This table specifies what the law says in each country. This is often not reflected at all by what is happening in reality.

COUN- TRY	Does legislation need to be improved to allow us to do our job?	(a) Has the country signed CITES ? (b) Has it passed enabling legislation?	Is hunting legal?	Is hunting legal inside PAs?	Are certain hunting technologies controlled? (a) In PAs (b) Elsewhere	Is sale of wildlife legal?	Apart from CITES, are there import and export laws?	Are there closed seasons and/or bag limits?
CAMER- OON	Yes. Some contradictions exist in the 1994 law and some points need clarification.	Yes.	Yes, for hunting bushmeat and trophies, under license from MINEF. Law recognizes three classes of animals: (A) fully protected; (B) partially protected which can be hunted with a license; and (C) can be captured or hunted with permission of the Minister. B and C class animals can be hunted outside protected areas without a permit.	No.	In PAs – no hunting is allowed. Elsewhere, including in logging concessions, the following hunting methods are illegal: nighttime hunting with a flashlight; use of fire, poison, modern nets, and non-traditional weapons. Military arms, rifle- grenades, and locally made firearms are all prohibited by law. Also, the Ministry of Interior has rules on owning arms and buying ammunition. Gun license owners can legally buy ammunition up to a legal annual quota.	Bushmeat trade is illegal. Trophy hunters are not allowed to sell the meat but must give it to the local community. There was a decree that allowed trophy hunters to sell the carcass but it was revoked. Transportation and sale of live animals is regulated and requires special permits, in theory.	Import and export laws conform with CITES requirements. The legality of safari hunters exporting their trophies is unclear.	For bushmeat hunting, there are no bag limits, but a closed season from May to November. However, customary rights to hunt non-protected species all year for local consumption are recognized. Trophy hunting has the same closed season (except for June which is open) and quotas for each trophy species are set within each safari concession.

COUN- TRY	Does legislation need to be improved to allow us to do our job?	(a) Has the country signed CITES ? (b) Has it passed enabling legislation?	Is hunting legal?	Is hunting legal inside PAs?	Are certain hunting technologies controlled? (a) In PAs (b) Elsewhere	Is sale of wildlife legal?	Apart from CITES, are there import and export laws?	Are there closed seasons and/or bag limits?
GABON	Yes, certain details need revision. New laws passed 31 December 2001, decree in development. Current thinking in the government is to move towards a legal and regulated bushmeat trade in rural areas (see Appendix X).	Yes, although enabling legislation is not complete.	Yes with a permit, except for: (i) fully protected species and large mammals (elephants, buffalo, apes, bongo, red river hogs; (ii) female and juvenile animals.	No.	In PAs – no hunting is allowed. Elsewhere, including in logging concessions, the following hunting methods are illegal: hunting at night; use of cable snares, high powered rifles, dogs and nets, and poisons.	In villages, it is allowed. In towns, it can only be done under license. There is a provision for licensed sale to restaurants in towns and in town markets, but no mechanism for issuing licenses exists so all urban trade is currently illegal.	No.	Yes. The closed season runs from 15 Sept to 15 March. Bag limit is 3 animals of the same species per bag, and not more than 9 species per bag.

COUN- TRY	Does legislation need to be improved to allow us to do our job?	(a) Has the country signed CITES ? (b) Has it passed enabling legislation?	Is hunting legal?	Is hunting legal inside PAs?	Are certain hunting technologies controlled? (a) In PAs (b) Elsewhere	Is sale of wildlife legal?	Apart from CITES, are there import and export laws?	Are there closed seasons and/or bag limits?
R CONGO	Despite its flaws, the existing law is workable. Some points recommended to the government during a recent (2001) revision process included: (i) reexamine protected categories of particular species; (ii) change the policy on closed hunting seasons to reflect the biology of species and seasonal differences between north and south Congo ; (iii) ban export of bushmeat; (iv) gazette community hunting zones.	Yes.	Yes, for sport and traditional hunting.	In national parks – no. In Community Reserves and safari hunting areas – yes.	In national parks – no hunting is allowed. Elsewhere, including in logging concessions, the following hunting methods are illegal: hunting at night; snarres, use of dogs.	Yes according to quotas under small game permits.	Yes. A permit system regulates imports and exports for scientific purposes, and for trophies. A certificate of origin is required.	Yes. The closed season runs from Nov to April.

COUN- TRY	Does legislation need to be improved to allow us to do our job?	(a) Has the country signed CITES ? (b) Has it passed enabling legislation?	Is hunting legal?	Is hunting legal inside PAs?	Are certain hunting technologies controlled? (a) In PAs (b) Elsewhere	Is sale of wildlife legal?	Apart from CITES, are there import and export laws?	Are there closed seasons and/or bag limits?
DR CONGO		Yes.	Yes, if methods used are sustainable and conform to the hunting law (Law no 82-002 of 28 May 1982). Law recognizes three levels of protection: (A) fully protected, for which all hunting is prohibited; (B) Partially protected, for which hunting is allowed with a license; (C) unprotected. The law specifies nine types of hunting licenses. Each license is valid for one hunting year.	In National Parks – no. In Aires de Chasse, Domaines de Chasse, and in some Réserve Partielles de Faune, hunting of category B and C species is legal when a license is granted for hunting particular species.	In national parks – no hunting is allowed. Elsewhere, including in logging concessions, the following hunting methods are illegal: wire snares, firearms, spot lights, metallic fastenings and closures, and <i>filets de tenderie</i>	No, unless an "exemption" has been issued the the relevant Ministry.	Yes. Without authorization from the Ministry, it is forbidden to import or export wildlife.	Yes. To allow wildlife populations time to recover, the Ministry can close the hunting season for all or some species in a particular area or in a region for a specified period. NB. In the Okapi Faunal Reserve, no closed seasons have been declared for the past 11 years. To reverse wildlife declines, local people are demanding the restoration of closed seasons.

2. RESEARCH. WHAT DO WE KNOW? DO WE KNOW ENOUGH TO ENABLE EFFECTIVE MANAGEMENT?

Data Availability and Organization:

- ++ Available and synthesized, i.e., obtainable
- + Available but need extracting/compiling

COUNTRY	Subsistence hunting: Do we know (a) Who hunts? (b) How much? (c) Why? (d) Sustainability?	Sport hunting: Do we know (a) Who hunts? (b) How much? (c) Sustainability?	Professional/commercial/non- resident hunters: Do we know (a) Who hunts? (b) How much? (c) Sustainability? (Professional=hunting species with high commercial value)	Do we know the scale of the domestic trade? i.e. how much is sold? What spp.? Where? Price structures of trade?	Do we know if there are significant exports and/or imports? What spp.? Scale of trade?	Do we know trade routes (internal and international) and ultimate destinations?
CAMEROON	At national level, no data are available on the scale or impacts of subsistence hunting. At Banyang Mbo, good data are available on hunting by local people for subsistence and local sale, and on the impacts on wildlife populations. Preliminary data are now available on hunting off-takes, types of hunters and hunting and impacts on wildlife populations for the eastern and southern regions of Mbam Djerem. For both areas, data show that hunting is unsustainably high.	All sport hunting companies are non- national and known to the government. Though quotas are set the government does not have a clear sense of the total off-take as they depend on the safari operators to report trophy taken, and quotas are probably being exceeded.	At national level, no relevant data exist. For Banyang Mbo, we know that very little hunting is done by outside professional hunters. In Mbam Djerem, by contrast, most hunting is by outside, commercial hunters, and data on the lack of sustainability of this hunt are now available.	At national level, no relevant data exist, although the Ministry has a database of wildlife confiscated at roadblocks and in markets. Some data exist for particular localities, e.g., good data are available for Banyang Mbo area, and preliminary data now exist for the eastern part of Mbam Djerem.	No relevant data exist.	In general, bushmeat source locations are areas of low population density, or ones with recent logging. Bushmeat is transported by road and by CamRail., with Yaounde and Douala being the primary destinations.
GABON	a) + Analysis underway. b) + Analysis underway. c) + Analysis underway. d) No – we need more data on abundances of species hunted.	Not applicable – no sport hunting is done.	a) + b) + c) Unsustainable for gorillas and chimpanzees. Not enough data on abundances for other species.	+ Yes to all, and analysis is underway. Data from south- western Gabon are still lacking.	No data available, except for official CITES exports/imports statistics.	Internal – yes. International – no.
R CONGO	At national level, no data are available. But very good data exist and have been written up for all aspects of subsistence hunting in	Sport hunting was shut down throughout the country in 1999. Prior to that, WCS monitored off-takes.	Studies on bushmeat traffic in Impfondo and Ouesso were completed in 2001, and have been done for the Kobo and Pokola logging concessions.	At national level, no relevant data exist. Detailed data are available and written up for the Kobo and Pokola logging concessions,	No relevant data exist.	Yes; main cross- border trade routes for bushmeat are known, although the type and scale of traffic is

COUNTRY	Subsistence hunting: Do we know (a) Who hunts? (b) How much? (c) Why? (d) Sustainability?	Sport hunting: Do we know (a) Who hunts? (b) How much? (c) Sustainability?	Professional/commercial/non- resident hunters: Do we know (a) Who hunts? (b) How much? (c) Sustainability? (Professional=hunting species with high commercial value)	Do we know the scale of the domestic trade? i.e. how much is sold? What spp.? Where? Price structures of trade?	Do we know if there are significant exports and/or imports? What spp.? Scale of trade?	Do we know trade routes (internal and international) and ultimate destinations?
	the Kabo and Pokola logging concessions, and for the villages near Nouabale-Ndoki.		In Bonassa, no such hunting exists. It is just building up in Makao, so studies there will be initiated.	and for Bonassa and Makao.		unknown. Ivory is known to go from Brazzaville to Douala by road, river and aeroplane, and to South-east Asia, probably via West Africa.
DR CONGO	At national level, no data are available. At Ituri, the main hunters and broad hunting patterns are known, although the information needs updating, and no data are available on sustainability of the hunt.	No sport hunting is currently taking place throughout the country.	It is known that the professional hunters are soldiers, seeking elephant tusks for sale. The scale of this is unknown.	At national level, no relevant data exist. In Ituri, Detailed studies showing the changes from subsistence to market hunting, and all of the implications on sustainability of hunting on the different prey species, have been conducted over many years by a series of authors.	Although there are no hard data on the issue, it is known that bushmeat is circulating within DRC and it is neither imported nor exported. Elephant tusks and trophies are certainly exported. In addition, anecdotal evidence suggests that okapi and leopard skins might be exported to Uganda.	Insufficient information is currently available.

3. AWARENESS AND EDUCATION

Awareness broken into two components: of hunting being a problem for wildlife, and of trade being a problem for wildlife.

COUNTRY	Is awareness of the issue among senior Govt. officials (a) High (b) Medium (c) Low (d) variable?	Is awareness of the issue among Govt. ground staff (a) High (b) Medium (c) Low (d) variable?	Is awareness of the issue among rural communities (a) High (b) Medium (c) Low (d) variable?	Is awareness of the issue among urban communities (a) High (b) Medium (c) Low (d) variable?	Is awareness of the issue among International/in-country donors (a) High (b) Medium (c) Low (d) variable	What is WCS doing to increase awareness on this issue?	What are others doing to increase awareness on this issue?
CAMEROON	Hunting: High Trade: High	Local forestry officers know that commercial trade is illegal but maybe that it is unsustainable. Their own role in law enforcement is often unclear, as is their confidence in receiving the necessary support to do this.	Old people are often aware that wildlife is declining due to hunting is responsible. Younger people that have lived with depleted wildlife populations often do not recognize declines and the role of hunting.	No data, but there is a sense that urban people just see bushmeat in markets and do not have a real picture of the problem.	High. All donors in Cameroon are aware that hunting and wildlife trade are problems. The primary environmental concern of donors in the past was logging and shifting cultivation, but now it is bushmeat.	At national level, WCS is working with MINEF to help them better understand the bushmeat issues and to improve the legislation. In Banyang Mbo and Mbam Djerem, environmental education programs use calendars, workshops, working with hunters, and theater.	WWF has an information unit in Yaounde that supports MINEF with leaflets and posters, and provides radio materials and TV programming. SNV has programs with MINEF to sensitize local communities. ECOFAC works around the Dja to sensitize local populations. GTZ does some environmental education.
GABON	Hunting: High Trade: High	Hunting: High, especially in and around protected areas. Trade: High.	Hunting + Trade: Awareness of it being a general problem is high at a local level, although recognition that it is a problem everywhere in Gabon is lacking, as is knowledge of the details of the law.	Hunting+ Trade: There is a general awareness that it is a problem, but not of its scale or immediacy.	Hunting + Trade: High among conservation-focused donors, much less among other donors.	Results of the national-level study of the trade are beginning to be publicised. A forthcoming project will incorporate monitoring into the wildlife department's activities. A local environmental education program is being conducted at Lopé.	WWF at Gamba and Minkébé, and ECOFAC at Lopé have local awareness campaigns. <i>Amis de Pangolin</i> produce an environmental newsletter and <i>Aventure sans Frontière</i> focus on sea turtles. Peace corps have an environmental education program, but it does not focus on bushmeat.

COUNTRY	Is awareness of the issue among senior Govt. officials (a) High (b) Medium (c) Low (d) variable?	Is awareness of the issue among Govt. ground staff (a) High (b) Medium (c) Low (d) variable?	Is awareness of the issue among rural communities (a) High (b) Medium (c) Low (d) variable?	Is awareness of the issue among urban communities (a) High (b) Medium (c) Low (d) variable?	Is awareness of the issue among International/in-country donors (a) High (b) Medium (c) Low (d) variable	What is WCS doing to increase awareness on this issue?	What are others doing to increase awareness on this issue?
R CONGO	Low for both hunting and trade throughout country, except in Nouabale-Ndoki and the surrounding logging concessions where it is high.	Low throughout most of the country, except in Nouabale-Ndoki and the surrounding logging concessions where it is high.	Low throughout most of the country, except in Nouabale-Ndoki and the surrounding logging concessions where it is high, although it is deteriorating in Makao.	Variable. In Pokola, it is high; in Ouesso and Impfondo medium, but is generally low elsewhere.	Variable. For those who have been involved in Pokola and Kobo, it is high, but for others it is medium to low.	At national level: Films on Congo TV, regional and national workshops, primary school education curriculum for protected species, training, regional teacher seminars, advising Govt officials, WCS calendar, t-shirts, posters for large mammal conservation, education work with NGO in Ouesso. In Pokola and Kobo: Nature club, organized campaigns, films on Pokola TV, popular meetings, focus groups, teacher training, employee education, hunter education, High level advising to the company and Regional Director, meetings with labor unions WCS calendar, t-shirts, posters for large mammal conservation.	Some national NGO activity in awareness. The most effective are in Lac Tele area, <i>Alliance Nationale pour la Nature</i> in Brazzaville, and APTDS in Ouesso. The Ministry also has sporadic publicity programs, Congo TV and Radio Congo broadcast regular programs on the environment.
DR CONGO	Low for both hunting and trade throughout the country. This is due to the lack of data -- hunting has never been treated as a central	Low for both hunting and trade throughout the country. This is due to the lack of data -- hunting has never been treated as a central	For those around Inuri, high for both hunting and trade. Concerns have been expressed, and actions to alleviate the problems being	Unknown, although it seems that most urban dwellers do not know what is happening on the ground.	Donors know that bush meat hunting and trade might be problems. However, the lack of data has prevented them from acting on the	Nothing has been done at a national level so far. However, there is a need for have a comprehensive study on the issue. The landscape approach gives WCS the opportunity to conduct studies on a larger scale.	As far as is known, no other organization is addressing the issue. There is a real lack of data.

COUNTRY	Is awareness of the issue among senior Govt. officials (a) High (b) Medium (c) Low (d) variable? never been treated as a central theme in conservation in DRC.	Is awareness of the issue among Govt. ground staff (a) High (b) Medium (c) Low (d) variable? theme in conservation in DRC.	Is awareness of the issue among rural communities (a) High (b) Medium (c) Low (d) variable? requested.	Is awareness of the issue among urban communities (a) High (b) Medium (c) Low (d) variable?	Is awareness of the issue among International/in-country donors (a) High (b) Medium (c) Low (d) variable ground.	What is WCS doing to increase awareness on this issue?	What are others doing to increase awareness on this issue?

4. NATIONAL GOVERNMENT CAPACITY

Definition of capacity: 2 components:

- (1) Technical (T) – individual staff having the knowledge and skills needed to do the job (including knowing their wildlife, knowing the law and how to enforce it:
- (2) Physical (P) – staff numbers are sufficient, and they have the necessary equipment, facilities and support to do their job.

COUNTRY	Is capacity within the country to enforce laws and regulations in protected areas (a) High (b) Medium (c) Low (d) Variable?	Is capacity within the country to enforce laws and regulations in logging concessions (a) High (b) Medium (c) Low (d) Variable?	Is capacity within the country to enforce laws and regulations in markets (a) High (b) Medium (c) Low (d) Variable?	Is capacity within the country to educate communities on these issues in rural areas (a) High (b) Medium (c) Low (d) Variable?	Is capacity within the country to conduct research and monitoring on these issues in town markets (a) High (b) Medium (c) Low (d) Variable?	Is capacity within the country to conduct research and monitoring on these issues in habitat areas (a) High (b) Medium (c) Low (d) Variable?
CAMEROON	T: Low P: Low. Most importantly, staff do not have the political support of their superiors to enforce the laws. In Banyang Mbo, WCS helps to provide political support to facilitate some law enforcement.	T: Low P: Low. A MINEF <i>chef de poste</i> is in each logging concession, but must rely on the logging company for logistical support so is usually ineffective.	T and P: Variable. MINEF sporadically enforces the laws in some markets but it is not systematic or regular.	T and P: Variable. Where NGOs provide support for the government (e.g., in Banyang Mbo and now in Mbam Djerem), capacity is greater than in other areas.	T and P: Government capacity low.	Low.
GABON	Private sector companies in forestry have the capacity, but do not use it for enforcement of hunting. The government does not have sufficient resources to force T and P: Low.	Private sector companies in forestry have the capacity, but do not use it for enforcement of hunting. The government does not have sufficient resources to force	T and P generally low, but higher in towns than rural areas. In Libreville and in larger towns, some government capacity exists, although even there, motivation is low.	Low. No national policy or campaign of public education. Even the efforts of NGOs which have done some poster series are sporadic and uncoordinated.	Medium. Technical capacity exists, but financial support is lacking, especially for long term programmes	Medium. Technical capacity in faunal surveys is very good, but financial support lacking. Technical expertise in socio-economics is reasonable, but lacks coordination and

		private sector companies to comply.					logistical and financial support.
R CONGO	Variable. Where there is NGO presence: T: High P: Variable. Without NGO presence: T: Medium P: Low.	Variable. Where there is NGO presence (in Kabo-Pokola: T: High P: High. In other areas: T: Medium P: Medium.	Variable. Where there is NGO presence: T: High P: Variable. Without NGO presence: T: High, especially general understanding of laws. P: High , but staff are not willing to enforce. T&P: Non-existent	Variable. Where there is NGO presence: T: High P: High to medium. Without NGO presence: T: High P: Low.	Variable. Where there is NGO presence: T: High to medium P: High to medium. Without NGO presence: T: Low P: Medium.	Variable. Where there is NGO presence: T: High to low P: High to medium. Without NGO presence: T: Low P: Low	Variable. Where there is NGO presence: T: High to low P: High to medium. Without NGO presence: T: Low P: Low
DR CONGO	T: High. ICCN is one of the best conservation agencies in Sub-Saharan Africa. P: Low. Shortage of staff at the highest level. In PAs, staff are underpaid or unpaid, and depend on international support for their salaries. E.g., in Okapi Faunal Reserve, staff numbers and level of training are the highest in DRC, but this is due to technical support and funding from WCS, GIC and UNESCO. In other areas, problems include the small proportion of the reserve under the control of ICCN staff, with the remainder being controlled by various conflicting rebels and militias e.g., Maiko, Kihuzi-Biega.	T and P: Non-existent, although data on which to base management exists in certain areas, e.g., around Okapi Faunal Reserve, where data collected by CEFRECOF with WCS support. There is a need to assess the country's capacity (both technical and physical) to enforce the law in logging concessions.		T: Medium. However, staff need a national framework in which to operate. P: Low.	T&P: Capacity is there, but needs a clear vision and national framework.	T: High P: High.	

Notes
