

Recipes for Survival: Controlling the Bushmeat Trade

Report 2006

Across the globe, forests are being treated as convertible, rather than renewable resources. The consequences of the bushmeat trade for endangered species, biodiversity and people are no longer in doubt – unless a concerted, multifaceted effort, equal in gravity to the severity of the crisis is initiated, the ‘empty forest syndrome’ will be realised in the foreseeable future.



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World Society for the Protection of Animals
25 years of animal welfare 1981-2006



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Recipes for Survival: Controlling the Bushmeat Trade

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Funded by the World Society for the Protection of Animals

Cover:
Black-fronted
duiker carried by
poacher, DRC

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Acknowledgments

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We would also like to recognise the role of our families and friends for their support and tolerance during many late nights and working weekends.

Executive Summary

The bushmeat trade provides a staple in the diet of the people of West and Central Africa, as well as in many other parts of the world under different names (wild-meat, game, bush-tucker, chop, etc.). Over a thousand species are hunted/traded, from caterpillars to elephants, but many of these species are facing population crashes through over-exploitation for commercial purposes. This 'bushmeat crisis' will inevitably lead to species extinction and consequent protein shortages unless it can be brought under control. There are also serious public health concerns regarding potential zoonoses on poorly preserved bushmeat. Thus, for bushmeat to be acceptable, it must be legal, sustainable and disease-free (or 'LSD', Redmond, in press). In other words, Legal – no hunting or trading of protected species or hunting in protected areas; Sustainable – numbers hunted must be less than or equal to reproductive capacity, and Disease-free – markets should be subject to meat inspections and other public health regulations the same as domestic meat.

These are the standards that, if enforced, would protect endangered species, public health, food security and sustainable livelihoods. In an ideal world, the animals would also be killed using humane methods, thereby reducing animal suffering too.

Bushmeat and apes

Despite the wide range of taxa and the complex issues involved, media coverage of the 'bushmeat crisis' has focused largely on the great apes. Bushmeat, however, is seldom ape-meat. Surveys of African markets have shown that ape-meat, if present, comprises only one or two per cent of the trade (Stein, 2002b); the rest is mostly meat of forest ungulates, large-bodied rodents and monkeys. Even so, ape populations decline under almost any level of hunting, because they reproduce so slowly and the sudden death of key individuals disrupts their complex societies.

What of the few cultures for whom eating apes is a tradition? It is important that people who grew up thinking it normal to eat gorilla, chimpanzee or bonobo body-parts, are not demonised by those who balk at the thought. But equally, people who do eat apes must realise that they will stop doing so soon. At current inferred rates of decline – there will simply be none left within our lifetime. Surely it is better to stop now, by choice, than later by extinction?

Conclusions

This review set out to examine the current state of knowledge of the bushmeat trade, and how the conservation community has reacted to the bushmeat crisis. Many organisations have raised money to respond to the threats posed to charismatic endangered species; it is interesting to note how this money has been applied. In summary, the results show:

- Hundreds of species are being hunted for food but surprisingly, preliminary results show that 45 per cent of them are insects, and only 23 per cent mammals and 20 per cent bird species.
- 27% of recorded mammals, 63% of birds, 61% of reptiles and 35% of amphibians hunted are listed by IUCN as endangered or vulnerable to extinction.
- The greatest number of recorded bushmeat projects concern research at 24%, then education at 11% and protection 9%. Very few projects address the issue of providing alternative protein sources, better management of wildlife or alternative livelihoods.
- The number of projects commencing per year increased dramatically in 1999 and 2000; the first Ape Alliance bushmeat review was published in 1998.
- The Democratic Republic of Congo (DRC) has the most projects (58), followed by Cameroon (53), Gabon (35) and Congo (23), but most countries have only one or a handful. The USA ranks third with 47 projects, but these are mainly awareness raising and education.

How can the bushmeat trade be controlled?

Whilst it is clearly necessary to understand a problem before designing a solution, there is a growing feeling that more research is not the top priority at this stage. Other activities urgently need funding if the bushmeat trade is to be reduced to sustainable off-take levels of legally hunted species. These activities include (in no particular order):

Education – is needed at every level of society, and materials/activities must be tailored to the target audience: in villages with hunters and traders, in urban markets/restaurants with traders and consumers; law-enforcement agents, judiciary and decision-makers. Further funding is also needed for NGOs and Education Ministries to reproduce educational materials for schools and wildlife centres. Training should be provided for environmental journalists to increase the number and quality of articles in local press and stories on local radio/television news channels. The Great Ape Film Initiative has established a system of increasing the number of ape documentaries shown in range states, but it limited by lack of funds.

Wildlife law enforcement and prosecution – is weak throughout the regions where bushmeat is traded. There is an urgent need to:

- build the capacity of law enforcement agencies,

- provide incentives for wildlife law enforcement officers, e.g. set up open and transparent bonus and award schemes for good work
- train officers in evidence gathering and preparing cases for prosecution
- give training in wildlife law to members of the judicial system, and
- publicise fines and prison sentences to deter others.

These are the approaches practiced by the Last Great Ape Organisation (LAGA) in Cameroon. Following reports of initial successes using this approach in Cameroon, LAGA has been requested by DRC authorities to advise on setting up a similar project there, and other African countries are showing interest. This suggests a need to run training courses and possibly explore secondments in Cameroon for officials from surrounding countries. One might also investigate the secondment to the region of enforcement officers or members of the judiciary from UK/Europe to work with counterparts in building capacity.

Sanctuaries and Wildlife Centres – play an important role in housing confiscated live animals and serve as centres for education and awareness-raising of the bushmeat crisis. Some countries which have a significant problem with live animal trade and illegally held pets, still have nowhere to house confiscated animals, and so confiscations are rare and require special arrangements each time.



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The country from which many of the confiscated African forest primates originates is the DRC. Sanctuaries in Kenya, Zambia, South Africa (via Angola), etc are full of smugled primates – especially chimpanzees – from DRC. But apart

from Lola ya Bonobo, there are no adequate facilities in DRC, and so few confiscations. As part of the DRC National Great Ape Survival Plan (NGASP), there is a move to convert DRC's three zoos (Kinshasa, Kisangani and Lubumbashi) into sanctuaries/wildlife education centres. If a firm commitment that meets the concerns of NGO partners can be reached, we will have the opportunity to do for chimpanzees and other illegally traded wildlife, what Lola ya Bonobo has done for bonobos.

Gabon also has an illegal wild animal trade and no facility to house confiscated animals – hence, no confiscations, and no law enforcement or prosecutions. The draft Gabon NGASP highlights this need, and seeks support for a sanctuary to be established for this purpose.

Above:
Chimpanzee orphans at the Tacugama Chimp Sanctuary, Sierra Leone

- Alternative protein** – is the corollary of improved law enforcement. If the bushmeat trade in legal species is to be reduced to sustainable levels, and the illegal trade stopped, alternative sources of protein must be introduced to the system. These might include:
- vegetable protein sources (nuts, mango-kernels, soy beans, smoked textured vegetable protein (TVP))
 - domestic animals: improved husbandry of traditional domestic stock;
 - developing methods of humane farming of wild species, such as grass-cutters, land-snails, farming edible insects – an as yet untried option with many advantages –

perhaps adapting the methods used for silkworms to suitable African species (this has been done for silk rearing in Uganda, but not yet as a food source).

- managing sustainable hunting of legal species in forests (where hunting is allowed).

These are effectively business opportunities for enterprising entrepreneurs, and therefore more likely to appeal to development organisations. It is, however, an important measure to support, so interested donors could, for example, hold seminars advising bushmeat dealers of how to source alternatives, perhaps making small loans to set them up in business importing or manufacturing smoked vegetable protein products designed for bushmeat consumers.

Alternative livelihoods – are one way of removing poachers from the bushmeat trade. Jobs in conservation, research, tourism, cultural crafts and displays, improved farming techniques, sustainable harvest of Non-Timber Forest Products all present possibilities.

Bio-monitoring – is essential for good wildlife management; the training of communities and/or rangers to gather data on the health of the forest, species numbers, and also the health of human population in and around hunting zones, are important measures in establishing a system to control the bushmeat trade. Where existing projects have established a formula that works, these should be expanded or replicated (with necessary adaptations for local differences) in another area of high-biodiversity value habitat under threat from commercial bushmeat hunters.

Protection of species function, not just survival of species

For more than a century, protected areas have been at the centre of conservation thinking, and efforts have concentrated on ensuring that protected areas include representative populations of important species. This gives the impression that as long as a population of a species survives somewhere, then we have achieved our conservation goal. But preventing total extinction is surely a last resort goal, and we should not be setting this last resort as our target. Such a goal (and much of the popular conservation literature) carries with it the idea that species are like living ornaments that it would be a shame to lose, and ignores the important role each species plays in the ecology of the habitat that evolved with it. Large mammals in particular, such as apes and elephants, play such an important ecological role – dispersing seeds in their dung, pruning trees as they pluck leaves and creating light gaps in the canopy as they break branches – that they are sometimes referred to as the gardeners of the forest. As such, they are needed in habitats which have evolved to depend on them across the whole of their historical range, and in densities appropriate to their function. If we value forests for the products and services they provide, and want healthy forest ecosystems, is it not foolish to shoot the gardeners?

Preface

It is a decade since WSPA drew the world's attention to the Slaughter of the Apes.

The report was influential in triggering the launch of the Ape Alliance in 1996 and the commissioning of The African Bushmeat Trade – Recipes for Extinction, a detailed review of what was then known about bushmeat trade (Ape Alliance, 1998). There has since been a flurry of academic and NGO activity, and a widespread recognition of the bushmeat crisis by governments and inter-governmental agencies. This new review was commissioned in late 2004 by WSPA to summarise the current state of knowledge of the bushmeat trade, and assess what is being done to solve the problems that this largely unregulated trade causes. It is hoped that the database of projects and references compiled will be of use to all those interested in this issue, and that the conclusions drawn will help to guide the application of funds in the future. For further details on the database, see Section 6

As well as the Ape Alliance network, resources used in researching and compiling this report include the scientific literature, reports from organizations involved in the bushmeat issue, media and news reportage, documentaries, personal contacts and the World Wide Web.

Species analysis:

The IUCN Red List website (www.redlist.org) was the principal resource for compiling the species database, which was developed with information from the scientific literature, reports and research data from concerned organisations.

The databases presented in this report are by no means exhaustive, but represent a detailed overview and are designed to be used and expanded upon. Likewise, the graphs and figures generated from our data are thorough but not fully comprehensive and should be used as an interpretative tool.

The data and research presented here should be treated as an active, ongoing resource and as such, comments, corrections and further contributions are welcome. With effective communication, the ever-changing international bushmeat crisis can be

tackled with appropriate and novel solutions.

Comments and corrections should be sent to: BushmeatWG@4apes.com

Taxonomic note:

Except where indicated otherwise, this work follows Groves (2001), which recognises two species in each of the three great ape genera, *Gorilla*, *Pan* and *Pongo*. We note the newly described sub-species of Eastern Chimpanzee, *Pan troglodytes marungensis* described in Groves (2005).

The authors are grateful to WSPA for funding this research, and to all the organisations and individuals who contributed information and their thoughts and opinions. The list of organisations is appended in Appendix 3, but in particular we would like to thank the Bushmeat Crisis Task Force and the members of the Ape Alliance for responding to our questionnaire and subsequent emails. Any mistakes or omissions are solely our responsibility, and we encourage readers to send us corrections and updates.

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Introduction

1



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It is ten years since the alarm bells first began to ring about the bushmeat crisis, as the booming trade in the meat of wild animals quickly became known. In this decade, we have seen bushmeat rise from a fringe concern of a few NGOs to being firmly on the international agenda, of equal concern to both conservation and development agencies.

The problems raised by the commercial bushmeat trade – whether its activities are legal or illegal – are complex, and any solutions proffered must reflect this. Bushmeat cuts across concerns about endangered species and biodiversity loss, poverty alleviation, food security, livelihoods and the sustainable utilisation of natural resources. The problems it raises are widespread and cannot be approached in isolation from other global environmental challenges, such as climate change, desertification, declining marine fish stocks and emerging diseases in an increasingly crowded world.

Prevailing scientific opinion is that we are entering a period of mass extinction, for which the human species is almost entirely accountable. The geographic nuclei of these extinctions are areas where human populations and pressure from hunting and agriculture are most intense (Ceballos & Ehrlich, 2002). Human use of biodiversity is natural, but the scale of that use has risen exponentially in the past century.

Above: Legal traditional hunters butcher a duiker, Central African Republic

Opposite: Bushmeat vendor, DRC, with monkey carcass, smoked to preserve meat.

Despite progress in agricultural productivity and plantation forestry, natural biodiversity is still important to humans in providing food security, micronutrients, medicines, fuel, construction materials, raw materials, farming inputs (such as fodder, compost, fencing and stakes), ecosystem services (such as soil, water-shed, pollinator and wildlife habitat) and as an asset convertible into other assets, such as savings, investments, barter or trade (ABCG, 2004).

Though for decades deforestation has been cited as the most immediate threat to tropical wildlife in forest habitats, popular contemporary belief is that hunting is cause for greater concern. The term 'empty forest syndrome' (Redford, 1992) has now been introduced in recognition of major global anxiety over commercialised hunting and the widespread prediction that large species will disappear long before the forests do. 'Empty savannah syndrome' is also becoming a reality, with the rise of commercial bushmeat trade from savannah habitats in Africa and elsewhere.

Traditionally, decision-makers and forest managers in the developed world have disregarded the value of non-timber forest products to people, ranking them below the more productive timber industry (Nasi, 2001). The subsistence of traditional forest people on wildlife has occurred since humans first evolved, but the past decade has seen a drastic increase in the amount of wild meat being removed from forests (Wilkie & Carpenter, 1999). People eat bushmeat because it is affordable, familiar, culturally traditional or prestigious, and because it tastes good and adds variety to domestically-cultivated protein (Wilkie *et al.*, 2005). Economic recession over the past 20 years has driven the commercialisation of bushmeat as a trade item, and today, bushmeat

reaches international markets as part of the US\$159 billion annual global wildlife trade (Wasser *et al.*, 2004).

Even in the world's most productive ecosystems, modern hunting has proved to be unsustainable, and in tropical forests, where the meat productivity is too low to support even subsistence hunting if the human density is more than about one person per square kilometre, the threat posed by commercial trade is acute (Barnett *et al.*, 2002). Moreover, in forested habitats, where wildlife is difficult to observe, the impact of hunting may go undetected until after the damage is too severe to rectify (Wasser *et al.*, 2004).

The bushmeat crisis is a complex, multifaceted issue that poses one of the most challenging problems in contemporary conservation. An all encompassing description was devised by Maitka and Trivedi in 2002:

"Wildlife populations and the livelihoods of people in many countries are threatened by escalating unsustainable use of wild meat, driven by increasing demand due to human population growth, poverty and consumer preferences and aggravated by problems of governance, use of increasingly efficient technology and provision of hunting access in remote areas by logging roads."

Awareness of and support for addressing the crisis was instituted during the mid-1990s and has since been mainstreamed by wildlife and humanitarian concerns, along with the global health implications of hunting and eating bushmeat. Much work has already been carried out to combat the bushmeat trade, yet despite progress, hunting still continues unabated.

In this report, we will explore the current status of the bushmeat trade, both in broad terms and for primates in particular. We will outline the scale and consequences of hunting and the factors and stakeholders driving it. We will assess what has already been achieved and what successes need to be built upon to bring about further change.



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History

2

Wildlife has been hunted for food since humans first evolved, but this has only recently become a problem of crisis proportions. In rural Africa, people have traditionally generated income by growing and selling rice, coffee, cacao, cotton and peanuts; hunting wildlife for meat was mostly subsistence-motivated or for barter. Historically, in Congo and Cameroon, bartering existed between Baka pygmies and Bantu farmers, who exchanged wild meat and agricultural produce respectively (Pearce & Ammann, 1995). Subsistence hunting is still important today in these communities (Matsura, 2004).

The past 20 years has seen a degradation of roads and trading routes in the war-torn regions of the Congo Basin, making it difficult to transport bulky agricultural goods to markets (Wilke & Eves, 2001). The commercial bushmeat trade emerged here due to the imperative of rural people to replace their incomes with relatively high value, easily transportable goods such as bushmeat and/or ivory. Hunting camps were soon established by migrants suffering economic hardships in outlying cities; they proved even less inclined to practice restraint than rural hunters nutritionally dependent on wildlife. It has now become difficult to differentiate subsistence and commercial hunting (Bower-Jones & Pendry, 1999).

The sudden boom in the bushmeat trade was facilitated in no small way by the logging industry. Traditionally, hunters would have to trek for days to reach new hunting areas, carrying snares, spears, bows and arrows and bringing back only what bushmeat they could physically carry. Logging provided road access to remote areas, as well as cheap transport for importing large numbers of carcasses to urban markets, thereby increasing capacity to hunt and inflating profitability of the trade. Furthermore, shotguns became more readily available after the colonial period (Barnes, 2002) and were virtually universally adopted by anyone who could afford to buy one (or hire one from an entrepreneur) to increase hunting success. Thus, for a small investment, the economic pay-off was substantial, and uncontrolled hunting became widespread.

Today, bushmeat continues to be an economically important food and trade item. Much evidence exists to show that, for most species, the current level of hunting is unsustainable.

Opposite: Lorry transporting

timber from primary rainforest, Sabah, Borneo.



The broader bushmeat issue: current situation

3

There are two broadly opposing academic views of the bushmeat 'crisis', which can be characterised as:

- (i) Anthropocentric – in which declining stocks of prey species are seen as loss of a human resource, leading to:
- threat to livelihoods
 - threat to food security
 - threat to cultural values
 - loss of other potential human uses of ecosystem, e.g. ecotourism, NTFPs (non timber forest products), bio-prospecting.

- (ii) Biocentric, in which the same situation is seen in terms of a loss of biodiversity:
- common species become rare, endangered species become extinct
 - breakdown in ecological processes
 - local loss of ecological services leads to negative impact on biosphere, ultimately affecting all life-forms.

These views are sometimes characterised as 'pro-people versus pro-wildlife', but the reality is much more complex than that; efforts to aid sustainable development are hampered by political and economic factors far removed from the biological systems on which they depend, and yet the destruction of those systems due to over-exploitation will negatively impact on the very people the aid is designed to help (for a discussion of these issues, see Robinson, 2006, versus Brown 2006 and a response by Redmond 2006).

- Bushmeat harvesting has strong parallels with fisheries. Both:
- are open access resources, where it is difficult to control off-take
 - have hidden assets, and so difficult to assess stocks
 - show improved yield with modern technology, and better access leads to over-exploitation
 - show boom and bust pattern of exploitation as population crashes lead to local extinction.

Opposite:
Wild animals for sale on market stall, Lagos, West Africa.



- And in both cases, restraining measures in response to declining stocks face:
- resistance to change by those whose livelihood depends on harvesting or trade
- cultural conservatism in consumption patterns despite evidence of declining stocks
- difficulty in imposing top-down restraint (law enforcement)
- lack of self-restraint because open access resource – the ‘tragedy of the commons’.

3.1 Scale and distribution of the bushmeat crisis

There is evidence to show that the multi-million dollar bushmeat trade has now surpassed habitat loss as the greatest threat to tropical wildlife (Brashares *et al.* 2004; Bennett *et al.* 2002). In the Congo Basin, researchers estimate that up to five million metric tons of bushmeat is traded annually (Wilkie & Carpenter, 1999; Fa *et al.* 2002), representing the most immediate threat to the region’s wildlife over the next 5 – 25 years (Wilkie & Carpenter, 1999; Robinson *et al.* 1999; BCTF, 2004b). By comparison, up to 0.15 million tons is traded in the Amazon Basin (Fa *et al.* 2002; Robinson & Redford, 1991), with an estimated market value of \$190.7 million. (Peters, 2000). Annual harvest rates in Sarawak reach 23,500 tons (Bennett, 2000); elsewhere in Asia, the scale of the problem is largely unquantified, though local extinctions have occurred (Kümpel, 2005).



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The commercial trade in bushmeat occurs across almost all of tropical Africa, Asia and the Neotropics (Robinson & Bennett, 2000), but it is most critical in the densely forested regions of Central and West Africa. Here, the magnitude of hunting is six times the sustainable rate (Bennett, 2002). The Congo Basin is the world’s second largest rainforest, stretching across 10 countries and housing more than half of Africa’s animal species. Uncontrolled bushmeat hunting in this region therefore threatens the health of a forest ecosystem of planetary importance, both in terms of biodiversity and of global climate stability.

Until recently, bushmeat hunting in East and Southern Africa was thought of as a subsistence-motivated activity, carried out exclusively by rural families with a history of traditional use, but commercial trade across the region is now of serious conservation

concern (Barnett, 2000; Born Free, 2004). At least 25% of meat in Nairobi butcheries is bushmeat, sold under the auspices of domestic meat, and a further 19% is a domestic-bushmeat mix, suggesting mixing and cross-contamination during storage or transit (Born Free, 2004).

Bushmeat is also a problem on a global scale, since a proportion of it (albeit low) enters international markets. It is not difficult to find bushmeat in Paris, Brussels, London and New York (Agnagna, 2002). Between 4,000 and 29,000 tons of illegal meat enters the UK annually from non-EU countries, with more entering undetected (Kümpel, 2005). Much of this is meat of domestic animals; the proportion of bushmeat is not known.

Evidence shows that illegal wildlife trade in the UK operates through organised crime smuggling routes. 50% of people prosecuted for wildlife trade have had previous convictions for drugs and firearms (Cook *et al.* 2002). The UK has some of the strongest CITES legislation in the EU, fortified by COTES (Control of Trade in Endangered Species) regulations. But offenders are rarely prosecuted, because Her Majesty’s Customs and Excise (HMCE) destroy all confiscated meat on the grounds of health risks, without first identifying the species (Kümpel, 2005). The proportion of meat from endangered species in UK imports has not, therefore, been quantified. Bushmeat imported into Europe is on the increase, indicating a need for stronger controls at airports (CITES, 2004).

3.2 The socio-economic importance of bushmeat

3.2.1 Social significance

The network of people involved in the bushmeat industry includes (locally) the rural poor, commercial poachers, traders, vendors (including restaurateurs), logging companies, vehicle drivers (who ferry meat to urban centres) and local administrators, as well as (internationally) foreign businesses that consume tropical timber, government and non-governmental organisations.

3.2.2 Food security

The loss of wildlife threatens the livelihoods and food security of those who most depend on it as a staple or supplement to their diet (ABCG, 2004). Wildlife provides protein for many poor rural families without land or access to agricultural markets. In several tropical countries, there is no replacement for bushmeat (Kaul *et al.* 2004). Surveys reveal that bushmeat represents 80% of all animal-based household protein consumed in Central Africa, and more in some regions (Draulans & Van Krunkelstven, 2002; Pfeiffer, 1996). Where crop-based agriculture is practiced, bushmeat hunting of crop-raiding species occurs in tandem to fulfil the twin imperatives of meeting protein needs and defending crops to maximise agricultural output for further economic gain.

The Food and Agriculture Organization recommends an annual intake of 22kg of meat protein per capita. In many areas, bushmeat consumption exceeds this (Barnett, 2000). With average Central Africans eating as much meat per capita as Americans but lacking the abundant agricultural protein sources found in the US and Europe, a reduction in bushmeat hunting and consumption could force already malnourished people to further reduce their meat consumption (Barnett, 2000).

Of 800 million people in developing countries, 200 million in Sub-Saharan Africa are undernourished (ABCG, 2004). In many African regions, agricultural productivity is diminished by poor soils giving disappointing yields, land tenure security, high seasonal variability and by prevalence of tsetse fly and trypanosomiasis, which kills livestock (Barnett, 2000, Stein & BCTF, 2001). Even in areas where livestock can be raised successfully, they are largely regarded as insurance commodities, relied on as a buffer during periods of severe hardship. Domestic meat tends to be available only in rural or urban markets that are situated close to savannahs and ethnic groups with a tradition of pastoralism (Barnett, 2000). In Gabon, 38% of people are dependent on agriculture compared with 60 – 70% in the Central African Republic (CAR) and Democratic Republic of Congo (DRC) (Fa et al, 2003).

The current non-bushmeat protein sources are mainly starchy root vegetables such as manioc or agricultural meat, seafood and fish. Some of this is available domestically and some imported (6% imported in DRC and 55% in Congo-Brazzaville (Congo-B)). In general, the food production in this region has not increased significantly in the past 40 years: in Congo-B, it has decreased by 10% annually (Fa et al, 2003).

3.2.3 Economic significance

The annual contribution of the bushmeat trade to national economies is difficult to estimate, because it is largely unregulated and untaxed. Nevertheless, it has been estimated to equal US\$24 million in Gabon, US\$42 million in Liberia, US\$117 million in Côte d'Ivoire and up to US\$150 million in Ivory Coast (Bower-Jones & Pendery, 1999; Kimpel, 2005). The estimated overall annual value of the trade could exceed US\$1 billion, with commercial hunters in Central Africa making up to US\$1,000 per year – more than the average household income (BCTF, 2000c; Wilkie & Eves, 2001). Many rural families living in extreme poverty are making less than US\$1 per day (Merode et al, 2004).

In Central and West Africa, the trade in bushmeat can supply 90% to 100% of all household income for rural families (Matsura, 2004; Williams, 2001). In Eastern and Southern Africa, 39% of household income is supplied by the bushmeat trade: in the Kitui District of Kenya, even part-time trading provides an income competitive with more formal professions (Barnett, 2000). A study found that 74.5% of people arrested for illegal hunting in Serengeti National Park said that they hunted to generate cash income and only 24.7% claimed they hunted to obtain food (Lobbock et al, 2002). The same study reported that those who owned livestock were significantly less likely to hunt wild animals but that those who did hunt relied on hunting to supply 51.4% of their protein.

An estimated 5,226 young adult men from the subsistence farming communities on the boundary of the National Park obtained their primary income from illegal hunting. Food expenditure for both poor and wealthy families in Kenya represents more than 70% of monthly income, and so savings made from eating no-cost bushmeat significantly contribute to living standards (Barnett, 2000).

In 1996, it was estimated that wild meat represented 1.4% (about US\$150 million) of Côte d'Ivoire's gross national product (Williamson, 2001). 120,000 tons of wild meat was harvested – more than double the annual production from domestic livestock (Caspary, 1999, cited by Williamson, 2001).

Bushmeat allows people to purchase materials and items that a subsistence life cannot provide, as well as generating income for shelter, clothing, taxes and schooling (Ziegler et al, 2002; Bower-Jones & Pendery, 1999). At a time when per capita spending on social services is decreasing, and incomes have plummeted due to falling agricultural prices and currency devaluation, the monetary incentive for hunting bushmeat is highly attractive. The likelihood of detection or punishment is minimal and the cost/benefit ratio is very favourable, further enhancing the appeal and justification for hunting wildlife. Indeed, the importance of bushmeat in the Gross Domestic Product and national economy is now being recognised in Central and West Africa (Barnett, 2000; Kimpel, 2005).

3.2.4 Cultural significance

Cultural and religious importance is also attributed to bushmeat (Apaza et al, 2002). Hunters in Kenya, Botswana, Zambia and Zimbabwe have esteemed status, because they provide food for the less capable elderly and female-led households (Barnett, 2000). Hunting is, in many cases, a revered activity and/or a social pastime. Furthermore, bushmeat is often sought after by urban elites seeking to retain links to a traditional village lifestyle (BCTF, 2004). In Sarawak, for example, city-dwelling men hunt recreationally, just as do many of their North American and European equivalents.

3.3 Factors contributing to commercial bushmeat hunting

The most important driving factors in commercial bushmeat hunting are:

1. Increasing human population and rising demand
2. Uncontrolled access to forest wildlife facilitated by logging, mining and hydroelectric or fossil fuel transport companies
3. War and civil strife
4. Weak governance, institutional deficiency and civil disobedience
5. Sophistication of hunting techniques
6. Lack of capital or infrastructure for meat production
7. Changes in the cultural environment and discarding of social taboos and traditional

- hunting embargoes
- 8. Structural adjustment plans imposed by international financial institutions resulting in civil service job losses
- 9. Unemployment, poverty and dysfunctional economies, with lack of alternative monetary opportunities

Local factors, including topography, available infrastructures, market access, taboos, religions, weapon availability and hunting seasons, are also important in affecting trade (Bowen-Jones & Pendry, 1999).

3.3.1 Increasing human population and rising demand

Where people live at low densities, wildlife populations are given the chance to recover from gradual harvesting. But as human populations increase, so, inevitably, does the rate of forest loss and demand for bushmeat.

There are 522 people per km² in Asia, 99 per km² in West and Central Africa and 46 per km² in Latin America (Milner-Gulland et al, 2003). Between 1950 and 1992, the population of Sub-Saharan Africa increased by 387% (ABCG, 2004).

Thirty-four million people living in the forests of Central Africa are consuming approximately 1.1 metric tonnes of bushmeat annually – the domestic equivalent of 4 million cattle – matching consumption rates of meat in Europe and North America (BCTF, 2000c).

In West Africa, human population densities are even higher, and hunting here has been so extensive that dietary dependence on rodents, the only group remaining in abundance, has emerged (BCTF, 2004). The current rate of population growth in West Africa is 2.6% per annum, but as the number of people grows and the area of forest shrinks, pressure and demand will exceed this rate (Barnes, 2002).

Across Africa, the number of consumers has increased from 100 million in 1900 to more than 800 million in 2000. A projected increase to 1.6 billion is expected in less than 25 years (Abaza et al, 2002). National statistics obscure exponential pressures (Barnes, 2002), and across Africa, it is likely that bushmeat demand will increase by 2 – 4% annually (Eves et al, 2002). Wildlife populations are incapable of replenishing rapidly enough to supply current demand, let alone future projections (Wilkie & Carpenter, 1999).

If the main protein source in a tropical moist forest is wild meat, then the sustainable carrying capacity should be no more than one person per km² (Robinson & Bennett, 2000, Ling et al, 2002). Even then, trade routes would need to be poorly established and population growth rates low (BCTF, 2004b).

The demand for bushmeat around the world is increasing as expatriate African populations expand. Up to 427kg of animal products (including bushmeat) are

confiscated at Heathrow each week. A suitcase of bushmeat can have a street value of £1000. The preparation of bushmeat for transport makes it very hard to identify species confiscated. DNA (mitochondrial) analysis is becoming an important tool in identification and law enforcement (Kelly et al, 2003).

Sustainable subsistence hunting may still be possible in the few areas where human population densities do not exceed two people per km², growth rates are low and trading routes to bushmeat markets have yet to be established (BCTF, 2004). But for great apes and other species with slow reproduction rates and slow maturation, a hunting pressure of even a few percent per annum can result in a decline leading to extinction.

3.3.2 Uncontrolled access to forest wildlife facilitated by logging, mining and hydroelectric or fossil fuel transport companies

Private logging companies have timber exploitation rights to major tracts of tropical forest (Elkan, 2002). In Central Africa, annual forest loss ranges from 0.2% in Congo-Brazzaville to 0.7% in DRC (Fa et al, 2003). An estimated 80,000ha of forest is destroyed in the Congo Basin each year for a total of 80 commercially logged species (Gouala, 2005; BCTF, 2004).

Africa's annual production of about 11 million cubic metres of wood make it the third most important timber producer worldwide (Pearce & Ammann, 1995). In 1996, 81% of exploited Cameroonian forests were under the control of EU-based companies (WSPA, 1996). In Gabon, logging is particularly prevalent, with the area of harvestable forest rising from 3 million hectares in 1960 to 11 million (60% of the national territory) in 2000 (MRL, 2000, cited by Medou, 2001).

There are currently no FSC-accredited logging concessions in the whole of Central Africa (Peterson, 2003). Forest recovery periods are generally not satisfied before new concessions are allocated (Bowen-Jones & Pendry, 1999).

Though 'defaunation' of forests is widely perceived as a greater threat to tropical species survival than habitat loss, it is the synergy between the hunting and deforestation that is the greatest cause for concern (Milner-Gulland, 2002). The logging industry provides the transport infrastructure (roads, airports, ferries) and trading routes necessary for the bushmeat industry, and there is evidence to suggest that, where transport infrastructure is poor, hunting is less severe (Butynski & Koster, 1994). Pearce (1995) reported a significant reduction of hunting when Congolese logging trucks were on strike, and some hunting camps closed completely.

Roads built by prospecting logging companies cause indiscriminate fragmentation of forests and provide commercial hunters with virtually unlimited access to remote areas, forcing rural families that lack the legal or practical capacity to restrict hunting to harvest as much as possible before others do (BCTF, 2000a).

Within logging concessions, large numbers of workers create a massive demand for bushmeat and provide an in-situ market for hunters to sell meat. As a result, some of the most lucrative hunting settlements are those established within logging townships. Families living in logging communities eat two to three times more bushmeat than rural communities (Wilke & Eves, 2001). Very few logging concessions currently provide food for their work force.

Mining for tantalum, a rare metal used in capacitors for mobile phones and portable computers, has created further pressure on Central African wildlife. The demand for PlayStations in 2000 led to a world shortage of tantalum and a massive increase in its price from \$40 to \$500 per pound (Hayes, 2002). In eastern DRC, protected areas suffered an influx of thousands of miners wishing to exploit the newly lucrative market for columbo-tantalite (an ore of tantalum known as coltan). The mining camps subsisted on bushmeat and were responsible for decimating the most important population of Eastern lowland gorilla *Gorilla beringei graueri* (an endemic subspecies) as well as Eastern chimpanzees, forest elephants, buffalo, antelope and many medium-bodied species (Redmond, 2001; Hayes, 2002). Panic-buying by major companies during the period of shortage created temporary stockpiles and reduction in demand/unit price. Some miners have withdrawn but others cannot afford to stop, and it is likely that bushmeat dependency will increase as the population suffers from chronic poverty (Hayes, 2002). Reports from the Kahuzi-Biega National Park staff indicate that some mining settlements are now cultivating crops in the lowland sector of the park. The full extent of the large mammal population crash has yet to be established, because continuing insecurity has prevented surveys (Bernard Ivoni, *pers. comm.*).

Thibault and Blaney (2003) have reported that the oil industry has a significant impact on the bushmeat problem and recruits more people into the forest than logging.

Below:

Skull of friendly, habituated gorilla killed for bushmeat during war, Kahuzi-Biega National Park, DRC.



© Ian Redmond

In 1963, Shell Gabon was granted an exploration permit within the Gamba protected areas complex in Gabon. Workers were recruited nationally, and thousands of people moved to the area, necessitating the creation of a township within the park. Bushmeat was exploited to meet the protein demand, and company vehicles, including private jets, were used to supply outlying urban areas, despite company policies forbidding this. In 1986, a collapse in oil prices forced men to return to their natal villages, where hunting provided the only alternative source of income (Barnes, 2002).

The Congo Basin is a likely target for further oil exploration, because it holds high-quality petroleum and production costs are low in the region. Currently, oil companies are not required to provide the means necessary to mitigate their impact on biodiversity.

3.3.3 War and civil strife

According to the UN Security Council, the illegal mining of coltan (and other natural resources) has helped support the civil war in DRC, which began in 1996. War affects bushmeat hunting in a number of ways, not least of which is the increased circulation of weapons and ammunition, which are used successfully for hunting. Most soldiers are unpaid and rely on terrorising villagers and traders for food. They have been recorded with live parrots, monkeys and apes on their way to markets (Draulans & Van Krunkelsven, 2002). Refugees may also include armed factions, who practice terrorism and increase pressure on locally available resources as well as forests, which are cleared for refugee camps. Harassment often drives local people into the forests, where they try to make a living from hunting (Draulans & Van Krunkelsven, 2002).

Civil unrest in DRC has led to collapse of the transport system due to river and road blocks, where goods can be confiscated or stolen (Draulans & Van Krunkelsven, 2002). Though it appears that reduced trading opportunities for bushmeat leads to hunting being abandoned in some areas, there is evidence to suggest that hunting continues and yields are hidden in the forest until such time that trading can resume (Draulans & Van Krunkelsven, 2002).

In the proposed Lomako Reserve area of DRC, the ongoing war has led to a decrease in hunting, because villagers are too scared to enter the forest, where they risk meeting soldiers (Dupain *et al.* 2000).

In Liberia, timber and wildlife harvesting have been very poorly regulated since the end of the civil war, when the country has been in social and economic crisis (Hoyt & Frayne, 2003).

3.3.4 Weak governance, institutional deficiency and civil disobedience

Weak governance and corrupt administrations are common in areas where bushmeat is hunted. Even where legislation regimes exist, resources and political will to enforce them do not (Kumpel, 2005). Political instability, armed conflict, economic and social strife and AIDS hamper state capacity for proper management and are significant disincentives for wildlife conservation (CITES, 2000). Wildlife policies are seldom regarded as legitimate, mandatory laws. Hunters have little fear of breaking the law (Eves *et al.* 2002), not least because officials themselves often benefit from the trade by accepting bribes (Kumpel, 2005).

In 1995, Cameroonian traders licensed by the government were recorded collecting up to 200kg of bushmeat on trips to hunting camps, despite the fact that many of the species had been hunted illegally. The government has also been known to suspend closed hunting seasons to encourage the bushmeat trade (Pearce & Ammann, 1995).

Anecdotal evidence also exists of hunters being commissioned by policemen to shoot gorillas (WSPA, 1994).

3.3.5 Sophistication of hunting techniques

Snaring is currently the cheapest and easiest way to catch wild animals for meat; it accounts for 84% of village-based hunting harvests (WCS, 1996). Snaring requires little time and, compared with hunting with firearms, reduces the risk of apprehension. But it usually results in more animals being trapped than can be retrieved (Barnett, 2000). Studies have shown that about a quarter of animals trapped by snaring are lost to decomposition or scavengers and a third escape injured (Newing, 2001; Noss, 1998).

Snaring is indiscriminate and inevitably affects non-target species. Though carnivores are often able to chew themselves free, death from residual injuries is probable (Ray, Stein & BCTF, 2002).

Left: Dikdik caught in snare and **Right:** Bushmeat drying.

Left: Dikdik caught in snare Tsavo National Park, Kenya.

Firearms have been ubiquitous in forests since colonial times (Barnes, 2002). They have greatly improved hunting success, particularly of arboreal species, such as primates, which are less easily snared.



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Research in the Peruvian Amazon showed no difference in harvests between traditional hunters using bows and those using shotguns, even though the latter were four times more effective (Alvard, 1995). In larger communities, however, overexploitation and the potential for extinction in some species was observed, suggesting that demand, rather than modern technologies, is driving the hunting to crisis state (Bowen-Jones & Pendery, 1999).

Table 1 shows the hunting activity and techniques employed by native hunters in capturing wild mammals in central-western Tanzania (December 1995 to February 1996) (Carpaneto & Fusari, 2000).

| Taxonomic group | Guns | Traps | Spears | Dogs | Total | % |
|--------------------|-------|-------|--------|------|-------|-------|
| Insectivores | – | 9 | – | 1 | 10 | 4.23 |
| Nocturnal Primates | – | 2 | – | – | 2 | 0.84 |
| Diurnal Primates | 6 | 1 | 4 | 3 | 14 | 5.93 |
| Carnivora | 22 | 8 | 4 | 20 | 54 | 22.88 |
| Hyacoridae | 1 | – | – | 1 | 2 | 0.84 |
| Suidae | 7 | – | 5 | – | 12 | 5.08 |
| Hippopotamidae | 1 | – | – | – | 1 | 0.42 |
| Bovidae | 82 | 9 | 10 | 3 | 104 | 44.06 |
| Pholidota | – | – | 1 | – | 1 | 0.42 |
| Rodenta | 6 | 6 | 2 | 3 | 17 | 7.20 |
| Lagomorpha | 2 | 10 | – | 7 | 19 | 8.05 |
| Total | 127 | 45 | 26 | 38 | 236 | 100 |
| % | 53.81 | 19.06 | 11.01 | 16.1 | 100 | 100 |

3.3.6 Lack of capital or infrastructure for domestic meat production

Over the past 30 years, funding for agricultural research and development in Central and West Africa has declined significantly. Over the same period, the US and Australia have doubled and quadrupled their spending respectively (Millner-Gulland et al, 2003).

Forest-dwellers are often hostile to the idea of livestock farming (CITES, 2004), because the costs involved are far more prohibitive than those incurred by commercial bushmeat hunters, who are able to avoid paying for animal husbandry, veterinary care, transport, slaughter and certification (Born Free, 2004). Moreover, agricultural markets promote unfair prices, and rural communities often lack the skills or resources to negotiate trade practices more favourable to their needs (ABCG, 2004).

Table 1: Number of specimens for each taxonomic group killed by native hunters during the study period in central-western Tanzania (Source: Carpaneto & Fusari, 2000)

In Asia, bushmeat is generally a luxury for wealthy city-dwellers; rural people have turned to domestic meat to compensate for the lack of wild species (Kümpel, 2005).

It is unlikely that this opportunity will be available to Africans faced with a shortage of forest wildlife. As well as problems of low agricultural productivity (due to poor soils, prevalence of disease and frequent wars), African forest-dwellers have lower access than Asians to coastline and fish supplies (Kumpel, 2005).

3.3.7 Changes in the cultural environment and discarding of social taboos and traditional hunting embargoes

The continuous, year-round demand for bushmeat has gradually eradicated traditional hunting seasons, and wildlife no longer benefits from recovery periods during closed seasons (Barnett, 2000). Moreover, gender selection and embargoes on pregnant individuals, as well as traditional taboo and totem restrictions are being abandoned in favour of maintaining supply (Barnett, 2000).

Bushmeat represents a coping mechanism during periods of prolonged drought and famine, when domestic stocks are likely to have perished and horticultural produce is scarce (Merode et al, 2004). Wild animals become more nomadic as they search for water and are easier to locate in the typically thinner vegetation (Barnett, 2000). Thus, bushmeat hunting can be seasonally acute.

3.3.8 Structural adjustment plans imposed by international financial institutions resulting in civil service job losses

Whilst hunting is a traditional way of life for some people, many commercial bushmeat hunters in Africa have turned to hunting after being made redundant. This has been observed in countries forced to slim down the civil service to curb government spending. With family responsibilities, there are few opportunities for alternative employment and many have turned to commercial hunting because it is profitable and requires little capital to start a business.

3.3.9 Unemployment, poverty and dysfunctional economies, with lack of alternative monetary opportunities

This has been discussed in section 3.2.

3.4 The effects of bushmeat hunting on species and ecosystems

A list of species worldwide recorded as being hunted for bushmeat is included as Appendix 1 (see separate document). Figure 1 and Graphs 1 and 2 respectively summarise the taxonomic composition of species hunted internationally for bushmeat, the number of species hunted for bushmeat per geographic region, and the number of species hunted for bushmeat per taxa per geographic region.

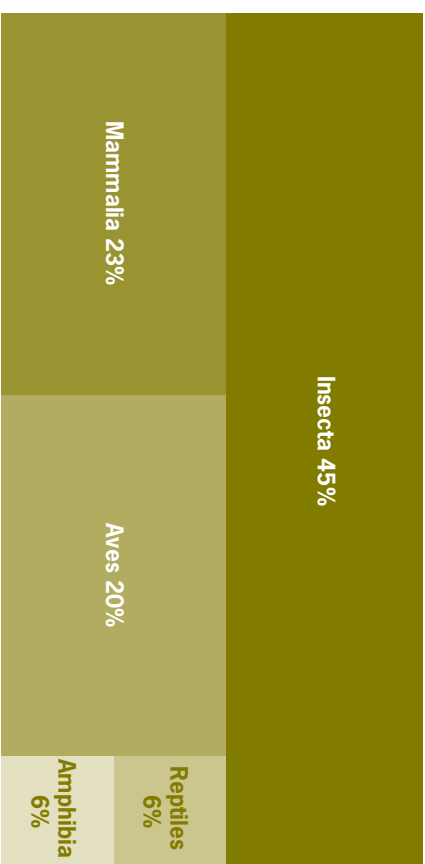
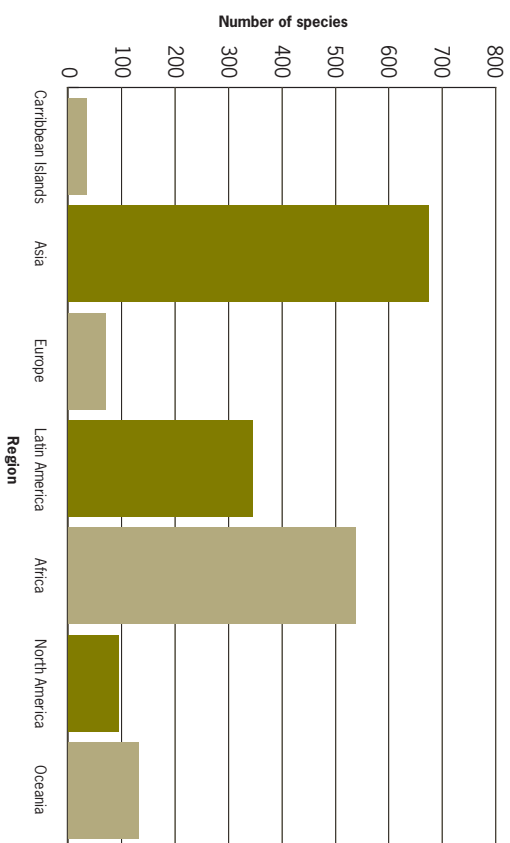
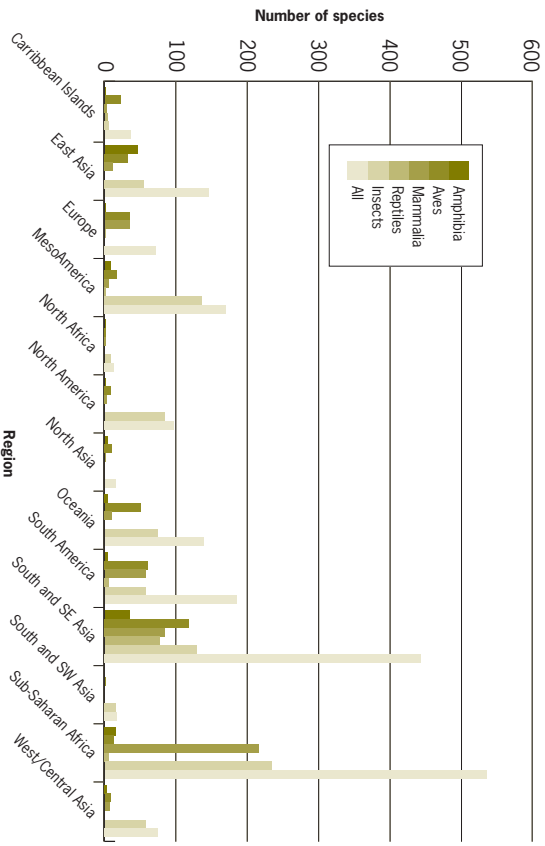


Figure 1: Taxonomic composition of species hunted internationally for bushmeat



Graph 1: Number of species hunted for wild meat per geographic region



Graph 2: Number of species hunted for wild meat per taxa per geographic region

3.4.1 Importance of forest wildlife

Invertebrates, amphibians, insects, fish, reptiles, birds and mammals are all targeted by the bushmeat trade. Forest animals are ecologically fundamental, and many forest plants – some of which are economically valuable – are reliant on herbivory and predation practices for pollination, seed dispersal and germination (Williamson, 2001; Serio-Silva & Rico-Gray, 2002; Riley, 2002).

In Gabon, regeneration of tree species such as *Irvingia gabonensis* and *Tieghemella* sp. is low in areas where animals responsible for dispersing their seeds are rare (Medou, 2001). Large-bodied frugivores, the seed dispersal agents of plants with large fruits are chief targets of bushmeat hunters. Moore (2001) showed that *Inga ingoides* trees in Bolivia had significantly lower genetic diversity in areas where there sole seed vectors (Spider monkeys) had been driven to extinction.

150 species of fruit among the rumen contents of duikers suggests that they are crucial for seed dispersal (Eves, Stein & BC TF, 2002). Up to 80% of all tree species could have their seed dispersal affected by the loss of tropical forest frugivores (Peres & van Roosmalen, 2002, cited by Apaza et al, 2002).

left Graph 3: Consumption of bushmeat taxa by habitat (Source: Wolfe, 2004)

Over-exploitation of wildlife is expected to alter forest composition, architecture and biomass, as well as altering ecosystem dynamics, such as regrowth and succession patterns, deposition of soil nutrients and carbon sequestration (Apaza et al, 2002).

The 'empty forest syndrome' therefore threatens the future not only of species but also of the ecosystem as a whole.

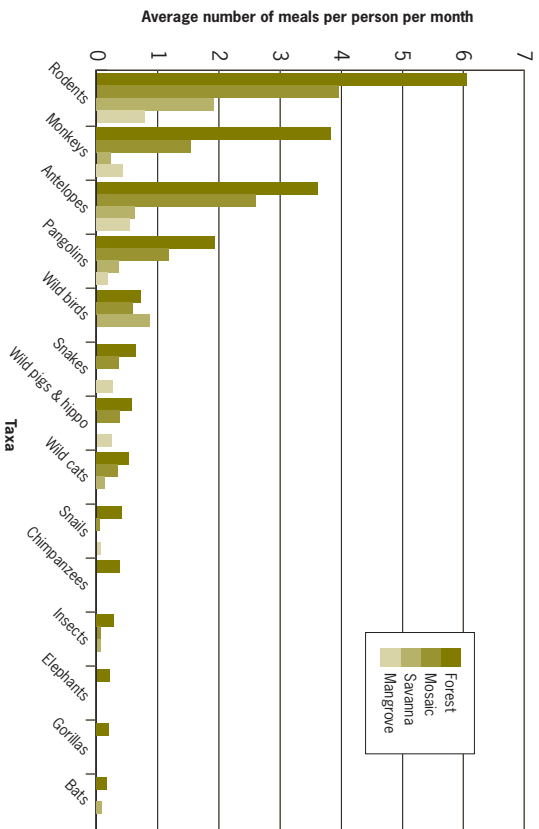
3.4.2 Species vulnerability

Research suggests that bushmeat use is positively correlated with availability, the most commonly hunted species being those that are abundant, proximal to human habitation and commonly regarded as pests (Bower-Jones & Pendry, 1999). Habitat type and location are also crucial factors; bushmeat consumption is more prevalent in forest communities than in any other type of habitat (see Graph 3), despite evidence that tropical forests are relatively unproductive compared to other habitat types (Künrpe, 2005). In agricultural park-boundary areas, where only small game is present, the loss from crop raiding can exceed the gain from bushmeat hunting (Naughton-Treves et al, 2003).

The most profitable species to hunt are large-bodied animals, weighing more than 1kg (for example, apes and duikers), which provide more meat per gun cartridge than smaller species (Kaul et al, 1994; Robinson, 1995). Concurrently, large-bodied animals are also the most vulnerable to hunting due to their low reproductive rates (Barnes, 2002). Even when the most productive species to hunt become scarce, hunting will



Below: Mbinzo (smoked caterpillars): nutritious, legal bushmeat for sale in Kinshasa, DRC.



still be profitable, because small-bodied species will remain common (Fa et al. 2001). The opportunistic nature of hunting keeps pressure on large animals high and accelerates their extinction (Barnes, 2002; Wilkie and Carpenter, 1999). The vulnerability of a species to hunting is, therefore, a product of biological characteristics, including size, growth rate and reproductive biology, as well as demographic factors, including population density, distribution and habitat specificity.

3.4.3 Geographic repercussions

Hunting of wild animals for meat is not just an African problem. Twenty-five tonnes of turtles are exported every week from Sumatra, Indonesia. 1,500 forest rats are sold per week in a Sulawesi market and 28,000 primates are hunted annually in Loreto, Peru (Milner-Gulland et al, 2003). Referring to wild meat rather than bushmeat reflects the global nature of this issue. Preliminary research presented in Appendix 1 suggests that 27% of Latin American mammals, 50% of Asian mammals and 50% of African mammals recorded amongst bushmeat harvests are categorised as endangered or vulnerable to extinction.

The status of many forest species is difficult to determine by traditional census techniques (Ray, Stein & BCTF, 2002). Annual variations mean that accurate estimates can be made only by several surveys over consecutive years (Barnes, 2002).

Table 2: Composition of bushmeat captured in the Congo Basin (Source: Wilkie & Carpenter, 1999)

| Location | Ungulates ^a | Primates | Rodents | Other |
|--|------------------------|----------|---------|-------|
| Inhur forest, DRC ¹ | 60–95% | 5–40% | 1% | 1% |
| Makokou, Gabon ² | 58% | 19% | 14% | 9% |
| Diba, Congo ³ | 70% | 17% | 9% | 4% |
| Ekom, Cameroon ⁴ | 85% | 4% | 6% | 5% |
| Brazzaville, Congo ¹³ | 76% | 8% | 6% | 10% |
| Ouessou, Congo ⁵ | 57% | 34% | 5% | 4% |
| Nloki and Ngatongo, Congo ⁶ | 81–87% | 11–16% | 2–3% | 2–3% |
| Dzanga-Sangha, CAR ⁷ | 77–86% | 0% | 11–12% | 2–12% |
| Libreville, Port Gentil, Oyem, and Makokou, Gabon ⁸ | 34–61% | 20–45% | 5–27% | 3–12% |
| Boko and Rio Muni, Equatorial Guinea ⁹ | 36–43% | 23–25% | 31–37% | 2–4% |
| Dja, Cameroon ¹² | 88% | 3% | 5% | 4% |
| Ekom, Cameroon ¹⁰ | 87% | 1% | 6% | 6% |
| Oieme, Congo ¹¹ | 62% | | 38% | |

In Central Africa, hunting pressure has been specifically identified as a threat to 84

| Species | Hunted individuals/km ² | Unhunted individuals/km ² | Impact |
|--------------------------------|------------------------------------|--------------------------------------|--------|
| <i>Cephalophus sylvicultur</i> | 0 | 0.03 | -100% |
| Gorilla gorilla | 0 | 0.24 | -100% |
| <i>Cercocebus albigena</i> | 2.5 | 51.2 | -95% |
| <i>Pan troglodytes</i> | 0.03 | 0.36 | -92% |
| <i>Cephalophus callipygus</i> | 0.6 | 6.7 | -91% |
| <i>Citellus abyssinicus</i> | 0.8 | 6.8 | -88% |
| <i>Tragelaphus spekei</i> | 0.005 | 0.03 | -83% |
| <i>Poramochoerus porcus</i> | 0.36 | 1.7 | -79% |
| <i>Hyemoschus aquaticus</i> | 0.02 | 0.09 | -78% |
| <i>Cercoptithecus nictians</i> | 21.9 | 80.2 | -73% |
| <i>Cephalophus dorsalis</i> | 2.5 | 5.8 | -57% |
| <i>Cercoptithecus pogonias</i> | 11.1 | 19.8 | -44% |
| <i>Cercoptithecus cephus</i> | 12.5 | 22 | -43% |
| <i>Cephalophus monticola</i> | 30.4 | 53 | -43% |

mammalian species and subspecies (IUCN, 2000) (see Tables 2 and 3). Thirty-four species are listed as threatened by extinction, the majority of which are primates (17), and the rest duikers (12), carnivores (4) and rodents (1) (CITES, 2004). Local extinctions have been recorded in populations of leopard *Panthera pardus*, golden cat *Profelis aurata* and elephant *Loxodonta africana*, with similar declines expected for giant pangolins *Smutsia gigantea* and slender-snouted crocodiles *Crocodylus cataphractus* (various authors cited by Bowen-Jones & Pendry, 1999). Commercial bushmeat hunting in West Africa has already caused local extinctions (BCTF, 2000a).

Kenya provides a model for East Africa, where wildlife populations have declined by 58% over the past 20 years and the scale of hunting appears to be escalating (Bom Free, 2004). Decreasing wildlife populations have intensified hunting effort, necessitating more sophisticated and unsustainable methods, such as night torch hunting (Barnett, 2000).

According to a recent comparative study of 57 and 31 mammalian taxa in the Congo and Amazon Basins respectively, 60% of Congo animals were exploited unsustainably, compared with no Amazon species (Fa et al. 2002). This research also showed that Congo mammals must annually produce 93% of their body mass to balance extraction rates, whereas Amazon species need only produce 4%. Conversely, studies in 25 Amazonian forest sites showed that even small-scale subsistence hunting reduced the number of large-bodied game species (Peters, 2000). Milner-Gulland et al (2003) assert that we can expect extinctions in even the remote areas of Latin America in the next 10–20 years.

Table 3:

Bushmeat species densities in hunted and unhunted forest in the Congo Basin (Source: Wilkie & Carpenter, 1999)

3.4.4 Species at risk

African forest hunters generally favour duikers and primates, but opportunistic hunting of carnivores also occurs and can be economically significant, for example the trade in leopard skins (Ray, Stein & BCTF, 2002). Forest carnivores such as leopards, golden cats, crowned eagles and snakes rely on bushmeat-hunted species for prey, and thus the trade also affects them indirectly (Milkie & Eves, 2001; Apaza et al. 2002). The ecological impact of carnivore relative to herbivore loss may be considerable because of carnivores' low densities, low reproductive rates and trophic rankings (Ray, Stein & BCTF, 2002).

Duikers represent a major proportion of bushmeat hunted for subsistence and trade, principally because they are large and abundant and easy to trap with wire snares (BCTF, 2003). 28 million bay duikers and 16 million blue duikers are killed in Central Africa each year (Milkie & Carpenter, 1999). In Liberia, three quarters of the bushmeat harvest comprises duikers (Bowen-Jones & Pendry, 1999). Duikers are currently estimated to comprise 40 – 80% of meat available in Central African markets, and significant population declines have been observed in West Africa, where habitat loss has reinforced commercial hunting (Eves, Stein & BCTF, 2002).

Though populations are hard to observe and monitor in the wild, duikers are easily hunted with guns and snares and are transportable on foot (Eves, Stein & BCTF, 2002). Hunted populations are replenished by individuals migrating from undisturbed areas, thus disguising the effects of unsustainable harvesting. But as logging activities swallow up undisturbed areas, populations that can seemingly tolerate hunting will begin to suffer (Eves, Stein & BCTF, 2002). Extinction of several duiker species is already considered imminent, and the repercussions could be catastrophic for the predator and tree species that rely on them for their survival and seed dispersal (Eves, Stein & BCTF, 2002). Low reproductive rates and territorial behaviour eliminate the potential for husbandry (Eves, Stein & BCTF, 2002).

Rodents are also hunted for bushmeat, particularly where other, more charismatic

species have been depleted by overhunting (Eves et al. 2002). Unlike the larger, preferred species, rodents have high reproductive rates and are adaptable to conditions of human disturbance and cultivation. Though the amount of meat per carcass is small, the abundance of rodents means they can be hunted in greater numbers to compensate for the lack of larger game. Rodents therefore represent a viable subsistence base. In many cases, rodents are nutritionally superior to bigger species (Barnett, 2000).

In Equatorial Guinea, rodents were found to comprise 32% of meat at markets (50% when pooled with blue duiker *Cephalophus monticola*) (Fa et al, 1995; Juste et al, 1995). Where there are significant duiker populations supplying the bulk of bushmeat to markets, rodent hunting is opportunistic, but local extinctions have occurred where overpopulation and overhunting have already depleted the larger, more marketable species (Stein et al, 2002a). Giant pouched rats and greater cane rats have suffered population extinctions even where laws require that hunters hold licences for killing unprotected rodents (Stein et al, 2002a). Human consumption of rodents is linked to Lassa fever, a viral illness whose reservoir is the multi-hammette rat *Mastomys* sp. Nevertheless, a preference for rodents over beef in some markets fortifies proposals for cane rat domestication and farming to provide an alternative source of nutritious protein. The percentage of rodents and ungulates in the offtake could be used to indicate site over-exploitation (rodents indicate reduced availability of larger, more charismatic species).

Elephant bushmeat is further cause for concern. Some authors have reported local extinctions as a result of hunting (Bowen-Jones & Pendry, 1999). The ivory trade and slow maturation and reproductive rates make elephants especially vulnerable to over-exploitation from commercial hunting (Stein & BCTF, 2001, Draulans & Van Krunkelsien, 2002). One outcome of this is decreasing tusk size and subsequent loss of profit from the ivory trade, encouraging the commercialisation of meat use to recover earnings (Eves & Ruggiero, 2000). Elephant hunting has recently been particularly severe in Central Africa (Wasser et al, 2004), where the meat and tusks of 273 elephants killed during four months in 1995 – 1996 sold for US\$400 per animal (Stein & BCTF, 2001). The Monitoring of Illegal Killing in Elephants program (MIKE) emphasised at CITES 11th Conference of the Parties that, in some instances, tusks appeared to be a secondary by-product to the bushmeat trade, though some research has suggested otherwise (Rafaele, 2005).

The current range of African elephants lies largely outside protected areas, making them yet more susceptible to illegal hunting and encroachment, particularly in Central and Eastern Africa, where political unrest has motivated the presence of illegal weapons (Eves & Ruggiero, 2000). Refugees also intensify demand.

Twenty five percent of **birds** in the order Galliformes are at risk from extinction, partly due to the extent to which they are over-hunted (McGowan & Garson, 2002). Galliformes provide one of the most important sources of avian protein in subsistence

Right Snaring affects many species indiscriminately: Lesser kudu caught in Tsavo National Park, Kenya



diets, not least because they are principally large, ground-dwelling birds and can occur at high densities.

Almost all Asian **turtles** (as well as tortoises and terrapins) are hunted and bartered for consumption, medicine and the pet trade (the only species left unreported are either exceptionally rare or believed extinct) (TRAFIC, 1999). Softshell turtles command the highest price per kilogram (up to six times that of lamb or chicken in India) and smaller individuals are preferred because they have a higher proportion of cartilage and gelatinous skin and can be served whole in restaurants (TRAFIC, 1999). Behler (1997) cites research from McCord that suggests one specimen of *Cuora trifasciata* is worth \$10,000. Most meat is exported, with estimates of volume ranging from 50,000 turtles daily (Behler, 1997) to 12 million annually (Salzberg, 1998). WaiNeng Lau et al. (1998) described a 2.5-fold increase in turtles being imported to Hong Kong between 1977 and 1996.

Primates are among the most highly endangered species hunted for the bushmeat trade and are considered in section 4.

3.4.5 Outlook

Tropical forests are relatively unproductive ecosystems and are more vulnerable to exploitation than other habitat types (Kumpel, 2005; Fa et al, 2005). Though intuitively, we might expect gradual declines in wildlife as a result of over-hunting, research has shown that a sudden, unexpected collapse of forest populations is more likely – the boom-and-bust situation observed in some fisheries (Barnes, 2002). It is unlikely that governments will tackle the bushmeat problem during the boom phase of good harvests – they won't perceive a problem until it's too late (Barnes, 2002). Stochastic factors such as low food availability or disease and other environmental catastrophes are circumstances in which such a collapse might be instigated (Barnes, 2002).

Large herbivores, large carnivores and most primates are unlikely to persist in permanently settled, multiple-use zones around national parks unless hunting is restricted. Only small, rapidly reproducing animals such as rodents and small antelopes are likely to withstand the pressure from commercial hunting (Wilkie & Eves, 2001).

3.5 Bushmeat supply, demand and price dynamics

3.5.1 Supply

A recent study has shown that, in Ghana, people have increased their reliance on bushmeat as a result of depleted fish stocks, facilitated in part by EU-subsidised fleets operating in the region (Brashares et al, 2004). This has consequently led to abrupt population declines in 41 mammal species.

Investigating the operation of a bushmeat commodity chain in Takoradi, Ghana, showed

that the primary trade route was from commercial hunters (who received the largest financial benefits), via wholesalers to chopbars (cafés) (Cowlshaw et al, 2005). In several countries across east and southern Africa, including Kenya and Malawi, illegal brew bars are a platform for trading bushmeat, since they satisfy the need for secret commerce (Barnett, 2000). Direct house-to-house sales are also popular, and some hunters and traders operate with contracts to fortify confidentiality (Barnett, 2000). Bushmeat trade is more open in areas with less adequate law enforcement, including Mozambique (Barnett, 2000) and the Central and West African region.

3.5.2 Demand

Wealthier inhabitants of urban areas are willing to pay more for bushmeat, which is perceived as a luxury product and a way of retaining cultural links to a traditional village lifestyle (Barnett, 2000). People living in urban areas eat bushmeat out of preference, rather than necessity, and decrease the supply available to those who need it most (ABCG, 2004).

Consumer demand can be decreased by:

- Changing consumer preferences and tastes
- Decreasing the price of substitutes and increasing availability
- Increasing the price of bushmeat

Changing preferences through environmental education is only likely to have an effect in areas where bushmeat is consumed as a luxury item, for example in urban areas (urban elites, restaurants and expatriates) rather than rural areas, where few substitutes are available.

Increasing the price of bushmeat could be achieved by decreasing the supply through law enforcement (Wilkie and Carpenter, 1999), but unless there are substitutes available, a price increase would bolster economic incentives for hunting.

3.5.3 Price

It has been suggested that the practice of eating bushmeat is entrenched in some cultures and inherently preferred over domestic meat, even where the latter is cheaper (Rose, 2001, cited by Apaza et al, 2002). But some research suggests consumption habits are more sensitive to price and consumers choose the most affordable meat available or hunt for themselves at no cost (Wilkie & Carpenter, 1999; Bowen-Jones, 1998; Apaza et al, 2002).

Many studies have been carried out to determine price trends (Barnett, 2000; Steel, 1994; King, 1994; Noss, 1998; Wilkie et al, 2005; Cowlishaw et al, 2005), but there is no governing precedent in bushmeat price across regions. Price dynamics are complex and influenced by fluctuating supply and demand. Typically, however, bushmeat is most expensive in urban areas (where supply is low) and least expensive in rural areas, where supply is high (Barnett, 2000). Fresh bushmeat is more expensive than the smoked product, which is common in urban centres because smoking preserves the meat during transportation.

A recent study in Ghana, West Africa, estimated that café owners were the most important vendors of bushmeat, accounting for 85% of sales to the public (Cowlisshaw et al, 2005). The same study found that transport costs affected the price of bushmeat.

In cities, bushmeat is perceived as a luxury product commanding a very high price, particularly during religious festivals (Barnett 2000, BCTE 2002). In Libreville, Gabon, the average price for the most popular bushmeat species was 1.6 times more expensive than the most popular cut of beef (Steel, 1994). By contrast, in rural areas, domestic meat is expensive and seldom available whereas bushmeat can be hunted for free.

Bushmeat prices peak when abundance is low and demand is high, resulting in further hunting pressure on depleted species. A high price of certain bushmeat species indicates the parallel problems of reduced abundance and continuing demand (Barnett, 2000). The higher the price, the greater the hunting pressure will be on these already beleaguered species, resulting in trade-motivated hunters entering protected areas to ensure supply (Barnett, 2000).

Among the Tsimane' Amerindians in the Bolivian rainforest, hunting for bushmeat was lowest where the cheapest fish and meat from domestic livestock was available (Apaza et al, 2002), suggesting that increased market access and a reduction in price of domestic relative to wild meat could alleviate unsustainable hunting of wildlife. Wilkie and Godoy (2001) report that reducing the price of beef by 10% can reduce bushmeat hunting by up to 74%.

In Gabon, consumption of bushmeat, fish, chicken and livestock was positively correlated with household wealth (Wilkie et al, 2005). Bushmeat consumption decreased as price increased, and fish was utilised as a dietary substitute. A small increase in the wealth of poor rural families had a large impact on the consumption of animal protein. These results imply that taxation or decrease in supply through better law enforcement could reduce wildlife consumption (though if efforts are focused only on reducing unsustainable bushmeat harvesting, there may be adverse effects on the exploitation of fish). Development aid to increase the wealth of the rural poor may, therefore, in this case, negatively impact wildlife consumption (Wilkie et al, 2005).

Bushmeat price is thus influenced by supply, wealth and cultural/taste preferences. In both rural and urban areas, it is preferred over alternative animal proteins.

3.6 Global health concerns linked to the bushmeat trade

Ebola, SARS (Severe Acute Respiratory Syndrome), Anthrax and HIV/AIDS are human diseases all thought to be transmitted by butchering, processing and consumption of bushmeat.

At least 25% of meat in Nairobi butcheries is bushmeat, and at least 19% is a domestic-bushmeat mix, suggesting cross-contamination during storage or transit (Born Free, 2004) and introducing the possibility of acquiring wildlife diseases from domestic meat (Born Free, 2004).

3.7 Outlook

At present, wild animal protein is the major factor preventing protein malnutrition for the people of the Congo Basin. But at current exploitation rates, the bushmeat protein supply is expected to drop 81% in less than 50 years in all Congo Basin countries (Fa et al, 2003). Only three Congo Basin countries could maintain a protein supply above the recommended daily intake in the event of reduced bushmeat availability (though strictly enforced laws or reduction in supply) (Fa et al, 2003). Four countries would not be able to produce enough non-bushmeat protein to feed their people (Fa et al, 2003). Concerns over wildlife extinction and protein malnutrition should, therefore, be equal in gravity.

To assess the impact of bushmeat hunting on wildlife populations we need to know:

- The harvest rates of bushmeat species;
- The maximum possible production per unit area of forest for primary bushmeat species;
- Densities of primary bushmeat species in areas of known off-take and production.

Nutrient-rich floodplain forests contain consistently more game biomass that nutrient-poor non-flooded forest, showing that consideration of forest productivity and forest type is important in establishing game management plans (Peres, 2000).

Tools that allow indirect assessment of the effect of hunting are currently being used in the fisheries industry and in UCN red listing (Milner-Gulland & Akcakaya, 2001). Models currently exist for estimating sustainability of hunting and effectiveness of different policy options (Rowcliffe et al, 2003; Robinson & Bodmer, 1999; Redford & Robinson, 1991). Some of these are prone to overestimating the sustainable off-take, leading to recommendations for a more precautionary approach (Milner-Gulland & Akcakaya, 2001). Nevertheless, one such model that suggested unsustainable hunting was occurring in Sarawak led the Malaysian government to stipulate a ban on commercial hunting (Whitfield, 2003).

Primate bushmeat: current situation

4

4.1 Introduction

Unsustainable hunting levels have been observed in a large diversity of species (see section 3), but it was the trade in primates, and great apes in particular, that brought attention to the bushmeat crisis during the 1990s. Apes provided a jumping-on point for conservation groups to get involved in bushmeat and begin campaigning and implementing measures to curb the problem.

The fact that Western lowland gorillas were hunted for meat was well known (see for example Harcourt and Stewart, 1980), but drew little attention from the conservation community. It was the ape orphans of the bushmeat trade that first attracted the attention of NGOs and the media in the late 1980s. The efforts by certain expatriates to save young gorillas and chimpanzees, and the shipping of some of these rescued apes to Western zoos led the International Primate Protection League to question whether this was trade under the guise of ape-rescue. An investigation in Congo (Redmond, 1989) concluded that the orphaned apes were indeed a by-product of the bushmeat trade, although infants would certainly be captured to order if anyone expressed an interest in buying one. The use of ape fingers and other body-parts in traditional African medicine was also highlighted. Rescued gorilla infants at that time suffered a mortality rate of 80 per cent, but chimpanzees were more resilient: the images of starving chimpanzees in the now defunct Parc Zoologique de Point Noire prompted Jane Goodall to begin her long-term support to chimpanzee orphans in Congo.

Much has changed in the intervening 15 years, but ape numbers continue to fall and it remains to be seen whether the newly adopted Global Strategy for the Survival of Great Apes will reverse the trend. On a more positive note, however, many of the great ape range states have developed (or are developing) National Great Ape Survival Plans and most have signed the UN Declaration on Great Apes, agreed in Kinshasa on 9th September 2005. This will have wider repercussions than just improving the survival chances of great apes. Under the paradigm of ‘umbrella species’, it is believed that conservation efforts focused on apes and their habitat have benefited non-primate species also hunted for food.

Opposite:

Infant chimpanzee rescued from bushmeat trade during the war in Liberia



4.2 Scale and distribution of the problem

Evidence suggests that primates of international conservation value are being hunted to dangerously low levels and harvesting rates have been recorded at up to 28 times the sustainable level (Fa et al, 1995). Seven million red colobus are killed in Central Africa each year (Fa & Peres, 2001, cited by Bennett et al, 2002). Local extinctions have been recorded in Preuss' red colobus (Waltert et al, 2002), as has the complete extinction in 2000 of Miss Waldron's red colobus (Whitfield, 2003; Oates et al, 2000).

In West and Central Africa, primates comprise 15% of market carcasses, with great apes constituting 1% (Stein et al, 2002b). In terms of biomass, however, the significance of great apes is higher (Stein et al, 2002b).

It is likely that the proportion of ape meat at markets is underestimated for a number of reasons. Vendors are usually aware that it is illegal to hunt endangered species; the preservation process of smoking meat conceals its origin from all but DNA analysis (Stein et al, 2002b). The difficulty in transporting large ape carcasses and preference for their meat could mean that they are eaten by villagers rather than traded (Bowen-Jones & Pendry, 1999). Furthermore, bushmeat is often transported regionally and across borders, making it difficult to track its origin (Stein et al, 2002b).

4.3 Exacerbating factors

4.3.1 Hunting techniques

The use of firearms can increase harvest rates by 10 times that of snare-based hunting (Wildlife Conservation Society, 1996), though gorillas, chimpanzees and bonobos have all been recorded as having been injured or killed from non-discriminatory snares (Bowen-Jones & Pendry, 1999; Thompson-Handler et al, 1995).

In Korup National Park, South-west Cameroon, hunting with dogs increases hunting success, particularly for endangered drills, which are easily driven up trees and killed in large numbers at a time (Waltert et al, 2002). Bonobos are hunted in much the same way (Lee et al, 1988).

Primates are more expensive to hunt than other species that are easily snared. While the availability of guns has made primate hunting lucrative, each animal that is shot costs a shotgun shell (BCTF, 2003).

4.3.2 Armed conflict

Of 23 protected areas worldwide containing great apes, two thirds have been affected by military conflicts in the past decade (Draulans & Van Krunkelsven, 2002).



4.3.3 Economic importance

In Korup National Park, Cameroon, 7% of hunters' income was generated from trade in drills. Africa's most threatened primate (Bowen-Jones & Pendry, 1999). Encounters with drills are rare, but where they do occur, up to 30 animals can be dispatched at once (Bowen-Jones & Pendry, 1999).

Chimpanzee or gorilla carcasses can be sold in Africa for the equivalent of \$20 – 25. With annual incomes at well under \$1,000, the hunting of apes is clearly an economically rational practice in the short term for hunters (Marshall et al, 2000).

In Bangui, the capital of Central African Republic (CAR), bushmeat is appealing because of its low cost – smoked gorilla can sell for as little as 25 cents per pound in a village market, despite its lower availability relative to duiker (Raffaele, 1995).

4.3.4 Persecution

Mountain gorillas and chimpanzees have been implicated in crop-raiding incidents as well as attacks on people. This may have resulted from animals being enticed on to cultivated land during food shortages or from habituation (deliberate or resulting from proximity to settlements) reducing their natural fear of humans (WWF, 2003).

4.3.5 The primate pet trade

Unlike most other species hunted for bushmeat, primates in general and great apes in particular suffer from a subsidiary trade in live animals. Hunters often speculate on the value of these rare animals without knowing that they are difficult to sell – laws against purchase prevent zoos, private collectors and captive breeding centres from displaying them (White, 2002).

Left: Hunters'

children depend on their fathers' success, but killing gorillas is illegal. Congo (Brazzaville).

Many baby great apes are fatally injured by the shots that kill their mother or by the fall from the forest canopy, but those that survive represent extra income to the hunters when they are traded as pets (IFAW & BCTF, 2003; IFAW 2005). They are usually kept and transported in deplorable conditions. A great number die, even if they are rescued. Estimates suggest that for every chimpanzee, gorilla or bonobo entering the pet trade, 10 – 50 more will have died in hunting camps or en route to cities (IFAW & BCTF, 2003). Redmond (2002a) used a multiplier of 15 gorillas removed from the population for each infant that reaches competent care, based on the 80 per cent mortality of infants arriving at the Brazzaville gorilla orphanage prior to 1989, when improved veterinary care lowered this rate, and at least two adults being killed for each infant – thus: (1infant+2adults)x5 = 15 gorillas, one alive and 14 dead. This means that the six gorillas reported to have been held by Ibadan Zoo prior to shipment of the Taping Four probably represented 84 dead gorillas, and 90 lost to the wild population.



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Above left: Infant chimpanzee for sale in bushmeat market, Libreville, Gabon.

As highly evolved organisms, great apes are vulnerable to mental suffering and trauma. Many confiscated orphans are found with broken limbs, smashed teeth and broken jaws (indicating failed attempts to extract teeth to prevent biting), untreated open wounds from chains and other injuries, dehydration, malnourishment, infections and parasitic infestations (IFAW & BCTF, 2003). In DRC, during the mid 1990s chimps were regularly offered for sale on roadsides for as little as \$5, a tenth of their value elsewhere (WSPA, 1996). Chimps are thought to

be more emotionally robust than gorillas and, as such, have been exploited to supply the international pet trade. Between 1970 and 1976 (before CITES came into force), it is estimated that 1,582 chimps were shipped from Sierra Leone into Europe, America and Japan (WSPA, 1996). Governments often report a disincentive for enforcing appropriate laws regarding the pet trade, because there are insufficient facilities for re-housing confiscated orphans.

A growing number of primate sanctuaries are operating across Africa to rehabilitate orphaned victims of the bushmeat trade; several countries that no longer harbour wild populations of apes have also established sanctuaries simply to cater for individuals that enter the country through international trade.

The Pan African Sanctuary Alliance (PASA) was founded in 2000 to support these sanctuaries and act as a hub for information sharing, fundraising and standardisation of values. PASA comprises 17 member sanctuaries as of March 2005, with plans for 19 by June 2005 (Doug Cress, pers. comm.).

Sanctuaries have been instrumental in securing areas of forest and effectively protecting them from hunters, as well as successfully running rehabilitation and release programs (IFAW & BCTF, 2003). But there are too few sanctuaries to adequately house all confiscated animals, most existing sanctuaries have reached saturation levels and do not have the capacity to accept more individuals. In other areas, there are no adequate facilities (DRC currently has good facilities only for bonobo orphans, although plans are in hand to improve this situation).

4.4 Primates at risk

Primates have a low rate of meat production relative to body size, and so hunting has a particularly negative impact on this taxon. A list of primate species worldwide recorded as being hunted for bushmeat is included as Appendix 2.

A recent study cited hunting as the most important cause for declines in Preuss' red colobus (*Procolobus pennanti preussi*), drill (*Mandrillus leucophaeus leucophaeus*) and crowned monkey (*Cercopithecus pogonias*) in Korup National Park, South-west Cameroon (Waltert et al, 2002). It is likely that this represents the situation for many more species, although the density of some common and abundant species (for example, greater white-nosed and moustached monkeys *Cercopithecus mitis* and *C. cephus*) appears to be unaffected by hunting (White, 1994).

Great apes

The hunting of great apes for sale and consumption has been recorded across most of their African range. Gorilla and chimpanzee meat is available on a daily basis in towns and villages across Central Africa. Harvesting rates are difficult to estimate because of

contentious population estimates (Bowen-Jones & Pendry, 1999), but across Africa, as many as 3,000 – 6,000 great apes and many more monkeys are being killed annually (WWF, 2003) – more than are kept in zoos and laboratories worldwide.

Ape populations are declining in 96% of protected areas where they are being studied, and without even assessing the contribution of habitat loss, most are faced with extinction in the next 10 – 50 years. (Marshall et al, 2000). Apes are hunted by humans in 62% of all protected areas; prevalence of snaring and armed conflict in protected areas amounts to 57% and 70% respectively. There are 33 national parks and 308 other conservation areas in Africa containing ape populations. The protection afforded the great apes by international conventions, such as CITES, makes both hunting and trading them illegal (Marshall et al, 2000).

Little research has been conducted outside protected areas, but the increased level of poaching in conjunction with commercial logging activities would suggest an even bleaker situation than is widely perceived.

Below: Mountain gorillas are not normally killed for bushmeat, but may die in antelope traps or due to civil war.

Apes, and great apes in particular, are attractive to hunters because of their large size and high volume of meat per unit effort. Subsistence hunting of great apes is already unsustainable, and further targeting by commercial hunters will guarantee extinction. Every square kilometre of forest that is logged represents the loss of habitat for one ape (Marshall et al, 2000).



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Low population sizes and reproductive rates, as well as long-term infant dependency and stress sensitivity, make the great apes vulnerable to even small increases in mortality levels. A female ape typically has a reproductive rate a quarter that of other mammals and will produce offspring (from the age of 15) only every 5 – 8 years (Marshall et al, 2000). It therefore takes a long time to replace a single individual lost from the population.

Female apes are selectively hunted, because they pose less risk to hunters than do males, who are likely to charge even when shot. With a generation time ranging from 15 to nearly 30 years, each adult female lost represents some 2 – 6 lost offspring in the next 15 – 30 years, and so gender selection accelerates population loss (Marshall et al, 2000).

Stochastic factors such as food supply, mating success, random catastrophes (for example, drought and fire), erosion of genetic diversity, hunting and human disturbance are severely threatening to all apes (Marshall et al, 2000). Ape social structure can also exacerbate the impact of hunting; infanticide of infants emigrating from a group whose silverback has been killed is common (Frossey, 1983).

At least some populations of seven African great ape sub-species (Western, Central, and both Eastern chimpanzees* see taxonomic note in Preface and on p.37), bonobos, Western and Eastern lowland gorillas and mountain gorillas) inhabit countries afflicted by civil unrest, where firearms are ubiquitous and law enforcement is weak or non-existent.

It is estimated that 12 – 17 mountain gorilla deaths, representing 3.7 – 5.2% of the Virungas population, were accountable to military activity between 1992 and 2000 (WWF, 2003).

For poachers, new territories are much more productive, because chimps and gorillas have less fear and are less vigilant. Some hunters in Southern Cameroon confirmed they had wiped out local gorillas near their base camp within six months of its establishment; one successful hunter in Ouesso, Republic of Congo claimed a rate of 3 – 4 gorillas per week (WSPA/ENVIRO-PROTECT, 1996).

Population estimates for all eight African great apes sub-species, as presented by WWF, are shown in Table 5.

At the IUCN Primate Specialist Group Workshop on Western Equatorial Africa's apes, held in Brazzaville in May 2005, there was a reluctance to give new population figures until new surveys had been conducted (Tutin et al, 2005). Nevertheless, here follows a review of various authors' past attempts.

Chimpanzee *Pan troglodytes*

Chimpanzees are present in 21 African countries and are believed to have declined from 2 million to 115,000 this century (Marshall et al, 2000).

| Species | IUCN status | Estimated population | Distribution |
|---|-----------------------|--|---|
| Western Chimpanzee <i>Pan troglodytes verus</i> | Endangered | 21,000 – 55,000 | Côte d'Ivoire, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Senegal, Sierra Leone, Nigeria |
| Nigeria Chimpanzee <i>Pan troglodytes vellerosus</i> | Endangered | 4,000 – 7,000 | E. Nigeria & W. Cameroon |
| Central Chimpanzee <i>Pan troglodytes troglodytes</i> | Endangered | 47,000 – 78,000 | Gabon, Cameroon, Republic of Congo, Central African Republic (CAR), Equatorial Guinea, Angola (Cabinda), SE Nigeria, (Democratic Republic of Congo, DRG)? |
| Eastern Chimpanzee <i>Pan troglodytes schweinfurthii</i> , (Includes newly described <i>Pitmangensis</i>) | Endangered | 75,200 – 117,000 | Burundi, CAR, DRG, Rwanda, Sudan, Tanzania, Uganda. |
| Bonobo <i>Pan paniscus</i> | Endangered (A2cd) | 25,000 – 50,000 | DRG |
| Western lowland gorilla <i>Gorilla gorilla gorilla</i> | Endangered | 110,000 (WWF, 2003) 40,000 (Raffaële, 2005) | Gabon, Republic of Congo, Angola (Cabinda), Cameroon, CAR, Equatorial Guinea (Western DRG?) |
| Cross river gorilla <i>Gorilla gorilla diehli</i> | Critically Endangered | <250 | Cameroon/Nigeria border |
| Mountain gorilla <i>Gorilla beringei beringei</i> | Critically Endangered | 359 – 395 in Virungas; 320 in Bwindi Impenetrable Forest, Uganda | DRG/Rwanda/Uganda border |
| Grauer's/Eastern lowland gorilla <i>Gorilla gorilla beringei graueri</i> | Endangered | 3,000 | Eastern DRG |

Table 5: A frequently published estimate is between 100,000 and 200,000, but this is likely to have declined significantly due to the bushmeat trade and ebola outbreaks (Walsh et al. 2003). The species estimate comprises four sub-species (see taxonomic note in Preface):
 Population statistics for great ape species (Source: WWF, 2005)
Western Chimpanzee *P. t. verus*: 21,300 – 55,600 (Kormos and Boesch, 2003)
Nigerian Chimpanzee *P. t. vellerosus*: 5,000 – 8,000 (Kormos and Boesch, 2003)
Central Chimpanzee *P. t. troglodytes*: 62,000 (Butynski, 2000)

Eastern Chimpanzee *P. t. schweinfurthii: 96,000 (Butynski, 2000) – note, this sub-species has now been divided into two, with all populations south of Ruteshuru to Murungu in the DRG, and those in Rwanda, Burundi and Tanzania being in the newly described *P. t. marungensis* (Groves, 2005).**

Estimated harvest rates range from 131 annually in North-east Congo (Kano & Asato, 1994) to 400 annually in Cameroon (Pearce & Ammann, 1995). Across the Congo Basin, up to 3,000 chimpanzees are harvested (killed) each year (Marshall et al., 2000; Pearce & Ammann, 1995).

In the Lopé reservation of Gabon, chimpanzee density has declined by up to 30% as a result of logging activities (Medou, 2001).

Bonobo *Pan paniscus*

Bonobos are endemic to the Democratic Republic of Congo, with a pre-war estimated population of 10,000 – 50,000, based on extrapolation from small-area density surveys. A much published guesstimate is 15,000, but Butynski (2000) gave 30,000 – 50,000 and Myers-Thompson (1997) calculated 29,500, contrasting with the fear expressed in the 1995 Action Plan that ‘The wild population may already number less than 5,000’ (Thompson-Handler et al., 1995).

Few figures are based on recent fieldwork, except a report of 75% decline in Lomako population since 1998 (Ammann, Bowman and Dupain, 2002).

Commercial hunting and capturing of bonobos began in 1984 and has risen during the absence of researchers as a result of political and economic crisis (Thompson-Handler et al., 1995). Animals were typically killed for their meat, medicinal or magical properties (some body parts thought to enhance strength and increase sexual vigour), and illegal export of live animals to Europe and the Far East for zoos, pets and biomedical research (Lee et al., 1988). Deteriorating economic conditions drove people into previously undisturbed areas, particularly Wamba and the Lomako Forest where bonobo numbers are significant.

Below: Gorilla hands and other bushmeat products for sale in traditional African medicine stall, Congo Brazzaville.



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The magnitude of commercial bonobo hunting is not known, but their meat is openly sold in Kinshasa, Democratic Republic of Congo (Thompson-Handler *et al.*, 1995). The demand for orphans is much reduced following the exodus of expatriates after rioting in 1991, but poor law enforcement during the same period may have invited illegal export of bonobos, chimpanzees and other endangered species (Thompson *et al.*, 1995).

The most recent survey conducted by the Congolese Institute for Nature Conservation (ICCN) and the World Conservation Society (WCS), in conjunction with the CITES programme for monitoring the illegal killing of elephants (MIKE) revealed numbers may be down to 2% of previous levels (Black, 2004). In Salonga NP where bonobos had previously been found, scientists recorded only indirect evidence of the species (calls, nests, droppings) in a quarter of the surveyed area and at lower densities than previously measured. In contrast, there was abundant evidence of human encroachment and poaching (Black, 2004). In the only country where bonobos are found, Salonga is the sole national park within its range. Armed militias have used the dense forests in national parks to hide and they use their munitions to subsist on bush meat, including bonobos and elephants. The Congolese Institute for Nature Conservation has been unable to function during the war, which ended in 1996.

Although Salonga was established in 1970 to protect bonobos, no sizeable populations have ever been confirmed. A 1987 survey revealed a group of about 20 (Neder *et al.*, 1988, cited by Thompson-Handler *et al.*, 1995) and several other anecdotal sightings exist (d'Huart, 1989, Alers *et al.*, 1989). The civil war suspended surveys, but a one-year study between 1989 and 1991 reported just one encounter (Thompson-Handler *et al.*, 1995).

Gorillas are present in 10 African countries. Since 2000, the new taxonomy has regarded Western and Eastern gorillas as separate species.

Western Gorilla Gorilla gorilla

A frequently published estimate is about 95,000, but this is likely to have declined significantly owing to the bushmeat trade and ebola outbreaks (Walsh *et al.*, 2003). The figure comprises:

Western Lowland Gorilla G. g. gorilla: 94,000 (Butynski, 2000)

Cross River Gorilla G. g. diehli: 200 – 250 (Oates, pers.com., Butynski, 2000)

Eastern Gorilla Gorilla beringei

Mountain Gorilla *G. b. beringei*: Two populations, which some regard as separate sub-species but this has not yet been formally described. The Virunga population is now estimated at up to 380 and the Bwindi population at about 320 individuals.

Eastern Lowland Gorilla *G. b. graueri*: Last census in 1996 gave a figure of 16,900 (range 8,660 – 25,499, Hall *et al.*, 1998), but a massive reduction in the population in

and around Kahuzi-Biega National Park during the Coltan boom has led to fears of an 80 – 90% crash, with perhaps only 2,000 – 3,000 remaining in small, scattered populations (Redmond, 2001, Hayes, 2002). Recent reports from the Dian Fossey Gorilla Fund International suggest that some populations may not have declined as much as feared, but accurate census data for the Kahuzi-Biega and Kasese Forest (which comprised 86 per cent of the 1996 estimate) is still being gathered by ICCN, with assistance from WCS and the Born Free Foundation.

As well as being hunted for bushmeat, there is demand for gorilla hands and skulls, which are valued as trophies and for their supposed witchcraft and medicinal properties (a finger might be tied around a baby's waist (Redmond, 1989) or ground into a powder and sprinkled into babies' baths to help them grow strong (Pearce & Ammann, 1995)).

Where bushmeat hunting is regular, gorillas are one of the first species to be eradicated (Plumptre *et al.*, 1999).

Regional estimates of annual gorilla kills range from 62 in North-east Congo (Kano & Asato, 1994), 400 – 600 in northern Congo (Redmond, 1989,) and 800 in Cameroon (Pearce & Ammann, 1995). More recent estimates for the Congo Basin as a whole suggest an annual harvest of 4,500 (Marshall *et al.*, 2000).

In contrast, the population of mountain gorillas has risen by 17% in the past decade in the Virunga volcanoes, despite civil strife in the region (White, 2002; Kirby, 2004). Two mountain gorillas were killed in Parc National des Volcans, Rwanda, in May 2002. Before that, no such poaching had been recorded since 1985. Meat wasn't taken, but one infant was missing, and so the presumption is that hunters were looking for babies to sell (Redmond, 2002). Two further deaths were recorded, and another infant presumed missing.

Orangutans are restricted to the two South-east Asian islands of Borneo (shared by Indonesia and the Malaysian states of Sabah and Sarawak – orangutans are not found in Brunei) and Sumatra (part of Indonesia). It has been estimated that in the last 10 years, orangutans have lost almost half of their habitat to illegal logging, gold mining, conversion to palm-oil plantations and fires (Marshall *et al.*, 2000) and, unlike the African great apes, this threat is more immediate than that of hunting. Some of the forest-dwelling people, such as Dayaks, are known to occasionally kill and eat orangutan, but this has never escalated to a commercial trade. Nonetheless, even a very low hunting pressure leads to a population decline in such a slow-reproducing species. It is noticeable that orangutans are more likely to survive in Moslem areas, where primate meat is taboo, than elsewhere.

Sumatran Orangutan Pongo abelii

One estimate in late 2002 was about 3,500 and declining (Wich *et al.*, 2003), down from an estimate in 1997 of 12,770 (Rijksen and Meijaard, 1999). The Sumatran

population is now thought to be about 7,500 (PHVA, 2004). It is estimated, however, that since 1998, some 1,000 Sumatran orangutans have been lost annually and if this rate continues, clearly extinction would be expected within a decade.

Bornean Orangutan *Pongo pygmaeus*

The 1993 Population and Habitat Viability Assessment concluded that only 10,200 – 15,500 orangutans remained in Borneo, but this lacked data on some populations, and was before the forest fires and illegal logging of recent years (Tilson et al, 1993). Three sub-species are now recognised, *P. p. pygmaeus*, *P. p. wurmbi* and *P. p. morio*. Estimates have been substantially revised in the light of new data, but even though there may be more than had been feared, the downward trend is clear. The current Bornean population is estimated to be about 50,000 (Meijaard et al, 2004), compared with an estimate last century of 180,000 (Marshall et al, 2000). About 8,000 individuals occur within national parks, but these are fragmented in small populations, which are highly vulnerable to extinction if migration between protected areas is not allowed (Marshall et al, 2000).

Economic crises in Indonesia have led to poaching pressure on orangutans, mainly to supply the pet trade (Yeager, 1999). Given the low population growth rate, the number of animals removed for this purpose far exceeds what can be replaced (Marshall et al, 2000). Furthermore, each orangutan orphan represents at least one dead parent, and many orphans don't even survive long enough to be traded. Thus, the pet trade is a significant threat to the remaining population.

4.5 Health implications

Emerging zoonotic diseases are one of the most important public health threats facing humanity. Close genetic correlation between humans and apes means that many of the same viruses (for example, the common cold, influenza, pneumonia, tuberculosis, measles, yellow fever, ebola fever, hepatitis B and poliovirus) and parasites (for example, schistosomiasis, filariasis, giardiasis, salmonellosis) affect both parties and are transmissible between the two (WWF, 2003; Wolfe, 2004).

Primate butchering and consumption practices and the pet trade have vastly increased human exposure to and risk from wildlife diseases (Redmond, 1995; BCTF, 2003). Access to remote forests and improved transport and trade have escalated these risks, as well as supporting the emergence of new zoonotic infections (Peeters et al, 2002).

At the same time, primates are at risk from human diseases. Chimpanzee populations have been documented suffering from fatal disease outbreaks, such as scabies, pneumonia and gut parasites, believed to originate from humans (WWF, 2003). Mountain gorillas in Rwanda, habituated for tourism, are at risk from human diseases, as are other habituated ape populations and those living near dense human settlements

(WWF, 2003). Stress and fragmentation or reductions in populations as a result of poaching are likely to increase this risk.

Simian retroviruses have long incubation periods and we may therefore see disease epidemics in the future as a result of infections occurring now (Peeters, 2004; Wolfe et al, 2004)

4.5.1 Simian immunodeficiency viruses (SIV) and human immunodeficiency virus (HIV)

In humans, AIDS is the end result of infection with one of two lentiviruses (HIV type 1 or 2), both of zoonotic origin (BCTF, 2003). SIVchz from chimpanzees and SIVsm from sooty mangabeys have been transmitted to humans on at least seven occasions; presumably this occurred in connection with the processing and consumption of these species, since transmission occurs through body fluids such as blood (Stein et al, 2002b). These transmissions are the original cause of HIV-AIDS in humans (BCTF, 2003) and are an example of how pathogens that do not cause disease in their natural host may evolve to do so in humans. The lack of symptoms in primates carrying SIVs suggests they might be key in curing HIV-AIDS in humans (Marshall et al, 2000).

As well as HIV-1 (which occurs internationally) and HIV-2 (which is restricted to West Africa), new recombinants are appearing in forested areas, where hunting and population growth have affected the dynamics of virus transmission (BCTF, 2003).

SIVs appear to be widespread in the wild. They have been reported in 26 different species of African primates, many of which are hunted for consumption; these include colobus, sun-tailed and DeBrazza monkeys, mandrills, drills, chimpanzees and red-capped mangabeys (Stein et al, 2002b; BCTF, 2003). In Cameroon, 13 of 16 primate species hunted for bushmeat were found to carry SIV lineages and, 16% of species consumed are thought to be SIV-infected (Peeters, 2004; Wolfe et al, 2004).

Below: Monkey

carcass for sale in Kinshasa Market, DRC; skull opened to eat brains, a practice that in other species led to transmission of prions causing scrapie, kuru, CJD and BSE.



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Research is currently underway to determine prevalence and risk factors associated with SVs, including the development of diagnostic assays designed to detect infection in both human and nonhuman primates.

4.5.2 Ebola haemorrhagic fever

By December 2004, 1,290 fatal cases of Ebola haemorrhagic fever had been recorded in humans across Africa (WHO, 2004). These infections have been linked to direct contact with gorillas, chimpanzees, monkeys, forest antelopes and porcupines, which were found dead in the rainforest (WHO, 2004).

Ebola virus has been documented in wild populations of chimpanzees, gorillas and duikers. Epidemics have decimated ape populations in Gabon and the Republic of Congo, reducing numbers by as much as 90% (WHO, 2004; WWF, 2003). One estimate suggests that 10,000 apes have been killed by Ebola in recent years (Racer, 2004).

Bushmeat vendors in Ouesso, Republic of Congo, reported a drop in bushmeat sales during an Ebola outbreak in 2003, when people switched to eating fish, beef or chicken (IRIN, 2003).

Training of local people to monitor the health of gorillas has assisted in the identification and response to recent Ebola outbreaks (BCTF, 20003), but some experts warn that international smuggling of Ebola-contaminated bushmeat could trigger outbreaks outside Africa, for example, in the US and Europe (Ratfaele, 2005).

4.5.3 Simian foamy viruses (SFV)

Recent studies in Cameroon have shown that 10 out of 1,000 people in regular contact with primates are infected with SFV, which can be interpreted to mean that thousands of rural people have acquired SFVs from primates (most notably from Western lowland gorillas, DeBrazza's guenons and mandrills (Wolfe, 2004)). The implications of this in terms of disease and human-human transmission have not yet been established.

4.5.4 Anthrax

Several sudden deaths in groups of well-studied chimpanzees in Tai National Park, Ivory Coast, between October 2001 and June 2002 have been attributed to infection with anthrax. They may have acquired it through eating infected meat, and humans eating infected bushmeat may also be susceptible (Leendertz *et al.*, 2004).

Anthrax is a highly infectious, airborne virus, which can be transmitted through the skin (unlike SVs, which are transmitted through body fluids) (Kümpel, 2005). New evidence from Tai National Park and Dia Reserve, east Cameroon has identified unique anthrax strains in gorillas and chimpanzees that were previously unknown to science (Leendertz *et al.*, 2000)

4.5.5 T-lymphotropic viruses

T-lymphotropic viruses passed on from primates to humans are associated in humans

with lymphoma, leukaemia and neurological disorders.

11% of primate species hunted for bushmeat are infected with T-lymphotropic viruses (Peeters, 2004; Wolfe *et al.*, 2004).

4.6 Ethical implications

No review of the bushmeat trade in relation to primates, especially the great apes, would be complete without some consideration of the ethical implications of eating species so closely related to ourselves. This issue has been discussed by many authors (see for example Redmond, 1995, 1996, Peterson and Ammann, 2003). Some have likened the consumption of ape-meat as almost cannibalism, whereas others argue that long-standing cultural traditions should not be swept aside by Western values (although the latter argument could be used to defend actual cannibalism and many other 'traditional' practices no longer considered acceptable in the 21st Century).

Evolutionary proximity is a difficult argument to wield across the spectrum of taxa taken for bushmeat - where do we draw the line for acceptable consumption? Ninety-seven percent shared DNA? (Just apes off limits) or Ninety-five percent? (all primates?) Given that we share nearly half our DNA with plants, this poses questions even for vegetarians!

Rather than genetic measures, some have raised the issue of self-awareness. Robert Barton (1993, cited in Redmond, 1996) observed that "what makes human beings morally relevant is their possession of consciousness: in particular their consciousness of pain... and of themselves as individuals with present and future desires that they wish to fulfil. The degree to which chimpanzees (or any form of life) share these features is the degree to which they command ethical consideration." Thus, species with demonstrable self-awareness and 'higher order intelligence' – such as great apes, elephants and cetaceans – are arguably deserving of greater consideration than others lacking these abilities.

For great apes, at least, these arguments are academic because all species are protected by law, and so hunting, trading and consumption of their meat, body-parts or infants is illegal in every range state. Thus, their conservation is more an issue of law enforcement than philosophy.

4.7 Outlook

Primate extinctions are already occurring, both locally and completely. It is widely considered that the great apes face their last 10 – 50 years but some research suggests this might not be the case for all species. For example, Marshall *et al.* (2000), calculated time scales in which we can expect to see ape populations reduced by half. The results indicated a halving time of 58 years for gorillas, 14.4 years for chimpanzees and 11 years for orangutans.

Actions ongoing and their effectiveness

5

5.1 General actions ongoing and their effectiveness

5.1.1 Government and policy

5.1.1.1 Africa

The CITES Bushmeat Working Group (CITES BWG) has developed National Bushmeat Strategies and Action Plans for three of the six Central African countries (Cameroun, Gabon and the Republic of Congo). The Government of the Republic of Congo has since validated and adopted its National Strategy and is now seeking funding for implementation (CITES, 2004).

CITES BWG also investigated wildlife laws and regulations in Central Africa, and the findings of the study were adopted by all six countries. This study now serves as the basis for review of national wildlife legislation, and some countries (Cameroun and the Republic of Congo) are now reviewing and re-adjusting existing wildlife laws.

CITES BWG was instrumental in the inclusion of bushmeat-related issues into the Final Communiqué of the 32 Ministers of the Africa Forest and Law Enforcement and Governance ministerial conference held in Yaoundé, Cameroun (CITES, 2004).

CITES BWG has developed partnerships with regional biodiversity conservation initiatives to integrate the bushmeat problem into Central African agenda (Agnagna, 2002). The crisis proportions of the bushmeat problem are now being mainstreamed into the Yaoundé Summit process through the *Conférence sur les Ecosystèmes de Forêts Denses et Humides d'Afrique Centrale* (CEFDHAC), the Organisation for the Conservation of Wildlife in Africa (OCFSA), the Council of Ministers for Forests of Central Africa (COMIFAC) and the Agency for the Development of Environmental Information (ADIE), thanks to the effective lobbying by CITES BWG. Ministers of the region have strengthened the role of OCFSA as a direct result of this lobbying (CITES, 2004).

The IUCN Regional Office for Central Africa (ROCA) is addressing the bushmeat problem in response to a resolution adopted by the IUCN in October 2000 and has become a

Opposite: Black-fronted duiker, Rwanda



leader in pioneering action in Central Africa (wa Mustii, 2002). It has facilitated CEFDHAC (Central African Moist Forest Ecosystems), which assists collaboration of concerned groups in the Central African region. IUCN-ROCA has also circulated a Global Environment Fund/United Nations Development Program (GEF/UNDP) proposal for implementing management strategies and instituting alternatives to bushmeat (wa Mustii, 2002). Collaboration of IUCN-ROCA with the UN Food and Agriculture Organisation (FAO) and CITES Bushmeat Working Group has assisted in development of a National Bushmeat Action Plan and establishment of the Central African World Heritage Forest Initiative (CAWHFI).

In 2001, the Congolese government's Ministry of Forestry Economy stipulated that all forest concessions operating in Northern Congo were to develop and fund wildlife management programmes (Elkan, 2002). In 2002, it proposed the design, implementation and monitoring of standardised guidelines for achieving this.

In February 2005, leaders of seven Central African nations signed a treaty to establish cross-border partnerships to help save the Congo Basin. Striving for protection against illegal logging, poaching and the ivory and bushmeat trades, the project is relying on a 60% contribution from international aid. The total projected budget for 2004 – 2013 is €1.25 billion. So far, only France and the US have contributed, donating €50 million and \$53 million respectively (Gouala, 2005).

Five African Presidents have also talked about creating a megapark in West Africa. (Black, 2004).

In September 2005, a 'Strategie et Plan d'Action pour la Survie des Grandes Singes en Republique Democratique du Congo' was produced after a national workshop and extensive consultation with stakeholders, forming the basis for government policy in relation to all great apes and their habitats in the Democratic Republic of Congo.

5.1.1.2 USA

The US led in facilitating the historic launch of the Congo Basin Forest Partnership (CBFP) at the World Summit of Sustainable Development in Johannesburg, South Africa, in 2002. CBFP comprises 29 partners, including 15 governments; 7 NGOs, 2 industry associations and 5 international organisations (McAlpine & Roth, 2002). The US Department of State, US Agency for International Development (USAID) and the United States Fish and Wildlife Service (USFWS) have supported the CITES Bushmeat Working Group and Bushmeat Crisis Task Force (BCTF, 2004c).

The USFWS's Division of International Conservation (DIO) is involved in project support throughout sub-Saharan Africa (Ruggiero, 2002). The USFWS administers four multinational species conservation funds, which include the African Elephant Conservation Fund (AFCF), The Great Ape Conservation Fund (GACF) and the Rhinoceros and Tiger Conservation Fund. Together with USAD's Central African

Program for the Environment (CARPE), the USFWS uses these funds to assist African governments, NGOs and conservationists to address the bushmeat crisis. This includes the Noubabale-Ndoki National Park (NNNP) partnership in the Republic of Congo, which is becoming a model for international government collaboration (Ruggiero, 2002).

CARPE also provides support for gorilla conservation in Central Africa (BCTF, 2002). The US Forest Service (USFS), a CARPE partner, has also been instrumental in supporting bushmeat work and providing support for various symposia throughout 1990 – 2002 (BCTF, 2002). Other US institutions, including the Subcommittee on Fisheries Conservation, Wildlife and Oceans, and US Department of the Interior, have been involved in bushmeat symposia (BCTF, 2002).



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5.1.1.3 Europe

In March 1996, a resolution drawn up by the World Society for the Protection of Animals (WSPA) was passed at the African, Caribbean and Pacific Group and European Union (ACP-EU) joint assembly in Namibia, calling for political action to end hunting and killing of apes for food in Central and West Africa. However, this did not succeed in reaching political agendas.

In 2001, European zoos participated in an extensive campaign initiated by the European Association of Zoos and Aquaria (EAZA) and the International Fund for Animal Welfare (IFAW). A resulting petition against the illegal bushmeat trade, signed by 1.9 million people, was presented to European Parliament in January 2002, resulting in a resolution being passed in January 2004.

5.1.1.4 UK

Government action in the UK, as at February 2005, has been described by the Parliamentary Office of Science and Technology (Kumpel, 2005) and is outlined here in summary.

Below: Eland and elephants are species hunted for their meat.

The Department for Environment, Food and Rural Affairs (Defra) is the UK government department involved with bushmeat. Defra proposed the creation of the CITES Bushmeat Working Group (CITES BWG) in 2000 and has since contributed funds to support this. It has also funded the UK Tropical Forest Forum's Bushmeat Working Group (UK-TFF-BWG). It funds the Darwin Initiative, which is currently involved in three bushmeat projects, as well as funding a separate UK-based bushmeat research project. Defra, together with the Foreign and Commonwealth Office (FCO), has contributed more than £500,000 to GRASP (the UNEP/UNESCO Great Ape Survival Project).

In 2002, a new Imported Food Division was established within the Food Standards Agency (FSA) to address public health issues in the context of imported food. In the same year, the UK Bushmeat Campaign was launched, a coalition of more than 30 conservation organisations led by Barry Gardiner, Member of Parliament (MP), and Robert Evans, Member of European Parliament (MEP). This campaign seeks to mainstream awareness of the bushmeat trade among international forums and consumers of timber and mining products.

In April 2003, Her Majesty's Customs and Excise (HMCE) acquired responsibility for anti-smuggling controls of wildlife products at all borders. HMCE is expected to receive £25 million in ministerial support during the first three years of this responsibility. The National Audit Office plans to publish findings of a study to determine progress, constraints and the capacity of HMCE to detect and mitigate illegal meat imports.

A UK parliamentary Early Day motion on bushmeat in 2003 was the third most popular in that session, receiving 322 signatures.

In 2004, CITES parties called upon the UN Food and Agricultural Organisation (FAO) to organise a workshop for developing new international strategies for addressing the bushmeat crisis. The creation of the Inter-departmental Ministerial Group on Biodiversity followed in the same year, including among its members Defra ministers, the Department for International Development (DFID) and FCO.

The UK had a presence at the 2004 African Forest Law Enforcement and Governance (AFLEG) conference and was one of 40 countries to sign a ministerial declaration on illegal logging, including measures to mitigate bushmeat hunting.

Since the mid-1990s, DFID has been negotiating poverty reduction strategy papers with central governments and providing funding for their implementation. But wildlife is seldom regarded by partner governments as a mechanism for alleviating poverty and is rarely included in these strategies (DFID, 2002).

5.1.1.5 International

The World Conservation Union (IUCN) adopted a resolution on bushmeat in October 2000, calling for increased funding, law enforcement and collaboration to help curb the crisis (wa Mustiti, 2002).

5.1.2 Private sector

International media attention has encouraged some multinational logging companies to collaborate with NGOs and install pilot activities to reduce the impact of logging on wildlife (Tutin et al. 2001, cited by Nasi, 2001). Many companies are beginning to alter their practices and management policies to reduce both direct and indirect impacts on biodiversity (BCTF, 2000b).

The Zoological Society of London (ZSL) and Timbret (the UK's leading hardwood trader) are planning to pilot a project in a Ghana concession to evaluate the feasibility of 'bushmeat stewardship'. It would be expensive, but Timbret argue that public money could support early production until consumer demand has increased to absorb the cost.

In 1999, the World Conservation Society (WCS) began collaborating with the logging industry (Congolese Industrielle des Bois (CIB)) and the government of the Republic of Congo to preserve wildlife in four concessions within Nouabalé-Ndoki National Park (NNNP).

CIB's administration fostered prohibitions on the hunting of protected species and the exportation of bushmeat from its concessions, as well as establishing no-hunting areas, buffer zones and community hunting zones (Elkan, 2002). Under the auspices of the Ministry of Forestry Economy, ecoguards were recruited from local communities, sentries established at trafficking points and regular patrols mobilised throughout the park (Elkan, 2002). In addition, the project has conducted surveys of consumer taste and market preference and implemented a system of beef importation, tilapia production and chicken farming, as well as the provision of food by CIB to its workforce.

Over the first two and a half years of the project, wildlife management was extended to more than 500,000ha in a 1 million ha concession (Elkan, 2002). Protection has been costly but effective. In the first two years, a 10-fold reduction in snaring was observed, and 160 prosecutions made (Elkan, 2002). Funding has been received from the Republic of Congo government, WCS, USAID, the Central African Regional Program for the Environment (CARPE), the International Tropical Timber Organisation (ITTO), USFWS and Columbus Zoo among others.

More recently, Global Forest Watch (GFW), World Resources Institute (WRI), World Conservation Union (IUCN) and Interfrican Forest Industries Association (IFA) have established the Forest Concession Monitoring System for Central Africa (FORCOMS). This system of independent, voluntary monitoring of concessions in Central Africa is currently in its first operational phase (IFA, 2005) and aims to work with pro-active forest companies to ensure their operations conform to regulations and sustainable management. WRI/GFW carried out their first mission to Cameroon in November and December 2004 and anticipate missions in the Republic of Congo and Gabon during 2005. More than 35 forest enterprises have already subscribed to the initiative (IFA, 2005). A schedule of aims, activities and context of the initiative was published in 2004 (Beck & Méthot, 2004).

In June 2004, the Forest Stewardship Council (FSC) were finalising revised standards for chain of custody and product labelling (green label = pure FSC, brown label = part FSC, and another label to indicate recycled) (Arbus & Dempsey, 2004).

5.1.3 Public awareness and education

Media coverage of the bushmeat issue has increased from an estimated 35 articles before 1999 to more than 800 during the period 2000 – 2004 (BCTF, 2004c).

The proportion of babirusas making up the trade in wild pig meat in Sulawesi, Indonesia, was approximately 39% from 1993 – 1997; in 1998, it had decreased to 14%. During this time, much effort was made in public education, guarding particular forest sites and discussions with dealers and villagers. The observed drop in proportion of babirusas indicates, at first sight, that this effort had a very positive impact, but an overall decline in the availability of babirusas has also had an effect (though such a sudden drop is unlikely to be due to population decline alone) (Milner-Guland & Clayton, 2002).

Left: Education activities for communities bordering a National Park in Kenya.

Right: Anti-poaching team, Park National des Volcans, Rwanda.

Born Free, in conjunction with Kenya University Travelling Theatre has a touring production called *Carcasses*, performed in schools and communities in Nairobi to raise awareness of the implication of bushmeat hunting and trade.

In Central Africa, environmental education about the bushmeat crisis remains mostly ineffective, and in some cases, non-existent (CITES, 2004). Nevertheless, in Northern Congo, education efforts have been successful in achieving local, regional and national awareness through meetings, seminars, television, media, individual contact and school nature groups (Elkan, 2002).

5.1.4 Protection and management

Over a two-year period, protection efforts in Nouabalé-Ndoki National Park, Northern

Congo, resulted in the confiscation of 15 high-calibre elephant guns, 27 tusks and 15,000 snares; snaring subsequently decreased by an order of magnitude and, during the same period, 160 prosecutions were made (Elkan, 2002).

Anti-poaching patrols in Volcanoes National Park, Rwanda, resulted in convictions of nine poachers, some receiving prison terms and fines of up to US\$6,000. Since October 2002, there have been no more records of mountain gorilla poaching in Rwanda (WWF, 2003).

Anti-poaching patrols in Dzanga-Sangha Dense Forest Special Reserve, Central African Republic (CAR), have led to the arrest and imprisonment of 20 poachers, and subsequently a noticeable decline in bushmeat availability at Bayanga market (Raffaële, 2005). In the same area, several discouraged poachers now work as guards, encouraged by the high salary offered by WWF-employed park adviser David Greer (Raffaële, 2005).

Between May & July 2003, 630 anti-poaching patrol days in Kahuzi-Biega National Park, Democratic Republic of Congo (DRC), resulted in 52 arrests and seizure of 700 snares, 3 firearms and 2 live chimpanzees (WWF, 2003).

In the 1990s, WWF proposed that Lomako Forest, DRC, be designated a protected area for bonobos, since the only national park within the species' range (Salonga National Park) did not have a sizeable bonobo population. But, because of the civil war, this plan was not followed up.

Law enforcement activity in Indonesia, involving overnight checkpoints on the Trans-Sulawesi highway and visits to the market by government wildlife staff, resulted in a reduction in babirusa sales, but no prosecutions were made. As traders gradually realised that no significant punishment would follow, sales increased again (Milner-Guland & Clayton, 2002).

5.1.5 Capacity building

In Central Africa, the capacity to tackle the bushmeat trade has improved and this should be capitalised upon. Improvements include increased awareness of the crisis proportions of the trade, as well as the establishment of trans-boundary parks, state collaboration and increased donor interest and funding to governments (CITES, 2004). The CITES Bushmeat Working Group states that adequate knowledge of national and CITES trade regulations fortifies the capacity of governments to enforce legislation.

5.1.6 Symposia and conferences

In 2001, The World Conservation Union (IUCN), UN Food and Agriculture Organisation (FAO) and TRAFFIC held a conference in Yaounde, Cameroon, to discuss the links between bushmeat, livelihoods and food security. The conference highlighted the problems that conservation agencies were having in relation to development agencies. The relationship between these two parties is incredibly important in overcoming the bushmeat crisis.



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Development agencies aim to reduce by one half the number of people living in extreme poverty (less than \$1 per day) by 2015, as well as address gender disparities and improve health and education. They also have an environmental sustainability and regeneration target, which aims to have national strategies for sustainable development in place by 2005 and to see the loss of environmental resources reverse by 2015 at global and national levels. In reality, the international development targets are, however, considered by some to be weakly linked to conservation goals.

The Bushmeat Crisis Task Force website has a comprehensive list of bushmeat-related conferences and symposia, detailed chronologically.

5.1.7 Research and monitoring

Long term conservation and/or research projects create employment and can bring significant resources to the communities surrounding the project. This is seldom reflected in development discussions, but there are many examples around the world. The presence of researchers in the Democratic Republic of Congo, for example, has been shown to effectively deter poachers (Thompson-Handler et al, 1995).

People who have found a route out of poverty through conservation will, like almost every family in the world, probably celebrate by eating more meat – though it is to be hoped that this will not be illegal bushmeat! But improved standards of living do lead to a higher demand for meat in the area, and can exacerbate the illegal bushmeat trade if they are not coupled with better enforcement of regulations, better education as to the rationale behind the regulations and better supplies of legal protein to provide an alternative to illegal bushmeat.

5.1.8 Community support

The Communal Areas Management Programme for Indigenous Resources (CAMPIRE) grants proprietorship of natural resources to local populations in Zimbabwe and has been successful at regulating commercial hunting activities (Bowen-Jones & Pendry, 1999).

5.2 Primate-specific actions ongoing and their effectiveness

5.2.1 Policy

In 2001, UNEP and UNESCO launched the Great Ape Survival Project (GRASP) in an effort to raise awareness among key decision-makers in ape range states and to develop national action plans, as well as raising awareness and generating support for great ape conservation.

The signing of the Kinshasa Declaration by 16 range states and 6 donor countries in September 2005 is a public commitment to implementing policies that will ensure great apes do survive. The targets agreed include slowing the decline of great apes by 2010 and ensuring the protection of key populations of each taxa by 2015.

The GRASP Scientific Commission has drawn up a list of priority sites and populations for all species and sub-species of great apes. There are only 94 sites, in which the 112 key populations are found (some sites have two species present). If these 94 sites can be protected, the survival of all taxa of great apes is assured (unless climate change causes shifts in rainfall patterns that alters their habitat beyond their ability to cope).

5.2.2 Protection

Table 8 shows the number and size of African national parks that contain apes, and Table 9 shows the number and size of African conservation areas other than national parks that contain apes.

| National parks | Bonobo Only | Chimpanzee only | Gorilla only | Chimpanzee and gorilla | No apes | Total |
|-------------------------------|-------------|-----------------|--------------|------------------------|---------|---------|
| Number known to contain: | 1 | 20 | 2 | 8 | 67 | 98 |
| Total area (km ²) | 36,560 | 47,058 | 169 | 31,557 | 24,6035 | 361,379 |
| % all national parks | 1.0 % | 20.4 % | 2.0 % | 8.2 % | 68.4 % | 100.0 |
| % area of all national parks | 10.1 % | 13.0 % | 0.0 % | 8.7 % | 68.1 % | 100.0 |

In 2003, WWF AIGAP (African Apes Programme) provided emergency support to help the ICN (Democratic Republic of Congo parks authority) continue anti-poaching patrols in Kahuzi-Biega National Park. But long-term support will be required to ensure ICN's capacity for controlling poaching in this area is maintained.

| Non-park conservation area | Bonobo Only | Chimpanzee only | Gorilla only | Chimpanzee and gorilla | No apes | No ape data found | Total |
|---|-------------|-----------------|--------------|------------------------|---------|-------------------|---------|
| Number known to contain: | 0 | 14 | 2 | 10 | 162 | 120 | 308 |
| Total area (km ²) | 0 | 12,113 | 98 | 20,435 | 360,934 | 129,021 | 522,603 |
| % (excluding where no ape data found) that contain: | 0.0 % | 7.4 % | 1.1 % | 5.3 % | 86.2 % | | 100.0 |
| % size of all non-park conservation areas with data available that contain: | 0.0 % | 3.1 % | 0.0 % | 5.2 % | 91.7 % | | 100.0 |

Table 9: Number and size of African conservation areas other than national parks that contain apes

(Source: Marshall et al, 2000).

Survey of organisations involved in projects and campaigns

6

The Bushmeat Crisis Task Force website (www.bushmeat.org) was a valuable tool in creating the Ape Alliance projects database produced for this report, which grew subsequently as a result of personal contact with many of the organisations concerned. Thorough investigation of websites and further resources on the World Wide Web were undertaken, and many organisations offered useful information and literature. We distributed electronic surveys to 157 of the organizations in the database in order to keep project data updated. Approximately two thirds of them responded. The survey format was as follows:

The Ape Alliance is updating its list of bushmeat related projects. We note from the excellent database compiled by the Bushmeat Crisis Task Force that your project '.....' Dated.....has been completed / currently in progress and wondered whether there was any more recent news please. Specifically we have a few questions which we hope you may be able to answer for us:

1. Are you going to pursue any similar projects in future? If so where?
2. What is the current status of your project?
3. As the project is complete, how are you monitoring it?
4. Aspects that haven't been successful and aspects that have?
5. How much funding were you able to create for the project? How much projected funding would you need for any future projects?
6. Which aspects of your project have had most impact?
7. Where and how are you focusing current and future effort? Education? Training? Policy? Public awareness?
8. How have you generated support (from other organisations or the public) for the project?
9. Was your initial budget sufficient or would more funding improve success of the project?
10. Did you collaborate with policy makers? Other organisations? Has this been successful?
11. If working directly with the public, what has been their response?
12. When and why did you get involved with bushmeat?
13. Has timing been a factor? i.e. do you feel attitudes to bushmeat/awareness/issues have improved over time?

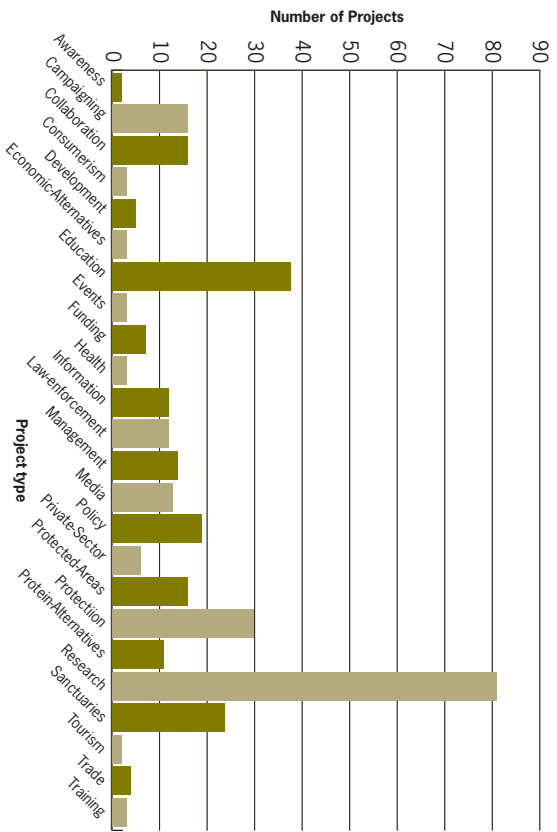
Opposite:
Bonobo in
Lola ya Bonobo
Sanctuary, DRC.



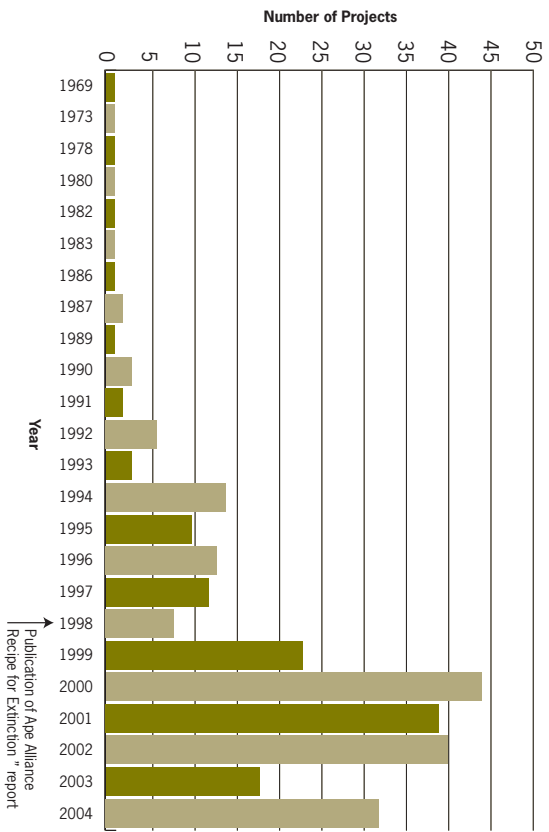
Projects were categorised according to the rough criteria below. We recognise that this is a somewhat arbitrary process, with much overlap between certain categories, but it is necessary for an assessment of where funds have been applied in response to the bushmeat crisis:

- Awareness** – E.g. bushmeat awareness groups
- Campaigning** – Broad term used for major initiatives like ESCAPE, which are a product of many of the other categories in the list
- Collaboration** – Used for cross-sectoral initiatives (e.g. Bushmeat working groups, BCTF, etc.)
- Consumerism** – Projects aimed at reducing impact of consumers buying products linked to illegal bushmeat trade (e.g. timber certification, developing market for ethically-sourced coltan)
- Development** – Economic, social and community development projects
- Economic** – Alternatives – projects offering employment/economic incentives to stop hunting (e.g. coffee-growing)
- Education** – Educational centres, exhibits, information packs, college workshops etc
- Events** – Awareness and fundraising events.
- Funding** – Financial support/sponsorship
- Health** – Disease research
- Information** – Databases, research archives, website resources
- Law-enforcement** – Anti-poaching and equipment support
- Management** – Management and monitoring plans
- Media** – Documentary, Radio
- Policy** – Government lobbying and collaboration – Ape Alliance postcard campaign, AFLEG (African Forest Law Enforcement and Governance Process), GRASP (The UN Great Apes Survival Project)
- Private-Sector** – Codes of conduct, monitoring of concessions
- Protected-Areas** – Demarcation of protected areas
- Protection** – Snare removal, targeted species projects such as International Gorilla Conservation Programme
- Protein-Alternatives** – Development and promotion of alternative food sources
- Research** – Survey, Census, Viability assessment, Studies...
- Sanctuaries** – Facilities caring for animals (mainly primates) orphaned by bushmeat hunters
- Tourism** – Eco-tourism projects
- Trade** – Projects focusing on trade routes/collaboration with transport companies
- Training** – Training for rangers and guards

The organisations involved in bushmeat projects and campaigns are indexed in Appendix 3 and their activities are detailed in Appendix 4 (see separate documents). Bushmeat projects are analysed in Graphs 1 – 4.

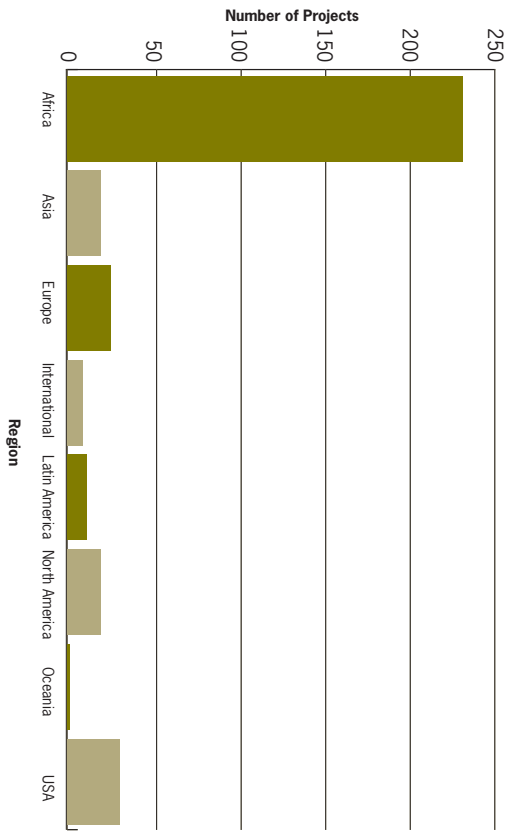


Graph 1: Number of bushmeat projects worldwide distinguished by project type

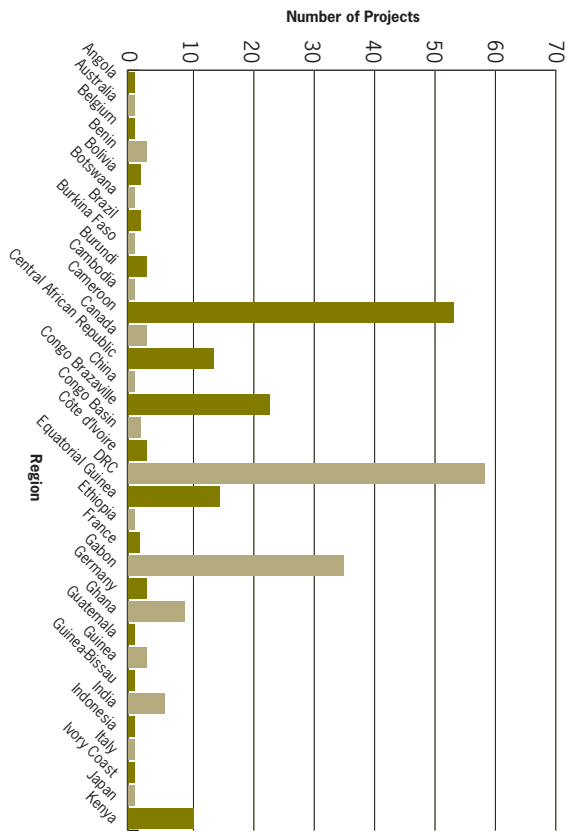


Graph 2: Number of bushmeat projects worldwide initiated per year

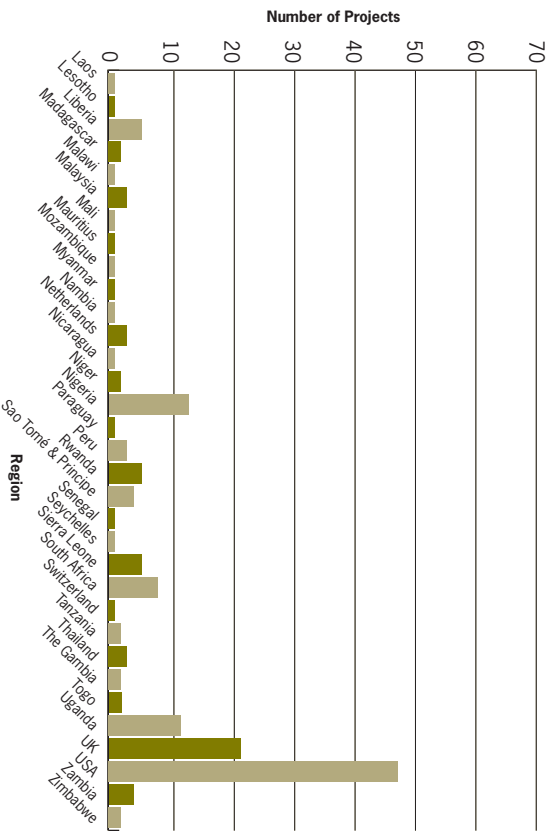
Publication of Ape Alliance Recipe for Extinction " report



Graph 3: Number of bushmeat projects per geographical region



Graph 4: Number of bushmeat projects per country



Obstacles to change

7

The economic importance of bushmeat is likely to be the single most important barrier to controlling the over-exploitation of bushmeat: producers and consumers will resist attempts to change their behaviour, and governments have little incentive to impose restrictions (Wilkie & Carpenter, 1999).

For the rural poor without land or access to agricultural markets, the forest provides building materials, fuel, traditional medicines, food and income (van Andel, 2000, cited by Nasi, 2001). Bushmeat carries social, economical, nutritional and cultural significance, and people traditionally supported by forest products view hunting as their prerogative. Evidence from outside Africa suggests that bushmeat consumption starts to drop only when families become wealthy enough to buy more expensive domestic meats (BCTF, 2000c).

Wildlife provides the primary source of animal protein to most poor, forested nations and provides higher than average incomes for hunters (Apaza et al, 2002). Bushmeat is the most important source of protein in many Central and West African cultures (Wilkie & Carpenter, 1999).

Subsistence hunters and their families benefit from the commercial bushmeat trade, and if laws were strictly enforced, their incomes would be affected. Across sub-Saharan Africa, the limitations on raising livestock due to trypanosomiasis make bushmeat hunting a lucrative alternative.

Bushmeat is often preferred even where domestic livestock and poultry are readily available and cheaper to purchase (WWF, 2003). Furthermore, people like the taste of certain species (Peterson, 2003).

Many African governments recognise that bushmeat is a major problem but claim they are powerless to act without necessary resources. In 1996, the Ministry of Agriculture, Water and Forests in Congo-Brazzaville issued a resolution listing measures already taken against the bushmeat trade and those that would, or could, be taken (for example, the use of anti-poaching teams and education) if funding was available from the international community and NGOs (WSPA correspondence). Furthermore, despite a Ministry clamp down on the trade, which included a ban on airline bushmeat

Opposite: Animal parts for sale on traditional medicine stall, Bamako, Mali.



transport. WSPA recorded planes from Ouesso, Republic of Congo, carrying meat into Brazzaville airport. All existing Ministry agents responsible for ensuring bushmeat was not loaded onto Brazzaville-bound planes were sacked as a result, but the incident highlights a weakness in implementation and monitoring measures.

A representative of the British High Commission in Cameroon said it was extremely difficult to stop even their drivers from carrying bushmeat back from any field trip, claiming it was an accepted bonus when going out of town (Report of WSPA/EN/RRO-PROTECT Conference, 1996).

Population growth has a strong impact on bushmeat demand – an increased need for housing and agriculture leads to clearing of land and increased extraction of forest products (BCTF, 2000a).

Over-fishing by foreign and pirate fleets off the coast of West Africa is an example of activities that indirectly affect the bushmeat problem and which need to be tackled in tandem with direct causes.

Conservation and development agencies have different agendas, but to overcome the bushmeat crisis, they need to work together, realising that issues such as poverty and food insecurity are closely linked to the bushmeat problem. Until these two agency types can communicate effectively and realise common goals, few problems will be resolved (Davies, 2002).

The focus of scientific research is often analysis of the problem rather than ways in which to solve it. For example, many resources have been devoted over the years to assessing meat found in markets but little into researching the most appropriate protein alternatives and establishing the infrastructure for these to become feasible. While long-term studies are beneficial in terms of comprehensive data analysis of the bushmeat problem (for example, Milner-Gulland & Clayton, 2002), recommending extensive research over years or decades to come in areas where extinctions are imminent is futile and resources would be better targeted at putting measures in place to halt species decline on a practical level.

The 16th Annual Meeting of the Society for Conservation Biology in Canterbury, UK, July 2002, found no novel solutions for tackling the bushmeat problem (Ling et al, 2002). Lack of new ideas may be an obstacle to change.

No global, information-sharing network exists to disseminate information (for example, within the private sector) and translate theoretical recommendations into action (CITES, 2004).

In 2004, CITES BMWG reported a number of obstacles to policy and legislative reform in Central Africa:

1. Lack of capacity to manage the bushmeat problem with regard to trained personnel, materials, finances and organisation.
2. Where political will is present, lack of resources defies implementation.
3. The forces of law and order and the judiciary are not always aware of laws and regulations against illegal bushmeat and wildlife.
4. Inadequacy of management capacity of wildlife administrative authorities of the six countries of the sub-region.
5. Poaching of wildlife for domestic consumption and commercial bushmeat trade continues unabated in countries of the sub-region.
6. Data on trends in wildlife and bushmeat consumption and trade is scanty and dispersed.
7. There is still no sub-regional databank on wildlife and bushmeat trade and consumption.
8. Food security and livelihood, issues of prime importance in the fight against the bushmeat crisis, are still not a priority for programmes established to manage the crisis.
9. The private sector has still not been completely wooed into the fight against the bushmeat crisis.
10. Environmental education about the bushmeat crisis remains ineffective and in some cases non-existent in the sub-region.
11. The absence of a strong institutional platform for the management of the crisis in the sub-region has reduced the possibility of consistency and uniformity in management approaches.
12. Monitoring and regulation of bushmeat trade and consumption remains weak throughout the sub-region.
13. Partnership with international NGOs and organisations working in the policy arena and at field level to fight against the bushmeat crisis has been minimal.
14. No strategy has yet been developed to guarantee the effective association of local communities in the management of the bushmeat problem.

Potential solutions

8

8.1 General solutions

Having attained professional consensus that the bushmeat crisis is a top global priority, it is time to shift the emphasis from quantifying the problem to constructing and installing solutions. A good starting point is tackling the key areas of (i) reducing local supply (ii) reducing commercial supply and (iii) reducing demand. All areas of hunting need to be addressed – not all hunting is for meat, and so even if bushmeat demand is reduced, some hunting will continue (Raffraele, 2005).

Collaboration of conservation groups, government agencies and world health and financial institutions to eliminate trade will be necessary.

Conservation concerns have traditionally dominated strategies to curb the bushmeat problem, and the sole approach has been the more effective management of protected areas, or the management of hunting and consumption itself (Rowcliffe, 2002).

Increasing attention is now being given to multi-disciplinary methodologies (Ling et al, 2002). Local conservation projects must give equal gravity to economic and biological considerations and draw on a number of different approaches to rationalise which is most appropriate (Ling et al, 2002).

All these solutions require money, and this needs to be sourced internationally. Perhaps the greatest priority, therefore, is to raise the profile of the bushmeat crisis in the international political forum in an effort to solicit major financial support.

8.1.1 Protein alternatives

Bushmeat will not be a significant source of nutritional support for a large proportion of the next generation. If we aim to reduce hunting to sustainable levels, protein alternatives need to be developed and promoted immediately. Rodents, insects and birds represent sources of protein that are often nutritionally superior to traditionally favoured species (Barnett, 2000); they also have high reproductive rates, making them suitable for captive breeding projects. Sourcing local species for such projects ensures maintenance of customs and also provides an opportunity to replenish wild populations



(though the cost of increasing bushmeat supply in the forest would match or exceed that of livestock rearing). Alternatives should be palatable and economically competitive (initial subsidisation may be required to make the products cheaper than bushmeat – BCTF, 2000c). In Liberia, replacing protein from wildlife with domestic meat could cost up to US\$100 million per annum, more than the income generated from bushmeat trade (Bowen-Jones & Pendry, 1999).

Willingness to accept alternatives can vary from region to region. In the Uttaranchal region of the Indian western Himalayas, 80% of hunting respondents were willing to stop hunting if alternative protein was supplied free of charge, but in the neighbouring Himachal Pradesh, 41% would not give up hunting under any circumstances (Kaul et al, 2004).

Domestication can involve economic constraints such as the cost of fencing and veterinary care, but many species can breed in very simple facilities, harnessed from local materials: cane rat and giant rat production are possible even using domestic food scraps and agricultural waste. Some farmers have expressed interest in cane rat domestication, because the species is more popular than livestock and is not associated with any cultural taboos (Stein et al, 2002a). It is important, therefore, to research cane rat biology to assess the risks of zoonotic disease transmission.

Rabbit raising has been effective in Cameroon in areas where bushmeat is already scarce (Wilkie & Carpenter, 1999), and intensive breeding of cane rats and Erin's rats has had some success (Bowen-Jones & Pendry, 1999). Pilot projects with blue duikers, sitatunga, red river forest hogs and brush-tailed porcupines have also been attempted (Bowen-Jones & Pendry, 1999; Jori et al, 1998).

Domestication enterprises may result in wildlife habitat loss as forests are converted into pasture or fodder. Where there is cultural, taste or other preference for bushmeat, it will be more difficult to institute alternatives. Equally, there is no reason to expect people not to exercise their 'right' to cost-free bushmeat. But if bushmeat alternatives are not available, the continuing demand for bushmeat will drive supplies down and prices up, inviting yet more people to enter the trade.

Development of protein alternatives, ecologically sound community farms and bushmeat-free markets should be focused in village, farm and urban areas where they are needed most – where bushmeat is currently irreplaceable.

In West Africa, marine and freshwater fish are the primary source of protein. Improved fisheries management by foreign and domestic fleets could help prevent extinctions. Large, heavily subsidised foreign fleets fish off the West African coast. The EU has the largest foreign presence, and its harvest increased by a factor of 20 between 1950 and 2001. Pirate fishing vessels from foreign ports are also a major problem, and increased policing of exclusive fishing zones could help (Bashares et al, 2004).

8.1.2 Improving agricultural infrastructure

Development of traditional agricultural economies has been proposed to satisfy tandem needs for alternative protein and economic opportunities (BCTF, 2000a). A variety of reasons exist to support hostile attitudes towards agriculture in Africa. These include the higher costs of rearing livestock relative to hunting free bushmeat and the prevalence of trypanosomiasis affecting domestic animals. Furthermore, poor soil and high rainfall leaching away nutrients means that both wild and domestic meat production in forests is limited, whether the land has been cleared or not (Barnes, 2002). The most predominant foliage is at canopy level, out of reach of herbivores, and energy passing through trophic levels tends to go directly from plants to invertebrate decomposers (Barnes, 2002). Mammalian biomass is therefore low. Domestic stock is also commonly regarded as a cultural and capital asset and exploited only in times of hardship.

Fa et al (2003), proposed necessary changes for instituting increased agricultural production in the Congo Basin:

1. Changes in policies and institutions that encourage private investment and more effective public investment in basic education, health, and nutrition;
2. Research extension;
3. Development of appropriate technologies;
4. Rural infrastructure;
5. Developing and strengthening social organisations representing farms and local communities;
6. Approaches that address the needs of women farmers.

Ecological zones other than forest are better suited to pastoralism. Forest edge, for example, is twice as productive as the interior. Edge species such as rodents represent opportunities for sustainable hunting (Barnes, 2002). Savannah is ten times more productive than forest (Robinson & Bennett, 2000). Cattle and pigs have been advocated as the best livestock to focus on (Bowen-Jones & Pendry, 1999; Newing, 2001), but breeding would have to be restricted to areas where tsetse flies and trypanosomiasis were not a problem. Improved land tenure management could help improve willingness to undertake agricultural practices (Stein & BCTF, 2001).

Ecoculture integrates farm and forest production, with the provision of ecosystem function at a landscape scale. Large-scale development and adoption of ecoculture is urgent. The strategies include: expanding natural areas; establishing reserves that benefit farmers; creating habitat networks; raising farm productivity; managing wild species; enhancing ecosystem value of lands under production; reducing agricultural pollution; modifying management of soil, water and natural vegetation; mixing species to mimic the structure and function of natural ecosystems; and diversifying household incomes (ABCG, 2004). Human livelihoods are most effectively sustained in highly modified ecosystems, where humans have intensified agriculture and grazing systems (ABCG, 2004).

8.1.3 Economic opportunities and employment

Annual income generated by hunting ranges between US\$400 and US\$1,100 (BCTF, 2004b), which is comparable to or greater than the salaries of people charged with wildlife protection. If the latter salaries could compete, poachers and people migrating from cities to capitalise on the bushmeat trade might be encouraged to use their knowledge of wildlife and forests as park guards, field assistants, census takers, teachers or tour guides.

Policing the Congo Basin would involve one guard per village of 50 people, paid at least \$1 per day, with an additional \$1 per day for equipment and supplies. This would amount to more than \$46,720,000 per year for the Basin (Wilkie & Carpenter, 1999). No national agency can afford this, and international donors are unlikely to pay (Wilkie & Carpenter, 1999). But there is potential for control methods to work in logging concessions, because the industry could be required to pay for policing.

Below: Poachers with bushmeat and tools of their trade in Kenya



© David Sheldrick Wildlife Trust



© David Sheldrick Wildlife Trust

It is important that enough guards are allocated to areas where illegal hunting is rife – unsupported guards may become demotivated in the face of rampant poaching. A team should be on 24-hour alert, and check-points/roadblocks established to better control bushmeat transport. Adequate protection is also an issue. Rebels, soldiers and poachers are frequently armed, whereas park guards are usually not (Stein et al, 2002b). Guards in Dzanga-Sangha, Central African Republic, are heavily outgunned by poachers, and many go on patrol unarmed, despite shootings within the park (Raffaele, 2005).

Game ranching (the commercial management of wildlife for meat and skins) could be another way of generating revenue (Eves et al, 2002). On privately owned land, this could have the potential for harnessing significant contributions to the national economy (Barnett, 2000; Barnes, 2002). In East and Southern Africa, game ranching and population cropping/culling are being practised but have been criticised for being unsustainable and irreversibly damaging to wildlife populations (Stein & BCTF, 2001).

Licensed sport hunting has also been proposed as an alternative source of income, but this undermines more lasting, non-consumptive revenue opportunities from ecotourism (Stein & BCTF, 2001). Even where sport hunting is a major activity, the economic impact can be trivial (TRAFFIC, 2002).

Barnett (2000), notes that legal game-production methods (cropping/culling, ranching/farming, licensed sport hunting and problem animal control) are viewed as inferior land-use options in East and Southern Africa due to economic under-performance – illegal bushmeat hunting is more lucrative. This is likely to be even more pertinent to the less productive forests of Central and West Africa.

8.1.4 Strengthening governance and political capacity to address the bushmeat crisis

Any efforts to control or regulate the commercial bushmeat trade will fail without political complicity in the regions concerned. Raising international funds for action at local level is a major priority for facilitating commitment of strong governmental leadership in these areas, which lack the resources to strictly enforce or even legitimise current policies and laws.

Leaders of the G8 nations should be urged to encourage the G8 to mobilise support for countries lacking the capacity to combat the bushmeat trade. The EU should (i) financially support African states to ensure proper capacity for law enforcement; (ii) enforce code of conduct for all EU logging companies operating concessions in areas where hunting is a problem; and (iii) increase support for projects aimed at tackling the bushmeat trade.

In Central Africa, some improvements have already occurred and should be capitalised on. These include increased awareness of the crisis proportions of the trade, as well as the establishment of trans-boundary parks, state collaboration and increased funding to governments (CITES, 2004).

Williamson (2002), advocates the use of “systematic thinking” to make sensible decisions with limited resources.

Legislation should be reviewed and updated, where necessary, taking into consideration the interests of all stakeholders, while providing an effective means for conserving wildlife. Adaptive solutions that are flexible, sympathetic and responsive are crucial for success within the context of local political, ecological, economic and cultural conditions.

Legislation needs to be better implemented and reviewed to ensure that short-term economic gains are successfully reconciled with long-term survival benefits. Judicial and law enforcement officers should be fully trained in conservation law and the application of interdiction and prosecution for non-compliance. A comprehensive, easy-to-understand manual on current wildlife-related legislation could be produced and distributed to

government agencies, police and judicial departments as well as the private sector. Law enforcement officers would need to be offered transport logistics, guns, uniforms and other equipment for effective operation, as well as competitive salaries.

Public health officers should confiscate bushmeat found in urban markets and apply prohibitive fines or even close down traders to prevent re-offence. In Kenya, domestic meat is stamped at the slaughterhouse and checked before despatch so any unstamped meat found in markets is likely to be bushmeat (Born Free, 2004).

Trade bans will not work if people depend on bushmeat as a nutritional “safety net” (Kumpel, 2005). People ignore the law because they see hunting as their imperative – a necessary means of surviving and making a living. They are unlikely to stop hunting unless they can generate income in other ways. To suddenly implement prosecutions, without the infrastructure in place to allow people to engage in legal activities instead, would be unjustified.

In West Africa, it is necessary to improve policing of waters to deter pirate ships and to limit the access of the large, heavily-subsidised foreign fleets, which are depleting fish stocks (Brashares *et al.*, 2004).

8.1.5 Community

All stakeholders with an interest in sustaining the huge revenue from bushmeat hunting (including hunters, traders, truck drivers, marketresellers, restaurateurs, consumers and the private sector) should be involved in conservation planning processes. Evidence from Ghana suggests that there is no one clear actor group that can be targeted to reduce bushmeat hunting/trade/consumption, and a multi-actor approach is therefore necessary (Covillshaw *et al.*, 2005).

Rural families will suffer most from restriction, and unless they have a stake in deciding rational use of wildlife, poaching is likely to continue. Moreover, they should be compensated for economic losses attributed to conservation.

Where wildlife can be exploited for economic reward other than through hunting, communities have an incentive to support survival of species in the long-term. Yet a successful policy for reconciling poverty alleviation and reliance on bushmeat currently remains elusive. Conservation concerns have dominated strategies to mitigate hunting, resulting in a preference for strictly enforced protected areas and trade bans, which have neglected livelihood considerations and had negative social impacts.

Traditionally, people were forcibly removed from areas designated for conservation and denied access to resources they had previously relied on, without receiving any direct benefits from these areas (for example, jobs through ecotourism, hunting royalties, taxes and income from commercial trade (CITES, 2004; Rigava, 2001)).

Now, a more decentralised approach is prevalent, involving proprietorship of resources

among rural communities, the allocation of responsibility, equitable sharing of financial benefits and the right to protect and benefit from their natural heritage (Rigava, 2001). In this way, rural people can be motivated to implement quota systems and discourage and regulate commercial hunting activities in their areas. Fences, making property more private, might help to achieve this. A study in Lima, Peru (Llaja *et al.*, 2000) found that hunters who were most heavily exploiting local populations of game were also the most motivated to participate in community-based wildlife conservation projects.

It is crucial that conservation strategies do not compromise the health, welfare or security of local communities. Conservation and development agencies, governmental and non-governmental departments, must be sensitive to personal circumstances, needs and realities and offer viable alternatives and economic opportunities (BCTF, 2000a). Set-aside payments could be made to communities during hunting moratoria, and training could be instated to optimise economic returns from harvested animals (for example, utilising skin, fur, horns and so on (Williamson, 2002b)). Alliances could be instituted between indigenous cultures and conservation organisations (Stearman, 2000), as could working relationships with hunters, to increase the sustainability of hunting and eliminate dependence on bushmeat by introducing alternatives (Noss, 2000).

Eves and Ruggiero (2000), proposed the establishment of conservation villages, whereby villagers are employed to manage and protect wildlife by enforcing hunting laws. Alternatively, willingness to engage in wildlife management plans could be reciprocated by granting exclusive hunting licences in certain areas (Fimbel *et al.*, 2000).

8.1.6 Private sector

Collaboration of private sector stakeholders (including logging transporters, logging concessionaires, agro-industrialists, safari hunters, aeronautic companies and railway companies) is important for the implementation of good practice guidelines and benefit-sharing regimes (CITES, 2004).

Logging companies play the key facilitation role in the commercial bushmeat trade and have management responsibilities over large areas of the affected forests (BCTF, 2004b). More widespread adoption of sustainable hunting practices and subsequent certification should be the goal.

Companies operating timber concessions will need to: prohibit the transport of bushmeat and hunters on their vehicles, ban settlement in existing and closed concessions, close roads when operations cease, prevent employees from purchasing and eating bushmeat, and provide protein for their workforces. An employee bonus scheme could be introduced to reward compliance. Abandoned logging concessions could be converted into safari camps for alternative activities such as game ranching and vegetable gardening.

Support for certification by the Forest Stewardship Council (FSC), African Timber Organisation (ATO) or International Tropical Timber Organisation (ITTO), as well as a growth in consumer demand for certified wood will help in mainstreaming these changes. European timber companies, looking to increase profits as a result of competition with Asian rivals, could be responsive to the demand for sustainably harvested wood (Bowen-Jones & Pendry, 1999). Trade organisations such as ITTO could be more involved in regulating imports of timber.

Tropical timber certification needs to be contingent on control of bushmeat hunting, and any timber sold under the label of sustainable should be evaluated for the impact of its extraction on wildlife. Periodic revision of agreements between government and forest exploiters in accordance with the state of the ecosystem should also be put in place.

Codes of conduct for exploiters of forest and wildlife products need to be developed and adhered to. Conservation bonds have been proposed as an incentive for logging companies to do this, but have yet to be successfully implemented.

8.1.7 Protection

Increases in the number, size and protection of wildlife reserves and in donor support are needed. Reserves should be established in areas where large populations of endangered species exist unprotected. Areas that harbour the most biodiversity should be prioritised.

The size of the protected areas is also important. Studies have shown that smaller parks suffer a greater impact from hunting than larger ones (Wilkie et al, 1998).

Law enforcement is a prerequisite of successful conservation in protected areas.

The management concept for the National Park of Upper Niger, West Guinea, where bushmeat hunting is widely commercialised, does not prohibit hunting in the buffer zones, on the grounds that it is an economically important activity for the local people (Zieglar et al, 2002). A "participatory" approach is adopted, whereby hunters are educated about sustainable use.

Though war, in some cases, can be beneficial to wildlife, this is usually the case only when it secures certain areas from human presence (Draulans & Van Krunkelsven, 2002). Demilitarized 'peace parks' such as those created for trans-boundary parks (for example, the Virunga chain) could usefully be applied to war zones. Reluctance of conservationists to collaborate with soldiers and military authorities may be misconceived in areas where chronic war is having a severe impact on wildlife. The urgency of the threats faced by many species suggests that waiting for an improved political situation is an impractical option (Draulans & Van Krunkelsven, 2002).

8.1.8 Education

Greater recognition of the value of and the services provided by tropical forests and their biodiversity is important. Trade in timber and other forest products generates a huge amount of money, yet the economic significance of forests is rarely taken into account when assessing Gross Domestic Product (Nasi, 2001). Furthermore, the services provided by a tropical forest (carbon dioxide absorption, oxygen production, erosion control, nutrient recycling and so on) far outweigh the GDP of tropical countries in an economic context.

Public awareness could be increased through local and global media materials (books, magazines, television and cinema materials, as well as radio and newspaper campaigns) and social marketing techniques that give threatened species national emblem status. Television advertisements in developed countries (mainly Europe) showing graphic bushmeat-related images could increase awareness without relying on people watching entire programmes.



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People involved at all levels of the trade (hunters, traders, truck drivers, market-resellers, restaurateurs and consumers) need to be educated on the imperative to conserve protected species and on relevant laws and regulations, with precise instructions to prevent them participating directly or indirectly in bushmeat trade.

School presentations (including theatre and dancing) could be implemented more widely to reach the younger generation. School and university curricula could be adapted to highlight the social, ecological and economic importance of viable wildlife populations.

Above: Protected wildlife habitat at the Tacugama Chimp Sanctuary, Sierra Leone.

Education campaigns need to distinguish where appropriate between legal, subsistence-based hunting to meet basic protein needs, and illegal, commercial hunting that threatens both wildlife and the livelihoods of future generations.

8.1.9 Integration of conservation and development

The alleviation of poverty is often proposed as a solution to addressing the twin imperatives of species conservation and livelihood/food security, but historically has been unsuccessful (Robinson & Bennett, 2002). Involvement of development agencies who are experienced with tackling problems faced by rural poor and in using policy interventions to secure livelihoods is important. But there is some conflict of interests – development agencies aim to alleviate poverty and place emphasis on people, not wildlife (Miller-Gulland, 2002).

Rural hunters lacking the education, skills and cultural context to exploit income-earning job opportunities have been peripheralised by development aid biased towards the more educated urban and semi-urban poor (Robinson & Bennett, 2002). Development by outsiders consumes the land and resources of traditional populations and increases demand, providing further incentive to hunt (Robinson & Bennett, 2002).

Communication between development agencies and conservation agencies is vital in solving the bushmeat crisis. Davies (2002), lists particular information that development agencies could be responsive to:

1. A regulated and sustainable bushmeat trade has the potential to contribute to economic growth in countries with few other options.
2. It is worth investing in a regulated bushmeat trade for the benefit of the rural poor, whose livelihoods may depend on it (the bulk of the profits currently go to traders and retailers).
3. Weak local governance and unfair terms of trade are underlying causes in both the bushmeat crisis and poverty.
4. Conservationists can help improve poverty assessment models to incorporate environmental concerns.
5. Strategic environmental assessments and environmental impact assessments, carried out after development corporation investment in areas such as improving access/road building, need to include bushmeat-specific questions to assess the impact on the bushmeat trade.

8.1.10 Research

Much research has already been carried out on the commercial bushmeat trade, and it has been argued that the focus should now be shifted from further quantifying the problem to constructing and installing solutions. But research into the problem could still prove useful, particularly with regard to hunting methods, market chains, and supply, demand and price dynamics (Williamson, 2002b).

The most expensive bushmeat species are those in high demand and limited supply. In the absence of sufficient methodologies for obtaining accurate census data, price could be used as a surrogate for determining relative abundance of species. This would, at least, be adequate for determining priority species and rationalising the distribution of conservation resources where they are most urgently needed.

Data about the relative proportions of harvested meat that are consumed by rural and urban communities are incongruous, and there is ambiguity surrounding the effects of lower harvesting rates on food security and economies (Bennett *et al.* 2002). There is currently no clear data on the ecological effects of unsustainable hunting and the extent to which wildlife consumption is affected by price relative to domestic alternatives (Bennett *et al.* 2002). Comprehensive conservation programmes that aim to resolve outstanding deficiencies in knowledge and communicate information more effectively to governments and development/private sectors are crucial (Bennett *et al.* 2002).

Increasing field research and media attention on areas less known for bushmeat problems (for example, Asia and South America) would help determine the broader scale of the crisis and help spread resources more equitably.

More research outside protected areas is needed, because hunting estimates in national parks are likely to be unrepresentative of non-protected areas.

More research on the hunting of forest carnivores is necessary to document adverse effects of habitat loss and hunting on their long-term survival (Ray, Stein & BCTF, 2002). Reliable monitoring techniques should be developed to achieve this.

Detailed research and analysis is needed to determine pathogen loads in bushmeat and to identify more comprehensively the health risks associated with its consumption.

However, others suggest that uncertainty over our ability to quantify bushmeat consumption, offtake rates and productivity is because of difficulties associated with studying tropical forest animals, rather than a lack of research effort. Wilkie and Carpenter (1999) argue that the substantial increase in effort required to have all the information that scientists would ideally like before taking action is not worth it, as figures may never be correct and that resources, therefore, should be spent on mitigation rather than further study.

8.1.11 Improving hunting efficiency

The effects of hunting can be reduced by increasing hunting efficiency. The use of indiscriminate snares has a detrimental effect on non-target (and often endangered) species (Newling, 2001). Control of snaring is important to avoid arbitrary wastage and could be achieved by establishing a zone around villages, beyond which snaring is restricted (Bower Jones & Pendry, 1999). Remote snaring is likely to be unimportant to villagers, because animals caught are likely to decompose or be scavenged before collection.

8.1.12 Market dynamics

It is important to determine how the economic environment affects consumer choice (Miller-Gulland, 2002). Taxation of bushmeat trade, targeted at traders, could reduce profit and demand, and some of the tax could be returned to local communities as compensation for the decreased revenue from hunting (Bowen-Jones & Pardy, 1999). Alternatively, taxation might increase the price of bushmeat, encouraging consumers to seek alternatives (BCTF, 2000c), especially if it is attended by a reduction in the price of domestic meat.

To achieve this, local governments will need to invest in agricultural research and extension activities to increase the productivity of domestic meat without clearing forest for grazing land (Apaza et al, 2002).

Bushmeat price dynamics are complicated and linked to preference, and so actions affecting price would need to be closely monitored. It is possible that increasing the price of bushmeat and reducing that of domestic meat could result in bushmeat being perceived as an even greater luxury, further increasing demand in urban markets.

Hunters should be encouraged to sell directly to markets rather than operating through commercial sponsors ("middlemen"), thus securing a more reasonable income for a lower volume of harvested meat (Bowen-Jones & Pardy, 1999).



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Above:

Conservation costs should be built into the price of valuable hardwood timber.

8.1.13 Resolving institutional deficiencies

Institutional frameworks will need to be strengthened allowing for better protection and monitoring of ecosystems, vulnerable and endangered species, improved habitat restoration and enhanced life conditions of local communities (Medou, 2001).

Institutional partnerships could have a role to play, involving collaboration of the World Bank, EU, IUCN, UNESCO, CITES, FAO, ITTO, WHO, governments, NGOs and the private sector.

To date, though, coordination between such bodies is often lacking, with the exception of the World Summit on Sustainable Development Type II partnerships such as GRASP and the Congo Basin Forest Partnership.

The NGO community has long urged such a coordinated response, for example the Ape Alliance drew up a series of proposals for the various parties involved in the timber and bushmeat trade to address the threat they pose to endangered species (Ape Alliance, 1998)

Bennett & Robinson (2000), offer a more detailed set of recommendations to the different players at national and local levels:

1. National governments

- Establish a network of effectively managed protected areas, where hunting is not allowed or strictly managed, as well as areas protected as extractive reserves.
- Ensure legal, technical and administrative mechanisms are in place, as well as trained personnel, to enforce the regulations in protected areas.
- Ensure laws exist and are enforced to protect vulnerable species from hunting.
- Control the wildlife trade and sale of modern hunting technologies.
- Minimise the building of roads through protected areas.
- Establish regulations so that logging companies are responsible for preventing their staff from hunting.
- Support research and monitoring of hunting and feed results into management decisions.
- Promote education and awareness programmes about wildlife conservation.

2. Local communities and agencies working with them

- Establish a system of land use that supports local protected areas.
- Ensure local people are involved in monitoring, management and decision-making regarding hunting.
- Encourage practices that reduce the use of harmful technologies and prevent hunting of vulnerable species.
- Establish registers of people allowed to hunt in extractive reserves and mechanisms to exclude outsiders.
- Establish mechanisms to reduce the sale of wildlife outside local hunting areas.

3. Timber companies

- Enact, comply with and enforce regulations to stop workers from hunting and buying wild meat from local people.
- Supply fresh protein supplies to workers.
- Prevent company vehicles from carrying wildlife and wild meat.
- Close all roads after logging.
- Protect all key areas for wildlife (for example, salt licks and breeding grounds).
- Create a system of unlogged blocks as refuges for less tolerant wildlife.

4. NGOs and academic institutions

- Act as intermediaries between government and international agencies, local communities and logging companies.
- Promote and conduct research and disseminate results.
- Promote and conduct education and awareness campaigns at all levels, from local communities to policy-makers.
- Support programmes to encourage alternative livelihoods.
- Encourage and train professional field staff skilled in addressing both biological resource use and local development.

5. International donors

- Ensure the issue of hunting is addressed in all development and conservation programmes.
- Ensure development programmes are based on what is biologically feasible and appropriate in the local political, social and cultural context.
- Promote conservation and extension programmes that reduce hunting and promote alternative sources of food and income.
- Promote the establishment of protected areas and extractive reserves.

8.2. Primate-specific solutions

Potential solutions relating to the primate bushmeat trade include targeting efforts to:

- Monitor logging companies through independent authorities to ensure their commitment to reducing their involvement in the bushmeat trade (for example, by providing alternative food for their staff, prohibiting the transport of bushmeat on their trucks and prohibiting hunters from setting up camp in their concessions).
- Educate consumers about using their buying power to support exclusive use of timber products certified for wildlife and forest-friendly management practices.
- Use 'Ape-friendly' stickers on wood.
- Educate local people through public service radio broadcasts. WSPA (1994) found that village elders in hunting camps throughout Central Africa possessed small radios.

These were the focal point of villages and represented an education opportunity through public service broadcasts, which could be followed up by distribution of printed materials to towns, villages, schools, animal welfare organisations and government agencies.

- Combat the commercial bushmeat trade by educating and seeking collaboration from captains of riverboats, a major portal for bushmeat transport from remote regions to cities. Boats could be used to distribute educational materials to remote regions.
- Combat the pet trade by: approaching governments to pass and enforce legislation banning ownership of wild species; approaching development agencies to secure support for facilities to accommodate, rehabilitate and, where possible, release orphaned primates; ensuring national wildlife authorities incorporate sanctuaries into conservation agendas.

- Use confiscated orphaned animals as educational 'ambassadors' while they are kept in sanctuaries, with outreach programmes to hunting camps, homes, businesses, etc. to engender positive conservation values in local people.
- Advertise in newspapers favoured by expatriates to educate against buying apes and other protected species as pets.

- Design and install methods to identify, analyse, monitor, prevent and treat interspecies viral and bacterial transmissions in areas where bushmeat hunting and commerce, pet and orphan-caretaking and other human contact with wildlife occurs.

- Build capacity at local, national and international levels to achieve successful monitoring and surveillance of disease, as well as the infrastructure for healthcare and readiness to deal with outbreaks (BCTF, 2003). Investment to achieve this should be sought on the grounds of public health and scientific concern. Expertise should be adopted in the fields of anthropology, primatology, epidemiology, virology, medicine, history, ecology, economics and politics (BCTF, 2003).

- Prevent, or at least manage, the circumstances under which zoonotic disease transmission is favoured, and pursue relevant education and training (BCTF, 2003).
- Carry out more research on the host/reservoir dynamics of Ebola to prevent this disease from exacerbating the impact of poaching (the natural reservoir is not currently known); implement strategies to minimise effects on people and apes.

- Obtain greater funding for research. Ape populations are declining more slowly in protected areas where the presence of researchers deters poachers (Marshall et al, 2000). Researchers who involve locals in research projects also help to ensure that species protection is in the interest of local people (Duppan et al, 2000).

- Investigate ammunition being used specifically for primates.
- Assemble and analyse all information about protected areas containing great apes that is currently unpublished and inaccessible. This should give a clearer picture of the current and future status of great ape species.

- Develop well-managed tourism to attribute alternative economic value to apes. Habituated troops of mountain gorillas in Rwanda, DRC and Uganda are a principle factor in generating tourism-based state income.
- Address other aspects of human-ape conflict such as crop-raiding, not just hunting.

Bonobos

Applying these general recommendations to specific sites requires careful analysis of local conditions, coupled with extensive consultation with local communities and NGOs. Bonobos present a useful example of this, because their conservation can only be viewed in the context of the recent political, military and social upheavals of their sole range state, the Democratic Republic of Congo (DRC).

The creation of a 3,800km² reserve along the Lamako River, is considered one of the main actions necessary for the conservation of the bonobo. A proposal was submitted by WWF to the Congolese Institute for Nature Conservation (ICCN) in 1990, but conservation activities in the region were largely halted by the civil wars in the 1990s.

Thompson-Handler *et al* (1995) described the bonobo situation and set out potential solutions:

Surveys completed in 1995 showed that, until recently, bonobos occurred in high densities throughout the proposed Lomako reserve, DRC, but as a result of deterioration of the economy, road and river transport systems, profits from agriculture have decreased and bushmeat hunting increased.

The south-central part of the proposed reserve still contains high densities of bonobos (1.1 – 3.4 individuals per km²) and lacks human settlement. But commercial hunters are now entering the proposed reserve area and rapidly decimating bonobo and other primate populations.

Below: Bushmeat survivors - bonobo mother and infant in Lola ya Bonobo Sanctuary, DRC

Old logging roads, where concessions have been abandoned, are facilitating access for commercial hunters. Bushmeat has a high value in DRC and is transported as far as Kinshasa, using logging company boats.



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- Potential solutions relating specifically to bonobos include targeting efforts to:
- Survey areas where bonobos are most concentrated.
 - Implement immediate research and local conservation education where bonobo populations are on the brink of extinction.
 - Carry out longer-term research and conservation programmes where larger, less-disturbed populations exist, and develop tourism in these areas.
 - Establish reserves in areas other than Salonga (as recommended on a number of occasions, for example, Lee *et al*, 1988; Thompson *et al*, 1995; WWF, 2003), with the financial and technical means to protect these areas and prevent poaching.
- Salonga's importance remains dependent on surveys to confirm a sizeable bonobo population within the park. If significant numbers are confirmed, funding will be needed to improve park infrastructure.
- Use social marketing methods, including television, radio, street theatre and music, to make people identify more with bonobos and to raise the species to emblem status.

The plight of the okapi generated public sympathy due to its status as a national symbol and profile on products such as Okapi Cigarettes and the Hotel Okapi.

In DRC, gorilla and elephant comic books were produced as education tools and distributed through zoos and conservation sponsors, as well as through regular market channels; the comics included successful quizzes with prizes such as t-shirts. School notebooks containing conservation messages were distributed (and read by other family members as well as schoolchildren). Soap (a highly prized and frequently traded commodity) was embossed with a conservation message.

The role of primate bushmeat in the spread of disease could be a suitable target for social marketing.

The most up-to-date summary of what is known of the bonobo's current situation is to be found in the World Atlas of Great Apes and their Conservation (Lacambra *et al*, 2005). Many of these ideas have informed the newly published (September 2005) 'Strategie et Plan d'Action pour la Survie des Grandes Singes en République Democratique du Congo'. This was produced, with the assistance of GRASP, after a national workshop and extensive consultation with all the stakeholders. It forms the basis for government policy in relation to all great apes and their habitats in the DRC. Several range states have now adopted such policy documents thanks to the efforts of GRASP, and as a result, the political climate for effective conservation action is much improved.

9

Conclusions

9.1 General conclusions

The twin threats of deforestation and hunting are decimating tropical wildlife populations on a massive scale. Investment in possible solutions is not the sole domain of conservation organisations which, by themselves, do not have the capacity for curbing the crisis in the long term.

The bushmeat problem encompasses more than just the loss of endangered species – it is a humanitarian issue as well. Milner-Gulland (2002) has described the bushmeat problem as the toughest challenge yet for human-centred conservation because: it is important in the general economy and in traditional cultures; it is widely distributed geographically, often in areas of poor law enforcement; it involves many people (hunters, traders, vendors, consumers); it supplies subsistence and commercial markets, with commodity chains reaching cities and spanning international borders; and it is important for livelihoods. These factors all militate against successful wildlife conservation and rationalise disincentives to restrict hunting and trade (Wilkie & Eves, 2001).

Rural families, with few options for making money to provide even the most basic needs, are easily drawn into the lucrative trade and quickly come to rely on it. These communities are characterised by malnutrition and daily incomes below US\$1, and so expecting them to cease exploitation of wild species is unjustified. However, modern human populations cannot be sustained by wild meat in perpetuity and though the economic rewards of hunting are expedient to poor families in the short term, hunters must be made aware that unsustainable use places future generations in jeopardy.

Regulating the trade in bushmeat will require that alternative ways are found to secure the livelihoods of those people inadvertently causing the crisis.

At current levels of demand, policies that aim to conserve wildlife are likely to impose restrictions that will directly impact various stakeholders. The successful conservation of bushmeat-hunted species will almost certainly incur a nutritional and financial cost



to hunters and traders, and will diminish the resources of governments enforcing protection (Kimpel, 2005). But unless the situation is taken in hand, the next generation will pay long-term livelihood costs.

Food security and livelihoods need to be given just as much priority as wildlife conservation. Sustainable, legal hunting programmes for local communities will ensure a long-term, wildlife-based resource is available to maintain livelihoods and quality of life for traditional forest people (Ekan, 2002).

The burden of responsibility cannot be placed on poor countries, where the crisis originates, because wealthy nations have just as much impact. International co-operation is now urgently needed to prevent local extinctions becoming regional ones. Efforts aimed at tackling root causes to provide across-the-board benefits for all hunted species are crucial.

Over the past decade, the urgency of the bushmeat crisis has brought to light many useful suggestions for curbing the anticipated extinction of commercially hunted species. But the momentum needed for their success can only be mobilised by international commitment to enormous investment and national commitment to a shift in attitudes.

A collaborative effort is needed, with the support of communities, landowners, government agencies, NGOs, media, private citizens, wildlife services and interested individuals, drawing together expertise from many different disciplines to implement and monitor effective strategies.

Novel solutions are crucial to build upon the successes of old ones, necessitating innovations in policy reform, capacity building, sustainable investment, long-term support for protected areas, regulation of hunting and trade, development of economic and dietary alternatives, management efforts in logging and mining concessions and widespread education/awareness programmes.

A holistic conservation approach needs to consider the economic, geographic, political, cultural and social scale of the problem. Active commitment from the countries involved is a prerequisite to the success of conservation strategies, whether local or international.

Across the globe, forests are being treated as convertible, rather than renewable resources. The consequences of the bushmeat trade for endangered species, biodiversity and people are no longer in doubt – unless a concerted, multifaceted effort, equal in gravity to the severity of the crisis is initiated, the ‘empty forest syndrome’ will be realised in the foreseeable future.

9.2 Primate-specific conclusions

It has often been noted that if we can't save our closest evolutionary ‘cousins’ from extinction, there can be little hope for more distantly related species. Great apes, as flagship species, have the greatest potential for mobilising action and funding from public and institutional bodies. Their command of public sympathy makes them good candidates for promoting awareness of the bushmeat crisis. But it is important to recognise that statements such as these, while accurate, could demean the broader bushmeat problem or brand other species with subordinate levels of concern.

The vast majority of bushmeat is of non-primate origin, and evidence suggests extinction is more likely in non-primate groups (Bowen-Jones & Pendery, 1999; Bennett & Rao, 2002, cited by McGowan & Garson, 2002). Conservation strategies that peripheralise the cross-taxonomic scope of the problem would be both negligent and irresponsible. Rather, apes can be used as a vehicle to engender support for broader conservation efforts and the ecosystem in general.

Time is running out for great apes. Their future rests on the commitment of the current generation. Either we seize the opportunity to preserve our closest kin or we allow them to be hunted to extinction – an action that, inevitably, will mark us as a historically irresponsible generation.

“The plight of Africa’s people bears comparison to no one else for poverty, disease and repression. But allowing chimpanzees, gorillas and bonobos to die won’t improve people’s lives; it will impoverish them. Saving them would cost peanuts compared with rescuing destitute people.” (Richard Leakey, cited by Black, 2004).

The signing of the Kinshasa Declaration brings new hope for the great apes and their habitats. The governments, NGOs and UN agencies that signed it agreed to work within a global strategy to ensure that 112 priority populations of all taxa of great apes, in 94 sites (some of which are trans-boundary), receive the protection they need to survive. If these fine words are turned into action on the ground, the future of the great apes will finally be assured.

Appendix 1

Species worldwide recorded as being hunted for bushmeat

See separate document

In 1998, Bowen-Jones listed 25 species at risk from bushmeat hunters, a figure that has risen more than 50-fold since. It is almost impossible to quantify exactly how many species are affected, because of the opportunistic nature of hunting and the use of indiscriminate techniques such as snaring. The data in this appendix are not comprehensive but are representative of global bushmeat off-take (primarily in tropical countries, excluding Australia and including southern Africa). See separate document for list of species; literature sources include:

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The 2004 IUCN Red list of Threatened Species (2004) <http://www.redlist.org/>

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Appendix 2

Primate species worldwide recorded as being hunted for bushmeat

See Appendix 1 for literature sources.

| | | | | |
|---------------------------------|-----------------------------|----------------------------------|--|---------------|
| ATELIDAE | | | | |
| <i>Oreomax flavicauda</i> | Yellow-tailed woolly monkey | CR B1+2ABCDE, C2A | | South America |
| CALLITRICHIDAE | | | | |
| <i>Saguinus nigricollis</i> | Tamarin | LC | | South America |
| CEBIDAE | | | | |
| <i>Saimiri sciureus</i> | Squirrel monkey | LC | | South America |
| <i>Alouatta seniculus</i> | Howler monkey | LC | | South America |
| <i>Ateles hybridus brunneus</i> | Brown spider monkey | CR A3CD | | South America |
| <i>Ateles paniscus</i> | Spider monkey | LC | | South America |
| <i>Cacajao calvus</i> | Bald uakari | NT | | South America |
| <i>Cacajao melanocephalus</i> | Black uakari | LC | | South America |
| <i>Callithrix moloch</i> | Titi monkey | LC | | South America |
| <i>Cebus apella</i> | Capuchin | LC | | South America |
| <i>Cebus xanthosternus</i> | Buff-headed tufted capuchin | CR A2CD, C2A(1) | | South America |
| <i>Cebus xanthosternus</i> | Yellow-breasted capuchin | CR A2CD, C2A(1) | | South America |
| <i>Chiropotes albinasus</i> | Red-nosed saki | LC | | South America |
| <i>Chiropotes chiropotes</i> | Bearded saki | LC | | South America |
| <i>Chiropotes satanas</i> | Bearded saki | EN A2CD, B2AB (I,II,III); C2A(1) | | South America |
| <i>Chiropotes utahickae</i> | Uta Hick's bearded saki | VU A3CD | | South America |
| <i>Lagothrix lagotricha</i> | Humboldt's woolly monkey | LR/LC | | South America |
| <i>Pithecia aequatorialis</i> | Equatorial saki | LR/LC | | South America |

| | | | | |
|-------------------------------------|--|---|--|--------------------|
| <i>Pithecia albicans</i> | Buffy saki | LC | | South America |
| <i>Pithecia irrorata</i> | Gray monkey saki | LC | | South America |
| <i>Pithecia monachus</i> | Geoffroy's monk saki | LC | | South America |
| <i>Pithecia pithecia</i> | Golden-faced saki | LC | | South America |
| CECOPITHECIDAE | | | | |
| <i>Brachyteles hypoxanthus</i> | Northern muriqui | CR B1AB(1,II,III,IV), +2AB(1,II,III,IV) | | South America |
| <i>Cercocebus agilis</i> | Agile mangabey | NR | | Sub-Saharan Africa |
| <i>Cercocebus albigena</i> | Grey cheeked mangabey (W&C) | LR/LC | | Sub-Saharan Africa |
| <i>Cercocebus atys</i> | Sooty mangabey | LR/NT | | Sub-Saharan Africa |
| <i>Cercocebus atys lunulatus</i> | White-naped mangabey | LR/NT | | Sub-Saharan Africa |
| <i>Cercocebus galentius</i> | Crested mangabey | LR/NT | | Sub-Saharan Africa |
| <i>Cercocebus mitis</i> | White-collared mangabey / Samango monkey | LR/LC | | Sub-Saharan Africa |
| <i>Cercocebus torquatus</i> | Collared mangabey (W&C) | LR-NT | | Sub-Saharan Africa |
| <i>Cercocebus sanjei</i> | Sanje mangabey | NR | | Sub-Saharan Africa |
| <i>Cercoptithecus aethiops</i> | Grivet monkey | LR/LC | | Sub-Saharan Africa |
| <i>Cercoptithecus ascanius</i> | Red-tailed monkey | LR/LC | | Sub-Saharan Africa |
| <i>Cercoptithecus campbelli</i> | Campbell's monkey | LR/LC | | Sub-Saharan Africa |
| <i>Cercoptithecus cephus</i> | Moustached monkey (W&C) | LR/LC | | Sub-Saharan Africa |
| <i>Cercoptithecus denti</i> | Dent's monkey | NR | | Sub-Saharan Africa |
| <i>Cercoptithecus diana</i> | Diana guenon | EN A1CD+2CD | | Sub-Saharan Africa |
| <i>Cercoptithecus dryas</i> | Dryad monkey | DD | | Sub-Saharan Africa |
| <i>Cercoptithecus erythrogaster</i> | Red-bellied guenon | EN A1CD | | Sub-Saharan Africa |
| <i>Cercoptithecus erythrotis</i> | Red-eared guenon | VU A1CD+2CD | | Sub-Saharan Africa |
| <i>Cercoptithecus hamlyni</i> | Owl faced monkey (W&C) | LR-NT | | Sub-Saharan Africa |
| <i>Cercoptithecus mitis</i> | Samango monkey (E&S) | LR/LC | | Sub-Saharan Africa |
| <i>Cercoptithecus neglectus</i> | De Brazza's monkey | LR/LC | | Sub-Saharan Africa |
| <i>Cercoptithecus nictitans</i> | Greater white nosed monkey (W&C) | LR/LC | | Sub-Saharan Africa |
| <i>Cercoptithecus petaurista</i> | Lesser spot-nosed monkey | LR/LC | | Sub-Saharan Africa |
| <i>Cercoptithecus pogonias</i> | Crowned guenon (W&C) | EN | | Sub-Saharan Africa |
| <i>Cercoptithecus preussi</i> | Preuss's guenon | EN A1CD+2CD | | Sub-Saharan Africa |
| <i>Cercoptithecus solatieri</i> | Scalder's guenon | EN B1+2C | | Sub-Saharan Africa |
| <i>Cercoptithecus solatus</i> | Sun-tailed guenon | VU B1+2ABCDE, C1 | | Sub-Saharan Africa |
| <i>Cercoptithecus mona</i> | Mona monkey (W&C) | LR/LC | | Sub-Saharan Africa |
| <i>Chlorocebus tantalus</i> | Tantulus monkey | LR/LC | | Sub-Saharan Africa |
| <i>Colobus angolensis</i> | Angolan colobus | LR/LC | | Sub-Saharan Africa |
| <i>Colobus hadius pennanti</i> | Red colobus (W&C) | EN | | Sub-Saharan Africa |
| <i>Colobus guereza</i> | Eastern black & white colobus (W&C) | LR/LC | | Sub-Saharan Africa |
| <i>Colobus polykomos</i> | Black-and-white colobus | LR/NT | | Sub-Saharan Africa |

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|---|------------------------------------|----------------------|------------------------------|
| <i>Colobus satanas</i> | Black colobus | VU A1CD+2CD | Sub-Saharan Africa |
| <i>Colobus vellerosus</i> | Geoffroy's black-and-white colobus | VU A1CD+2CD | Sub-Saharan Africa |
| <i>Erythrocebus patas</i> | Patas monkey | LR/LC | Sub-Saharan Africa |
| <i>Lophocebus aterrimus</i> | Black crested mangabey | LR/NT | Sub-Saharan Africa |
| <i>Macaca assamensis</i> | Assam macaque | VU A1CD | East Asia, South And SE Asia |
| <i>Macaca fascicularis</i> | Long-tailed macaque | LR/NT | South And SE Asia |
| <i>Macaca nemestrina</i> | Pig-tailed macaque | VU A1CD | South And SE Asia |
| <i>Macaca silenus</i> | Lion-tailed macaque | EN C2A(I) | South And SE Asia |
| <i>Mandrillus leucophaeus</i> | Drill | EN A1ACD+2CD | Sub-Saharan Africa |
| <i>Mandrillus sphinx</i> | Mandrill | VU A2CD | Sub-Saharan Africa |
| <i>Miopithecus talapoin</i> | Talapoin (W&C) | LR/LC | Sub-Saharan Africa |
| <i>Papio anubis</i> | Olive baboon | LR/LC | Sub-Saharan Africa |
| <i>Papio cynocephalus</i> | Yellow baboon | LR | Sub-Saharan Africa |
| <i>Papio hamadryas</i> | Hamadryas baboon | LR/NT | Sub-Saharan Africa |
| <i>Presbytis hosei cancrivorus</i> | Miller's grizzled surilli | DD | South And SE Asia |
| <i>Presbytis melalophos</i> | Banded leaf monkey | LR/NT | South And SE Asia |
| <i>Procolobus badius</i> | Red colobus | EN A1CD+2CD, B1+2ABC | Sub-Saharan Africa |
| <i>Procolobus pennantii</i> | Pennant's red colobus | EN A2CD | Sub-Saharan Africa |
| <i>Procolobus rufonitratus</i> | Eastern red colobus | CR B1+2ABCDE, C2A | Sub-Saharan Africa |
| <i>Pygathrix cinerea</i> | Grey-shanked douc | EN A1CD | South And SE Asia |
| <i>Semnopithecus johni</i> | Black leaf monkey | VU C2A(I) | South And SE Asia |
| <i>Semnopithecus vetulus nestor</i> | Western purple-faced langur | EN A1CD | South And SE Asia |
| <i>Simias concolor</i> | Pig-tailed langur | EN A1CD+2C | South And SE Asia |
| <i>Trachypithecus delacouri</i> | Delacour's langur | CR A2CD+3CD; C2A(I) | South And SE Asia |
| <i>Trachypithecus obscurus</i> | Dusky leaf monkey | LR/LC | South And SE Asia |
| <i>Trachypithecus poliocephalus poliocephalus</i> | Golden-headed langur | CR A2CD, C2AB | South And SE Asia |
| GALAGONIDAE | | | |
| <i>Galago alleni</i> | Allen's squirrel galago | LR/NT | Sub-Saharan Africa |
| <i>Galago elegantulus</i> | Elegant needle-clawed galago | LR/NT | Sub-Saharan Africa |
| <i>Galagoides potto</i> | Dermidoff's galago | NR | Sub-Saharan Africa |
| <i>Galagoides sp. Nov</i> | Mt. Rungwe galago | NR | Sub-Saharan Africa |
| <i>Otiolemur crassicaudatus</i> | Greater galago | LR/LC | Sub-Saharan Africa |
| HOMINIDAE | | | |
| <i>Gorilla beringei graueri</i> | Eastern gorilla | EN A2CD | Sub-Saharan Africa |
| <i>Gorilla gorilla gorilla</i> | Western gorilla | EN A2CD | Sub-Saharan Africa |
| <i>Pan paniscus</i> | Bonobo | EN A2CD | Sub-Saharan Africa |
| <i>Pan troglodytes</i> | Chimpanzee | EN A3CD | Sub-Saharan Africa |

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|------------------------------------|-----------------------------|-------------|------------------------------|
| <i>Gorilla beringei beringei</i> | Mountain gorilla | CE | Sub-Saharan Africa |
| <i>Gorilla gorilla ssp. Diehli</i> | Cross River gorilla (W&C) | CE | Sub-Saharan Africa |
| <i>Pongo abelli</i> | Sumatran orangutan | CR A2BCD | South And SE Asia |
| <i>Pongo pygmaeus</i> | Orang-utan | EN A2CD | South And SE Asia |
| HYLOBATIDAE | | | |
| <i>Hylobates lar</i> | White-handed gibbon | LR/NT | South And SE Asia |
| <i>Loris lydekkerianus</i> | Horton Plains slender loris | NR | South And SE Asia |
| <i>Mycoceboidea</i> | | | |
| <i>Nomascus gabriellae</i> | Buff-cheeked gibbon | VU A1CD+2CD | South And SE Asia |
| <i>Nomascus leucogenys</i> | White-cheeked gibbon | DD | East Asia, South And SE Asia |
| INDRIDAE | | | |
| <i>Propithecus candidus</i> | Silky sifaka | NR | Sub-Saharan Africa |
| <i>Propithecus perrieri</i> | Perrier's sifaka | NR | Sub-Saharan Africa |
| LEMURIDAE | | | |
| <i>Eulemur albocollaris</i> | White-collared lemur | NR | Sub-Saharan Africa |
| <i>Prolanur simus</i> | Greater bamboo lemur | CR A2CD | Sub-Saharan Africa |
| LORIDAE | | | |
| <i>Arctocebus aureus</i> | Golden angwantibo | LR/NT | Sub-Saharan Africa |
| <i>Arctocebus calabarensis</i> | Angwantibo | LR/NT | Sub-Saharan Africa |
| <i>Pardotificus potto</i> | Potto gibbon (W&C) | LR/LC | Sub-Saharan Africa |

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Note: Appendix 5 (see separate document) contains the abstracts for some of the references cited.

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| Latin name | Common name |
|------------|-------------|
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BOVIDAE

| | |
|--------------------------------------|-----------------------------|
| <i>Aepyceros melampus</i> | impala |
| <i>Alcelaphus buselaphus</i> | hartebeest |
| <i>Antidorcas marsupialis</i> | sprngbok |
| <i>Artiope cervicapra</i> | BLACKBUCK |
| <i>Bocercus euryceros</i> | bongo |
| <i>Bubalus bubalis</i> | ASIAN BUFFALO |
| <i>Bubalus depressicornis</i> | ANOA |
| <i>Bubalus mindorensis</i> | TAMARAW |
| <i>Capra falconeri</i> | MARKHOR |
| <i>Capricornis sumatraensis</i> | SEROW |
| <i>Cephalophus adersi</i> | ADERS' DUKER |
| <i>Cephalophus callipygus</i> | Peter's duker |
| <i>Cephalophus dorsalis</i> | BAY DUKER |
| <i>Cephalophus grimmia</i> | Common duker |
| <i>Cephalophus harveyi</i> | HARVEY'S DUKER |
| <i>Cephalophus jentinki</i> | JENTINK'S DUKER |
| <i>Cephalophus leucogaster</i> | WHITE-BELLIED DUKER |
| <i>Cephalophus maxwellii</i> | MAXWELL'S DUKER |
| <i>Cephalophus monticola</i> | Blue duker |
| <i>Cephalophus natalensis</i> | NATAL DUKER |
| <i>Cephalophus niger</i> | BLACK DUKER |
| <i>Cephalophus nigrifrons</i> | BLACK-FRONTED DUKER |
| <i>Cephalophus ogilbyi</i> | OGILBY'S DUKER |
| <i>Cephalophus sylvicultor</i> | Yellow-backed duker |
| <i>Cephalophus zebra</i> | BANDED DUKER |
| <i>Conochaeates taunius</i> | wildebeest |
| <i>Damaeus lunatus</i> | topi |
| <i>Gazella benettii</i> | CHINKARA |
| <i>Gazella granti</i> | Grant's gazelle |
| <i>Gazella thomsonii</i> | Thomson's gazelle |
| <i>Hemiragus jenshahicus</i> | HIMALAYAN TAHR |
| <i>Hippotragus equinus</i> | Roan antelope |
| <i>Hippotragus niger</i> | sable antelope |
| <i>Kobus ellipsiprymnus</i> | waterbuck |
| <i>Kobus vardoni</i> | puku |
| <i>Madoqua kirkii</i> | dik dik |
| <i>Naemohedus caudatus</i> | CHINESE GORAL |
| <i>Naemohedus goral</i> | Goral |
| <i>Neotragus batesi</i> | BATES' PYGMY ANTELOPE |
| <i>Neotragus moschatius</i> | sun |
| <i>Neotragus pygmaeus</i> | Royal antelope |
| <i>Oreotragus oreotragus</i> | klipspringer |
| <i>Oryx gazella</i> | gemsbok or oryx |
| <i>Ourebia ourebi</i> | oribi |
| <i>Ovis musimon</i> | European mouflon |
| <i>Pseudoryx nghelinhensis</i> | SAOLA (F, S) |
| <i>Raphicerus melanolis</i> | Sharp's Gysbok |
| <i>Raphicerus campestris</i> | steenbok |
| <i>Raphicerus melanotis</i> | Cape gysbok |
| <i>Raphicerus sharpei</i> | Sharp's gysbok |
| <i>Redunca arundinum</i> | southern or common reedbuck |
| <i>Redunca redunca</i> | Bohor reedbuck |
| <i>Syncerus caffer</i> | AFRICAN BUFFALO |
| <i>Syncerus caffer nanus</i> | forest buffalo |
| <i>Tagelaphus (Taurotragus) oryx</i> | common eland |
| <i>Tagelaphus angasi</i> | nyala |
| <i>Tagelaphus imberbus</i> | lesser kudu |
| <i>Tagelaphus scriptus</i> | bushbuck |
| <i>Tagelaphus spekei</i> | sitatunga |
| <i>Tagelaphus strepsiceros</i> | greater kudu |
| <i>Alces alces</i> | elk |
| <i>Capreolus capreolus</i> | Roe deer |
| <i>Cervus elaphus</i> | Red deer |
| <i>Cervus nippon</i> | sika deer |
| <i>Dama dama</i> | Fallow deer |
| <i>Mazama americana</i> | Brocket deer |
| <i>Muntiacus crinitrons</i> | BLACK MUNTJAC |
| <i>Muntiacus muntjak</i> | Barking deer |
| <i>Muntiacus tuongsonensis</i> | TRUONG SON MUNTJAC |

CERVIDAE

| | | |
|---------------------|---|--|
| GIRAFFIDAE | <i>Muntiacus vuquangensis</i> <i>Odocoileus virginianus</i> Rangifer tarandus fennicus | GIANT MUNTJAC white-tailed deer forest reindeer |
| HIPPOTAMIDAE | <i>Giraffa camelopardalis</i> <i>Okapia johnstoni</i> | giraffe OKAPI |
| MOSCHIDAE | <i>Hippopotamus amphibius</i> | hippopotamus |
| SUIDAE | <i>Moschus chrysogaster</i> | Musk Deer |
| TAYASSUIDAE | <i>Babirusa babirusa</i> <i>Hylchoerus meinertzhageni</i> <i>Phacochoerus aethiopicus</i> <i>Phacochoerus africanus</i> <i>Potamochoerus larvatus</i> <i>Potamochoerus porcus</i> <i>Sus scrofa</i> | Babirusa giant forest hog warthog Common warthog Bush pig bush pig Wild boar |
| TRAGULIDAE | <i>Tayassu pecari</i> <i>Tayassu tajaca</i> | White-tipped peccary Collared peccary |
| CARNIVORA | <i>Hyemoschus aquaticus</i> | WATER CHEVROTAIN |
| CANIDAE | <i>Alopex lagopus</i> <i>Canis adustus</i> <i>Canis lupus</i> <i>Canis mesomelas</i> <i>Nyctereutes procyonoides</i> <i>Otocyon megalotis</i> <i>Vulpes vulpes</i> | domestic arctic fox Side-striped jackal wolf black backed jackal raccoon dog bat eared fox red fox |
| FELIDAE | <i>Felis aurata</i> <i>Lynx lynx</i> <i>Neofelis nebulosa</i> <i>Panthera pardus</i> | golden cat Eurasian lynx CLOUDED LEOPARD leopard |
| HERPESIIDAE | <i>Atilax paludinosus</i> <i>Beogale nigripes</i> <i>Crossarchus obscurus</i> <i>Helogale parvula</i> <i>Herpestes naso</i> <i>Ichnemlia albicauda</i> <i>Mungos mungo</i> | Marsh mongoose Black-legged mongoose Long-nosed cusimanse Dwarf mongoose Long-nosed mongoose White-tailed mongoose Banded mongoose |
| HYAENIDAE | <i>Crocuta crocuta</i> | SPOTTED HYAENA |
| MELLIVORINAE | <i>Mellivora capensis</i> | honey badger or ratel |
| MUSTELIDAE | <i>Aonyx capensis</i> <i>Aonyx congicus</i> <i>Eira barbara</i> <i>Gulo gulo</i> <i>Lutra lutra</i> | AFRICAN CLAWLESS OTTER CAMEROON CLAWLESS OTTER Tayra wolverine European otter |

CHIROPTERA

CRASEONYCTERIDAE
Craseonycteris thonglongyai
HOG-NOSED BAT

HIPPOSIDERIDAE
Hipposideros gigas
Hipposideros jonesi
Hipposideros lamottei
Hipposideros ruber
JONES'S ROUNDLEAF BAT
LAMOTTE'S ROUNDLEAF BAT
NOACK'S ROUNDLEAF BAT

MOLOSSIDAE
Chaerephon ansorgei
Chaerephon nigeriae
ANSORGE'S FREE-TAILED BAT
NIGERIAN FREE-TAILED BAT

NYCTERIDAE
Nycteis gambiensis
Nycteis grandis
GAMBIAN SLIT-FACED BAT
LARGE SLIT-FACED BAT

PTEROPODIDAE
Acerodon jubatus
Dobsonia chapmani
Eidolon helvum
Epomophorus gambianus
Epomophorus grandis
Hypsignathus monstrosus
Lalidens salimalli
Lissonycteris angolensis
Lissonycteris smithi
Neopteryx frosti
Pteropus dasymallus
Pteropus insularis
Pteropus mahannus
Pteropus niger
GOLDEN-CAPPED FRUIT BAT
NEGROS NAKED-BACKED FRUIT BAT
Straw-coloured fruit bat
GAMBIAN EPAULETTED FRUIT BAT
LESSER ANGOLAN EPAULETTED FRUIT BAT
HAMMER-HEADED FRUIT BAT
SALIM ALI'S FRUIT BAT
ANGOLAN FRUIT BAT
SMITH'S FRUIT BAT
SMALL-TOOTHED FRUIT BAT
RYUKYU FLYING-FOX
CHUUK FLYING-FOX
MARIANAS FLYING FOX
GREATER MASCARENE FLYING FOX

CHIROPTERA

PHOCIDAE
Lutra maculicollis
Martes martes
Martes melles
Mellivora capensis
Mustela erminea
Mustela putorius
Mustela vison
spot-necked otter
pine marten
Eurasian badger
Honey badger
stoat
western polecat
American mink

PHOCIDAE
Halichoerus grypus
Phoca hispida
Phoca vitulina
grey seal
ringed seal
common seal

PROCYONIDAE
Nasua nasua
Potos flavus
Procyon lotor
South American coati
Kinjajou
raccoon

URSIDAE
Helarctos malayanus
Ursus arctos
Ursus thibetanus
MALAYAN SUN BEAR
Brown bear
Asiatic black bear

VIVERRIDAE
Arctictis binturong
Civetctis civetta
Eupleres goudotii
Genetta cristata
Genetta johnstoni
Genetta servalina
Genetta tigrina
Libericus kuhni
Nandina binotata
Osbornictis piscivora
Paradoxurus jerdoni
Poiana richardsonii libbensis
Binlurong
African civet
FALANOU
Crested genet
Johnston's genet
small spotted genet
Large-spotted genet
Liberian mongoose
two spotted palm civet
aquatic genet
BROWN PALM CIVET
Leighton's linsang

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|-----------------------------------|------------------------------|
| <i>Pteropus ornatus</i> | ORNATE FLYING FOX |
| <i>Pteropus rufus</i> | MADAGASCAN FLYING FOX |
| <i>Pteropus voeltzkowi</i> | PEMBA FLYING FOX |
| <i>Roussettus aegyptiacus</i> | LONG-HAIRED ROUSETTE |
| <i>Roussettus lanosus</i> | EGYPTIAN FRUIT BAT |
| RHINOLOPHIDAE | |
| <i>Rhinolophus alcyone</i> | HALCYON HORSESHOE BAT |
| <i>Rhinolophus guineensis</i> | GUINEAN HORSESHOE BAT |
| <i>Rhinolophus hillii</i> | |
| <i>Rhinolophus hillebrandi</i> | HILL'S HORSESHOE BAT |
| <i>Rhinolophus ruwenzori</i> | RUWENZORI HORSESHOE BAT |
| <i>Rhinolophus silvestris</i> | FOREST HORSESHOE BAT |
| <i>Rhinolophus zima</i> | |
| DIPROTODONTIA | |
| MACROPODIDAE | |
| <i>Dorcopsis atrata</i> | BLACK DORCOPSIS WALLABY |
| <i>Macropus fuliginosus</i> | Western grey kangaroo |
| <i>Macropus giganteus</i> | Eastern grey kangaroo |
| <i>Macropus rufus</i> | Red kangaroo |
| PHALANGERIDAE | |
| <i>Spilocuscus rufoniger</i> | BLACK-SPOTTED CUSCUS |
| HYRACOIDEA | |
| PROCAVIIDAE | |
| <i>Dendrohyrax dorsalis</i> | tree hyrax |
| <i>Heterohyrax brucei</i> | Yellow-spotted hyrax |
| INSECTIVORA | |
| ERINACEIDAE | |
| <i>Atelestes albigentris</i> | Four-toed hedgehog |
| LAGOMORPHA | |
| LEPORIDAE | |
| <i>Lepus europaeus</i> | European brown hare |
| <i>Lepus saxatilis</i> | scrub hare |
| <i>Lepus timidus</i> | Arctic hare |
| <i>Lepus yarkandensis</i> | YARSLAND HARE |
| <i>Oryctolagus cuniculus</i> | European rabbit |
| <i>Poelagus marjorita</i> | Uganda grass hare |
| <i>Sylvilagus brasiliensis</i> | Tapeti |
| <i>Sylvilagus insonus</i> | OMILTEME COTTONTAIL |
| MACROSCHELIDAE | |
| <i>Petrochromis tetradactylus</i> | Four-toed elephant shrew |
| <i>Rhynchocyon chrysopygus</i> | Golden-rumped elephant shrew |
| MONOTREMATA | |
| TACHYGLOSSIDAE | |
| <i>Zaglossus bruijnii</i> | LONG-BEAKED ECHIDNA |
| EQUIDAE | |
| <i>Equus burchelli</i> | zebra |
| TAPRIDAE | |
| <i>Tapirus bairdii</i> | BAIRD'S TAPIR |
| <i>Tapirus indicus</i> | ASIAN TAPIR |
| <i>Tapirus pinchaque</i> | ANDEAN TAPIR |
| <i>Tapirus terrestris</i> | BRAZILIAN TAPIR |
| PHOLIDOTA | |
| MANIDAE | |
| <i>Manis gigantea Illiger</i> | giant pangolin |
| <i>Manis temminckii</i> | Ground pangolin |
| <i>Manis tricuspis Rafinesque</i> | common/tree pangolin |

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| Tree pangolin | <i>Manis javanica</i> |
| Giant pangolin | <i>Manis gigantea</i> |
| Long-tailed pangolin | <i>Manis tetradactyla</i> |
| PRIMATES | |
| ATELIDAE | |
| YELLOW-TAILED WOOLLY MONKEY | <i>Oreanax flavicauda</i> |
| CALLITRICHIDAE | |
| Tamarin | <i>Saguinus nigricollis</i> |
| CEBIDAE | |
| Squirrel monkey | <i>Saimiri sciureus</i> |
| Howler monkey | <i>Alouatta seniculus</i> |
| Brown spider monkey | <i>Ateles hybridus brunneus</i> |
| Spider monkey | <i>Ateles paniscus</i> |
| Bald Uakari | <i>Cacajao calvus</i> |
| Black Uakari | <i>Cacajao melanocephalus</i> |
| Titi monkey | <i>Callitrichus moloch</i> |
| Capuchin | <i>Cebus apella</i> |
| Buff-headed tufted capuchin | <i>Cebus xanthosternus</i> |
| YELLOW-BREASTED CAPUCHIN | <i>Cebus xanthosternus</i> |
| Red-nosed saki | <i>Chiropotes albinasus</i> |
| Bearded saki | <i>Chiropotes chiropotes</i> |
| Bearded saki | <i>Chiropotes satanas</i> |
| Uta Hick's bearded saki | <i>Chiropotes uahicheae</i> |
| Humboldt's woolly monkey | <i>Lagothrix lagotricha</i> |
| Equatorial saki | <i>Pithecia aequatorialis</i> |
| Buffy saki | <i>Pithecia albicans</i> |
| Gray monkey saki | <i>Pithecia inorata</i> |
| Geoffroy's monk saki | <i>Pithecia monachus</i> |
| Golden-faced saki | <i>Pithecia pithecia</i> |
| CECOPITHECIDAE | |
| Northern muriqui | <i>Brachyteles hypoxanthus</i> |
| Agile mangabey | <i>Cercocebus agilis</i> |
| gray cheeked mangabey (W&C) | <i>Cercocebus albigena</i> |
| Sooty mangabey | <i>Cercocebus atys</i> |
| White-naped mangabey | <i>Cercocebus atys lunulatus</i> |
| CRESTED MANGABEY | <i>Cercocebus galienus</i> |
| White-collared mangabey / Samango monkey | <i>Cercocebus mitis</i> |
| collared mangabey (W&C) | <i>Cercocebus torquatus</i> |
| Sanje mangabey | <i>Cercocebus sanjei</i> |
| Grivet monkey | <i>Cercocebus aethiops</i> |
| Red-tailed monkey | <i>Cercocebus ascantus</i> |
| Campbell's monkey | <i>Cercocebus campbelli</i> |
| mustached monkey (W&C) | <i>Cercocebus cephus</i> |
| Dent's monkey | <i>Cercocebus denti</i> |
| DIANA GUENON | <i>Cercocebus diana</i> |
| DRYAD MONKEY | <i>Cercocebus dryas</i> |
| RED-BELLIED GUENON | <i>Cercocebus erythrogastrer</i> |
| RED-EARED GUENON | <i>Cercocebus erythrois</i> |
| owl faced monkey (W&C) | <i>Cercocebus hamlyni</i> |
| samango monkey (E&S) | <i>Cercocebus mitis</i> |
| De Brazza's monkey | <i>Cercocebus neglectus</i> |
| greater white nosed monkey (W&C) | <i>Cercocebus nictitans</i> |
| Lesser spot-nosed monkey | <i>Cercocebus petunista</i> |
| crowned guenon (W&C) | <i>Cercocebus pogonias</i> |
| PREUSS'S GUENON | <i>Cercocebus preussi</i> |
| NON | <i>Cercocebus sclateri</i> |
| SCLATER'S GUENON | <i>Cercocebus sclateri</i> |
| SUN-TAILED GUENON | <i>Cercocebus solatus</i> |
| Mona monkey (W&C) | <i>Cercocebus mona</i> |
| Tantalus monkey | <i>Chlorocebus tantalus</i> |
| Angolan colobus | <i>Colobus angolensis</i> |
| red colobus (W&C) | <i>Colobus badius pennanti</i> |
| eastern black & white colobus (W&C) | <i>Colobus guereza</i> |
| Black-and-white colobus | <i>Colobus polykomos</i> |
| BLACK COLOBUS | <i>Colobus satanas</i> |
| GEORROY'S BLACK-AND-WHITE COLOBUS | <i>Colobus vellerosus</i> |
| Patas monkey | <i>Erythrocebus patas</i> |
| BLACK CRESTED MANGABEY | <i>Lophocebus ateimnus</i> |
| ASSAM MACAQUE | <i>Macaca assamensis</i> |
| Long-tailed macaque | <i>Macaca fascicularis</i> |
| Fig-tailed macaque | <i>Macaca nemestrina</i> |
| LION-TAILED MACAQUE | <i>Macaca silenus</i> |
| DRILL | <i>Manillus leucophaeus</i> |
| Mandrill | <i>Manillus sphinx</i> |

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|------------------------------------|--|
| talapoin (W&C) | <i>Miopithecus talapoin</i> |
| Olive baboon | <i>Papio anubis</i> |
| Yellow baboon | <i>Papio cynocephalus</i> |
| Hamadryas baboon | <i>Papio hamadryas</i> |
| Miller's grizzled sunli | <i>Presbytis hosei caninus</i> |
| Banded leaf monkey | <i>Presbytis melalophos</i> |
| RED COLOBUS | <i>Procolobus badius</i> |
| PENNANT'S RED COLOBUS | <i>Procolobus pennantii</i> |
| EASTERN RED COLOBUS | <i>Procolobus rufomitratus</i> |
| Grey-shanked douc | <i>Pygathrix cinerea</i> |
| BLACK LEAF MONKEY | <i>Semnopithecus johnii</i> |
| Western purple-faced langur | <i>Semnopithecus velulus nestor</i> |
| PIG-TAILED LANGUR | <i>Simias concolor</i> |
| Delacour's langur | <i>Tachypithecus delacouri</i> |
| Dusky leaf monkey | <i>Tachypithecus obscurus</i> |
| Golden-headed langur | <i>Tachypithecus poliocephalus</i> |
| GALAGONIDAE | |
| Allen's squirrel galago | <i>Galago allenii</i> |
| Elegant needle-clawed galago | <i>Galago elegans</i> |
| Dermidoff's galago | <i>Galagoides potto</i> |
| Mt. Rungwe galago | <i>Galagoides sp. nov.</i> |
| Greater galago | <i>Otolemur crassicaudatus</i> |
| HOMINIDAE | |
| EASTERN GORILLA | <i>Gorilla gorilla gorilla</i> |
| WESTERN GORILLA | <i>Gorilla gorilla gorilla</i> |
| BONOBO | <i>Pan paniscus</i> |
| CHIMPANZEE | <i>Pan troglodytes</i> |
| mountain gorilla | <i>Gorilla beringei beringei</i> |
| Cross River gorilla (W&C) | <i>Gorilla gorilla ssp. Diehli</i> |
| Sumatran orangutan | <i>Pongo abelii</i> |
| ORANG-UTAN | <i>Pongo pygmaeus</i> |
| HYLOBATIDAE | |
| White-handed gibbon | <i>Hylabates lar</i> |
| Horton Plains slender loris | <i>Loris lydekkerianus nycticeboides</i> |
| BUFF-CHEEKED GIBBON | <i>Nomascus gabriellae</i> |
| WHITE-CHEEKED GIBBON | <i>Nomascus leucogenys</i> |
| INDRIDAE | |
| Silky sifaka | <i>Propithecus candidus</i> |
| Ferre's sifaka | <i>Propithecus perrieri</i> |
| LEMURIDAE | |
| White-collared lemur | <i>Eulemur albocollaris</i> |
| Greater bamboo lemur | <i>Prolemur simus</i> |
| LORIDAE | |
| GOLDEN ANGWANTIBO | <i>Arctocebus aureus</i> |
| ANGWANTIBO | <i>Arctocebus calabarensis</i> |
| potto gibbon (W&C) | <i>Pterodicticus potto</i> |
| PROBOSCIDEA | |
| ELEPHANTIDAE | |
| RODENTIA | |
| AGOUTIDAE | |
| Agouti | <i>Cuniculus paca</i> |
| ANOMALURIDAE | |
| Lord Derby's scaly-tailed squirrel | <i>Anomalurus derbianus</i> |
| CAPROMYIDAE | |
| BROWNS HUTIA | <i>Geocapromys brownii</i> |
| CUIVERS HUTIA | <i>Flagiodontia aedium</i> |
| CASTORIDAE | |

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|------------------------------|-----------------------------------|
| Canadian beaver | <i>Castor canadensis</i> |
| European beaver | <i>Castor fiber</i> |
| | CRICETIDAE |
| Gambian rat | <i>Cricetomys gambianus</i> |
| | DASYPROCTIDAE |
| Agouti | <i>Dasyprocta vanezata</i> |
| Green acouchi | <i>Myoprocta acouchy</i> |
| Red acouchi | <i>Myoprocta exilis</i> |
| | ERTHIZONTIDAE |
| Bicolor-spined porcupine | <i>Coendou coendou</i> |
| Koopman's porcupine | <i>Coendou koopmani</i> |
| Brazilian porcupine | <i>Coendou prehensilis</i> |
| Rothschild's porcupine | <i>Coendou rothschildi</i> |
| | HYDROCHAERIDAE |
| Capybara | <i>Hydrochoaeris hydrochaeris</i> |
| | HYSTRICIDAE |
| brush-tailed porcupine | <i>Atherurus africanus</i> |
| Hystrix cristata | <i>Hystrix cristata</i> |
| Hystrix africaeaustralis | <i>Hystrix africaeaustralis</i> |
| | MURIDAE |
| Beamys major | <i>Beamys major</i> |
| Cricetomys emini | <i>Cricetomys emini</i> |
| Ondatra zibethicus | <i>Ondatra zibethicus</i> |
| | MYCOCASTORIDAE |
| Myocastor coypus | <i>Myocastor coypus</i> |
| | MYOXIDAE |
| Ethiopian dormouse | <i>Glis glis</i> |
| | PEDETIDAE |
| springhare | <i>Pedetes capensis</i> |
| | SCIURIDAE |
| Calliscius adamsi | <i>Calliscius adamsi</i> |
| Calliscius albescens | <i>Calliscius albescens</i> |
| Calliscius baluensis | <i>Calliscius baluensis</i> |
| Calliscius caniceps | <i>Calliscius caniceps</i> |
| Calliscius erythraeus | <i>Calliscius erythraeus</i> |
| Calliscius finlaysonii | <i>Calliscius finlaysonii</i> |
| Calliscius inornatus | <i>Calliscius inornatus</i> |
| Calliscius melanogaster | <i>Calliscius melanogaster</i> |
| Calliscius nigrovittatus | <i>Calliscius nigrovittatus</i> |
| Calliscius notatus | <i>Calliscius notatus</i> |
| Calliscius orestes | <i>Calliscius orestes</i> |
| Calliscius phayrei | <i>Calliscius phayrei</i> |
| Calliscius prevostii | <i>Calliscius prevostii</i> |
| Calliscius pygerythrus | <i>Calliscius pygerythrus</i> |
| Calliscius quinquestratus | <i>Calliscius quinquestratus</i> |
| Calliscius ebii | <i>Calliscius ebii</i> |
| Euxenus erythropus | <i>Euxenus erythropus</i> |
| Funambulus tristatus | <i>Funambulus tristatus</i> |
| Funisciurus anerythrus | <i>Funisciurus anerythrus</i> |
| Funisciurus bayonii | <i>Funisciurus bayonii</i> |
| Funisciurus camurheresi | <i>Funisciurus camurheresi</i> |
| Funisciurus comgicus | <i>Funisciurus comgicus</i> |
| Funisciurus isabella | <i>Funisciurus isabella</i> |
| Funisciurus lemniscatus | <i>Funisciurus lemniscatus</i> |
| Funisciurus leucogenys | <i>Funisciurus leucogenys</i> |
| Funisciurus pyrops | <i>Funisciurus pyrops</i> |
| Funisciurus substatius | <i>Funisciurus substatius</i> |
| Helioscirus rufobrachium | <i>Helioscirus rufobrachium</i> |
| Helioscirus ruwenzori | <i>Helioscirus ruwenzori</i> |
| Squirrel | <i>Squirrel</i> |
| EAR-SPOT SQUIRREL | |
| KLOSS SQUIRREL | |
| INBALU SQUIRREL | |
| GRAY-BELLIED SQUIRREL | |
| PALLAS'S SQUIRREL | |
| FINLAYSON'S SQUIRREL | |
| INORNATE SQUIRREL | |
| MENTAWAI SQUIRREL | |
| BLACK-STRIPED SQUIRREL | |
| PLANTAIN SQUIRREL | |
| BONNEO BLACK-BANDED SQUIRREL | |
| PHAYRES SQUIRREL | |
| PREVOST'S SQUIRREL | |
| IRRAWADDY SQUIRREL | |
| ANDERSON'S SQUIRREL | |
| Ebian's palm squirrel | |
| Squirrel | |
| JUNGLE PALM SQUIRREL | |
| THOMAS'S ROPE SQUIRREL | |
| LUNDA ROPE SQUIRREL | |
| CARRUTHERS MOUNTAIN SQUIRREL | |
| CONGO ROPE SQUIRREL | |
| LADY BURTON'S ROPE SQUIRREL | |
| RIBBONED ROPE SQUIRREL | |
| RED-CHEEKED ROPE SQUIRREL | |
| FIRE-FOOTED ROPE SQUIRREL | |
| KINTAMPO ROPE SQUIRREL | |
| Ruwenzori sun squirrel | |

Anas acuta
Anas bernieri
Anas clypeata
Anas crecca
Anas luzonica
Anas platyrhynchos
Anas querquedula
Anas strepera
Anser anser
Anser fabalis
Aythya feralis
Aythya fuligula
Bucephala clangula
Cairina scutulata
Clangula hyemalis

pitfall
MADAGASCAR TEAL
northern shoveler
Teal
PHILIPPINE DUCK
Wigeon
Mallard
garganey
gadwall
greylag goose
bean goose
common pochard
tufted duck
Canada goose
Common goldeneye
WHITE-WINGED DUCK
long-tailed duck

ANSERIFORMES

Myrmecophaga tridactyla
Tamandua tetradactyla

Giant anteater
Southern tamandua

MYRMECOPHAGIDAE
Dasyus hybridus
Dasyus kappeli
Dasyus novemcinctus
Dasyus pilosus
Dasyus sabanicola
Dasyus septemcinctus
Pridonates maximus
Tolypeutes tridactylus

SOUTHERN LONG-NOSED ARMADILLO
GREATER LONG-NOSED ARMADILLO
COMMON LONG-NOSED ARMADILLO
HAIRY LONG-NOSED ARMADILLO
LLANOS LONG-NOSED ARMADILLO
BRAZILIAN LESSER LONG-NOSED ARMADILLO
GIANT ARMADILLO
BRAZILIAN THREE-BANDED ARMADILLO

DASYPODIDAE

Bradyus torquatus
Bradyus tridactylus
Bradyus vanegatus

MANED SLOTH
PALE-THROATED SLOTH
BOLIVIAN THREE-TOED SLOTH

BRADYPODIDAE

XENARTHRA

Orycteropus afer

Aarvark

ORYCTEROPODIDAE

TUBULIDENTATA

Trichechus senegalensis

West African manatee

TRICHECHIDAE

SIRENIA

Thalonomys swinderhanus

greater cane rat

THRYONOMYIDAE

Myosciurus pumilio
Paraxerus poensis
Paraxerus vincenti
Protoxerus stangeri
Ratufa indica
Sciurus ssp.
Sciurus vilgerti
Sundasciurus brookei
Sundasciurus davenisi
Sundasciurus flaterculus
Sundasciurus hippurus
Sundasciurus hoogstraali
Sundasciurus jentinki
Sundasciurus juvencus
Sundasciurus lowii
Sundasciurus mindanensis
Sundasciurus moellendorffi
Sundasciurus philippinensis
Sundasciurus raboni
Sundasciurus samarensis
Sundasciurus steeni
Sundasciurus tenuis

African pygmy squirrel
Squirrel
VINCENT'S BUSH SQUIRREL
Squirrel
INDIAN GIANT SQUIRREL
Squirrels
(Eurasian) red squirrel
BRooke's squirrel
DAVAO SQUIRREL
FRATERCUL SQUIRREL
HORSE-TAILED SQUIRREL
BUSUNGA SQUIRREL
JENTINK'S SQUIRREL
NORTHERN PALAWAN TREE SQUIRREL
LWS SQUIRREL
MINDANAO SQUIRREL
CULION TREE SQUIRREL
PHILIPPINE TREE SQUIRREL
PALAWAN MONTANE SQUIRREL
SAMAR SQUIRREL
SOUTHERN PALAWAN TREE SQUIRREL
SLENDER SQUIRREL

Dendrocygna arborea

Mergus merganser

Mergus serrator

Mergus squamatus

Peronetta hartlaubii

Rhodonessa caryophyllacea

Somateria mollissima

CASUARIIFORMES

CASUARIIDAE

Casuarus casuarus

Casuarus unappendiculatus

CHARADRIIFORMES

CHARADRIIDAE

Charadrius thoracicus

SCOLOPACIDAE

Gallinago gallinago

Gallinago nemoralis

Scolopax rusticola

Tinga guttifer

ARDEIDAE

CICONIIFORMES

Ardea humblyi

Ardea insignis

Ardea idae

Egretta euphotes

Gorsachius gotsagi

Gorsachius magnificus

CICONIIDAE

Ciconia boycana

Ciconia stormi

Leptoptilos dubius

Leptoptilos javanicus

Mycteria cinerea

THRESKIORNIITHIDAE

Bosistrchia boccageti

Lophotibis cristata

Nipponia nippon

Pseudibis davisoni

Taunahibis gigantea

Threskiornis bennetti

Threskiornis melanocephalus

COLUMBIFORMES

COLUMBIDAE

Caloenas nicobarica

Columba agnetha

Columba carboaea

Columba ephinstoni

Columba evermanni

Columba inornata

Columba leucocephala

Columba oenops

Columba pallidiceps

Columba palumbus

Columba punctata

Columba thomensis

Columba tomtongtoni

Columba trocaz

Didunculus strigirostris

Drepanoptila holosericea

Ducula aurorae

Ducula barchanensis

Ducula carola

Ducula cineracea

Ducula galaeata

Ducula goliath

Ducula mindorensis

BLACK-BILLED WOOD-DUCK

goosander

red-breasted merganser

CHINESE MERGANSER

HARTLAUB'S DUCK

PINK-HEADED DUCK

common eider

CASUARIIFORMES

CASUARIIDAE

SOUTHERN CASSOWARY

NORTHERN CASSOWARY

CHARADRIIFORMES

CHARADRIIDAE

BLACK-BANDED PLOVER

SCOLOPACIDAE

Snipe

WOOD SNIFE

WOODCOCK

NORDMANN'S GREENSHANK

ARDEIDAE

CICONIIFORMES

MADAGASCAR HERON

IMPERIAL HERON

MADAGASCAR FOND-HERON

CHINESE EGRET

JAPANESE NIGHT-HERON

WHITE-EARED NIGHT-HERON

CICONIIDAE

JAPANESE WHITE STORK

STORM'S STORK

GREATER ADJUTANT

LESSER ADJUTANT

MILKY STORK

THRESKIORNIITHIDAE

DWARF OLIVE IBIS

MADAGASCAR CRESTED IBIS

CRESTED IBIS

WHITE-SHOULDERED IBIS

GIANT IBIS

MADAGASCAR SACRED IBIS

BLACK-HEADED IBIS

COLUMBIFORMES

COLUMBIDAE

NICOBAR DOVE

GREY WOOD-PIGEON

RING-TAILED PIGEON

NILGIRI WOOD-PIGEON

PALE-BACKED PIGEON

PLAIN PIGEON

WHITE-CROWNED PIGEON

PERUVIAN PIGEON

YELLOW-LEGGED PIGEON

Wood pigeon

PALE-CAPPED PIGEON

MAROON PIGEON

CEYLON WOOD-PIGEON

MADIRA LAUREL PIGEON

TOOTH-BILLED PIGEON

CLOVEN-FEATHERED DOVE

POLYNESIAN IMPERIAL-PIGEON

BAKERS IMPERIAL-PIGEON

CHESTNUT-BELLIED IMPERIAL-PIGEON

SPOTTED IMPERIAL-PIGEON

TIMOR IMPERIAL-PIGEON

MARQUESAN IMPERIAL-PIGEON

GIANT IMPERIAL-PIGEON

MINDORO IMPERIAL-PIGEON

Nothocrax urrumulum

Nocturnal currawong

CORACIIFORMES
CORACIDAE

Aleornis crossleyi
Brachypteracias leptosomus
Brachypteracias squamiger
Uralornis chimamera

CROSSLEY'S GROUND-ROLLER
SHORT-LEGGED GROUND-ROLLER
SCALED GROUND-ROLLER
LONG-TAILED GROUND-ROLLER

CORACIIFORMES
CORACIIFORMES

Tockus pallidirostris
Tockus nasutus
Tockus montei
Tockus leucomelas
Tockus jacksoni
Tockus hemprichii
Tockus hartlaubii
Tockus flavirostris
Tockus fasciatus
Tockus erythrorhynchus
Tockus deckeni
Tockus camurus
Tockus bradfieldi
Tockus albottomatus
Penelopides panini
Penelopides mindorensis
Ceratogymna elata
Ceratogymna atrata
Bycanistes subcylindricus
Bycanistes cylindricus
Buceros rhinoceros
Anthracoceros montani
Anthracoceros marchei
Aceros walidani
Aceros subnigrifacialis
Aceros njabalensis
Aceros narcondami
Aceros leucoccephalus
Aceros everetti

PALE-BILLED HORNBILL
AFRICAN GREY HORNBILL
MONTEIRO'S HORNBILL
SOUTHERN YELLOW-BILLED HORNBILL
JACKSON'S HORNBILL
HEMPRICH'S HORNBILL
BLACK DWARF HORNBILL
EASTERN YELLOW-BILLED HORNBILL
AFRICAN PIED HORNBILL
RED-BILLED HORNBILL
VON DER DECKEN'S HORNBILL
RED-BILLED DWARF HORNBILL
BRADFIELD'S HORNBILL
CROWNED HORNBILL
TARICOT HORNBILL
MINDORO HORNBILL
YELLOW-CASQUED HORNBILL
black-casqued hornbill
black and white casqued hornbill
BROWN-CHEEKED HORNBILL
RHINOCEROS HORNBILL
SULU HORNBILL
PALAWAN HORNBILL
VISSAYAN WRINKLED HORNBILL
PLAIN-POUCHED HORNBILL
RUFOUS-CHEEKED HORNBILL
MINDANAO WRINKLED HORNBILL
SUMBA HORNBILL

CORACIIFORMES
BUCEROTIDAE

Zenaida graysoni
Turacoenas modesta
Teron psittacea
Teron tomentosae
Teron floris
Teron capellei
Teron calva
Stamoenas cyanocephala
Ptilinopus roseicapilla
Ptilinopus meruli
Ptilinopus marchei
Ptilinopus hutereaui
Ptilinopus dohrtyi
Ptilinopus arcanus
Phapitreron chinensis
Phapitreron brunneiceps
Lepidocolaptes ocellatus
Lepidocolaptes hololepis
Goura victoria
Goura scheepmakeri
Goura cristata
Geopelia striata
Geopelia striata
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Gallinula chloropus
Ducula whartoni
Ducula pectorata
Ducula oceanica

SOCORRO DOVE
BLACK CUCKOO-DOVE
TIMOR GREEN-PIGEON
WHISTLING GREEN-PIGEON
FLORES GREEN-PIGEON
LARGE GREEN-PIGEON
African green pigeon
BLUE-HEADED QUAIL-DOVE
MARIANA FRUIT-DOVE
CREAM-BELLIED FRUIT-DOVE
FLAME-BREASTED FRUIT-DOVE
RAPA FRUIT-DOVE
RED-NECKED FRUIT-DOVE
NEGROS FRUIT-DOVE
DARK-EARED BROWN-DOVE
MINDANAO BROWN-DOVE
OCHRE-BELLIED DOVE
BROWN-BACKED DOVE
VICTORIA CROWNED-PIGEON
MAROON-BREASTED CROWNED-PIGEON
BLUE CROWNED-PIGEON
CRESTED QUAIL-DOVE
GREY-HEADED QUAIL-DOVE
FRIENDLY GROUND-DOVE
SANTA CRUZ GROUND-DOVE
THICK-BILLED GROUND-DOVE
MINNDORO BLEEDING-HEART
CAROLINE GROUND-DOVE
NEGROS BLEEDING-HEART
WETAR GROUND-DOVE
POLYNESIAN GROUND-DOVE
MINDANAO BLEEDING-HEART
CHRISTMAS IMPERIAL-PIGEON
GREY IMPERIAL-PIGEON
MICRONESIAN IMPERIAL-PIGEON

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|--------------------------|-------------------------------------|
| CONGO PEAFOWL | <i>Atypus congensis</i> |
| PHASIANIDAE | |
| WHITE-BREADED GUINEAFOWL | <i>Agelastes meleagrides</i> |
| NUMIDAE | |
| OCCELLATED TURKEY | <i>Melagris ocellata</i> |
| MELAGRIDAE | |
| NEVAFOU MEGAPODE | <i>Megapodius pritchardii</i> |
| NICOBAR MEGAPODE | <i>Megapodius nicobariensis</i> |
| NEW HEBRIDES SCRUBFOWL | <i>Megapodius layardi</i> |
| MARIANAS SCRUBFOWL | <i>Megapodius laprousei</i> |
| BLAK MEGAPODE | <i>Megapodius geelvinkianus</i> |
| SULA SCRUBFOWL | <i>Megapodius bernsteini</i> |
| GRAY'S BRUSH-TURKEY | <i>Macrocephalon maleo</i> |
| MOLUCCAN MEGAPODE | <i>Eulipota wallacei</i> |
| BRUIN'S BRUSH-TURKEY | <i>Aepypterus brunyi</i> |
| MEGAPODIIDE | |
| TRINIDAD PIPING-GUAN | <i>Pipile pipile</i> |
| BLACK FRONTED CURASSOW | <i>Pipile jacutinga</i> |
| HIGHLAND GUAN | <i>Penelopina nigra</i> |
| WHITE-CRESTED GUAN | <i>Penelope pileata</i> |
| CAUCA GUAN | <i>Penelope perspicax</i> |
| BAUDO GUAN | <i>Penelope ortoni</i> |
| CHESTNUT-BELLIED GUAN | <i>Penelope ochrogaster</i> |
| WHITE-BROWED GUAN | <i>Penelope jacucaca</i> |
| BARBED GUAN | <i>Penelope barbata</i> |
| WHITE-WINGED GUAN | <i>Penelope albipennis</i> |
| BUFF-BROWED CHACHALACA | <i>Oreallis superciliosa</i> |
| RUFOUS HEADED CHACHALACA | <i>Oreallis erythroptera</i> |
| HORNED GUAN | <i>Oreophasis derbianus</i> |
| HORNED CURASSOW | <i>Crax unicornis</i> |
| GREAT CURASSOW | <i>Crax rubra</i> |
| HELMETED CURASSOW | <i>Crax pauxi</i> |
| ALAGOAS CURASSOW | <i>Crax mitis</i> |
| WATTLED CURASSOW | <i>Crax globulosa</i> |
| HOCO DE DAUBENTON | <i>Crax daubentoni</i> |
| MUTUM | <i>Crax blumenbachii</i> |
| BLUE-BILLED CURASSOW | <i>Crax alberti</i> |
| BLACK GUAN | <i>Chamaepetes unicolor</i> |
| WATTLED GUAN | <i>Aburria aburri</i> |
| CRACIDAE | |
| GALLIFORMES | |
| crowed hawk eagle | <i>Stephanoaetus coronatus</i> |
| PHILIPPINE HAWK-EAGLE | <i>Spizaetus philippensis</i> |
| GREAT PHILIPPINE EAGLE | <i>Philicopphaga jefferyi</i> |
| BLACK HONEY-BUZZARD | <i>Henicopus infuscatus</i> |
| NEW GUINEA EAGLE | <i>Harpyopsis novaeguineae</i> |
| African fish eagle | <i>Haliaeetus vocifer</i> |
| SANFORD'S FISH-EAGLE | <i>Haliaeetus sanfordi</i> |
| CAPE GRIFFON | <i>Gyps coprotheres</i> |
| Palm nut vulture | <i>Gypohierax angolensis</i> |
| MADAGASCAR HARRIER | <i>Circus mallardi</i> |
| African goshawk | <i>Accipiter tachiro</i> |
| ACCIPTRIDAE | |
| FALCONIFORMES | |
| Hoazin | <i>Ophistocomus hoazini</i> |
| Opisthocomidae | |
| blue plantaineater | <i>Corythaecola cristata</i> |
| PRINCE RUSPOLIS TURACO | <i>Tauraco ruspolii</i> |
| MUSOPHAGIDAE | |
| RED-FACED MALKOHA | <i>Phaenicophaeus pyrrocephalus</i> |
| BAY-BREADED CUCKOO | <i>Hyleonis nigrilatus</i> |
| SUMATRAN GROUND-CUCKOO | <i>Carpococcyx viridis</i> |
| CUCULIDAE | |
| CUCULIFORMES | |

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|--------------------------------|---------------------------------------|
| Chukar partridge | <i>Alectoris chukar</i> |
| Red-legged partridge | <i>Alectoris rufa</i> |
| HAINAN PARTRIDGE | <i>Arborophila ardens</i> |
| CHESTNUT-HEADED PARTRIDGE | <i>Arborophila cambodiana</i> |
| ORANGE-NECKED PARTRIDGE | <i>Arborophila davidi</i> |
| RICKETT'S HILL-PARTRIDGE | <i>Arborophila ghigna</i> |
| CHESTNUT-BREASTED PARTRIDGE | <i>Arborophila mandelli</i> |
| WHITE-FACED HILL-PARTRIDGE | <i>Arborophila orientalis</i> |
| SICHUAN PARTRIDGE | <i>Arborophila turpectus</i> |
| Common hill partridge | <i>Arborophila torquata</i> |
| GREAT ARGUS | <i>Argusianus argus</i> |
| FERRUGINOUS PARTRIDGE | <i>Caloperdix oculea</i> |
| Cheer pheasant | <i>Catreus walli</i> |
| Quail | <i>Coturnix coturnix</i> |
| WHITE EARED-PHEASANT | <i>Crossoptilon crossoptilon</i> |
| BEARDED WOOD-PARTRIDGE | <i>Dendrocyx barbatus</i> |
| CAMEROON FRANCOLIN | <i>Francoiscolinus camerunensis</i> |
| Black francolin | <i>Francoiscolinus francois</i> |
| GREY-STRIPED FRANCOLIN | <i>Francoiscolinus griseostriatus</i> |
| NAHAN'S FRANCOLIN | <i>Francoiscolinus nahani</i> |
| DJIBOUTI FRANCOLIN | <i>Francoiscolinus ochropectus</i> |
| SWIERSTRA'S FRANCOLIN | <i>Francoiscolinus swierstrai</i> |
| Guttera edouardi | <i>Guttera edouardi</i> |
| Crested guineafowl | <i>Lophophorus impejanus</i> |
| Himalayan monal | <i>Lophophorus lhuysii</i> |
| CHINESE IMPERIAL | <i>Lophophorus sclateri</i> |
| BULLWHER'S PHEASANT | <i>Lophura bulweri</i> |
| DIARD'S FIREBACK | <i>Lophura diardi</i> |
| EDWARDS'S PHEASANT | <i>Lophura edwardsi</i> |
| CRESTLESS FIREBACK | <i>Lophura erythrophthalma</i> |
| VIETNAMESE PHEASANT | <i>Lophura hainensis</i> |
| ACEH PHEASANT | <i>Lophura hoogewerfti</i> |
| SALVADORI'S PHEASANT | <i>Lophura inornata</i> |
| White-crested kalij | <i>Lophura leucomelanos</i> |
| BLACK PARTRIDGE | <i>Melanoperdix nigra</i> |
| heimeled or tufted guinea fow | <i>Nunida melaeagnis</i> |
| TACARCUNA WOOD-QUAIL | <i>Odontophorus dialeucos</i> |
| DARK-BACKED WOOD-QUAIL | <i>Odontophorus melanotus</i> |
| GORGETED WOOD-QUAIL | <i>Odontophorus strophium</i> |
| GREEN PEAFOWL | <i>Pavo muticus</i> |
| Grey partridge | <i>Perdix perdix</i> |
| Common pheasant | <i>Phasianus colchicus</i> |
| NAPOLIENON'S PEACOCK-PHEASANT | <i>Polyplecton emphanum</i> |
| GERMAN'S PEACOCK- | <i>Polyplecton germani</i> |
| BORNAN PEACOCK-PHEASANT | <i>Polyplecton schiermacheri</i> |
| Koklass pheasant | <i>Pucrasia macrolopha</i> |
| CRESTED ARGUS | <i>Rheinardia ocellata</i> |
| CHINESE BARRED-BACKED PHEASANT | <i>Symaticus ellioti</i> |
| HUMES BAR-TAILED PHEASANT | <i>Symaticus humiae</i> |
| REEVES'S PHEASANT | <i>Symaticus reevesii</i> |
| Himalayan snowcock | <i>Tetraogallus himalayensis</i> |
| BLTHT'S TRAGOPAN | <i>Tragopan blythii</i> |
| CABOT'S TRAGOPAN | <i>Tragopan caboti</i> |
| BLACK-HEADED TRAGOPAN | <i>Tragopan melanocephalus</i> |
| UDZUNGWA FOREST-PARTRIDGE | <i>Xenoperdix udzungwensis</i> |
| hazel grouse | <i>Bonasa bonasia</i> |
| CHINESE GROUSE | <i>Bonasa sewerzowi</i> |
| SIBERIAN GROUSE | <i>Dendragapus falcipectus</i> |
| Red grouse | <i>Lagopus lagopus</i> |
| willow grouse | <i>Lagopus lagopus</i> |
| Plumigan | <i>Lagopus mutus</i> |
| Black grouse | <i>Tetrao tetrix</i> |
| Capercaille | <i>Tetrao urogallus</i> |

TETRAONIDAE

HELIORNITHIDAE

Helipais personata

ASIAN FINFOOT

MESITORNITHIDAE

Mesitornis unicolor

BROWN MESITE

Mesitornis variegatus

WHITE-BREADED MESITE

Psophiidae

Monias benschi

MONIAS

Mesitornis unicolor

BROWN MESITE

Mesitornis variegatus

WHITE-BREADED MESITE

Monias benschi

MONIAS

Mesitornis unicolor

BROWN MESITE

Mesitornis variegatus

WHITE-BREADED MESITE

Monias benschi

MONIAS

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|------------------------------|----------------------------------|
| GREY-WINGED TRUMPETER | <i>Psophia crepitans</i> |
| PALE-WINGED TRUMPETER | <i>Psophia leucoptera</i> |
| DARK-WINGED TRUMPETER | <i>Psophia vitiis</i> |
| RALLIDAE | |
| PLATEN'S RAIL | <i>Aramidopsis plateni</i> |
| common coot | <i>Fulica atra</i> |
| SAMOAN MOORHEN | <i>Gallinula pacifica</i> |
| MAKIRA MOORHEN | <i>Gallinula silvestris</i> |
| LORD HOWE ISLAND WOODHEN | <i>Gallinulus sylvestris</i> |
| BALD-FACED RAIL | <i>Gymnocrex rosenbergii</i> |
| NEW GUINEA FLIGHTLESS RAIL | <i>Megacrex inepta</i> |
| WHITE-STRIPED FOREST-RAIL | <i>Rallina leucospila</i> |
| PLAIN-FLANKED RAIL | <i>Rallus wetmorei</i> |
| PASSERIFORMES | |
| CAMPPEHAGIDAE | |
| REUNION CUCKOO-SHRIKE | <i>Coracina newtoni</i> |
| CORVIDAE | |
| WHITE-NECKED CROW | <i>Corvus leucognathus</i> |
| HISPANIOLAN PALM CROW | <i>Corvus palmarum</i> |
| COTINGIDAE | |
| LONG-WATTLED UMBRELLABIRD | <i>Cephalopterus penduliger</i> |
| WHITE-WINGED COTINGA | <i>Xipholena atrorupurea</i> |
| DREPANIDAE | |
| OU | <i>Ptilinopus psittacea</i> |
| EMBERIZIDAE | |
| YELLOW-BREASTED BUNTING | <i>Emberiza aureola</i> |
| ESTRIDIDAE | |
| JAVA SPARROW | <i>Padda oryzivora</i> |
| MUSCIPIDAE | |
| FOREST THRUSH | <i>Cichlherminia herminieri</i> |
| BARE-HEADED ROCKFOWL | <i>Picathartes gymnocephalus</i> |
| ASHY THRUSH | <i>Zoothera chirea</i> |
| PARADISAIDAE | |
| BLACK SICKLEBILL | <i>Epinachus fastuosus</i> |
| MACGREGOR'S BIRD-OF-PARADISE | <i>Macgregoria pulchra</i> |
| BLUE BIRD-OF-PARADISE | <i>Paradisaea rufolphti</i> |
| PITTIDAE | |
| KOCH'S PITTA | <i>Pitta kochi</i> |
| SCHNEIDER'S PITTA | <i>Pitta schneideri</i> |
| PTILONORHYNCHIDAE | |
| ADELBERT BOWERBIRD | <i>Sericulus bakeri</i> |
| STURNIDAE | |
| WHITE-EYED STARLING | <i>Apornis brunneicapillus</i> |
| POHNPEI MOUNTAIN STARLING | <i>Apornis peizehi</i> |
| MOUNTAIN STARLING | <i>Apornis santovesstris</i> |
| PELCAIFORMES | |
| ANHINGIDAE | |
| ORIENTAL DARTER | <i>Anhinga melanogaster</i> |
| PELCAIIDAE | |
| GREY PELICAN | <i>Pelecanus philippensis</i> |

Cyprurellus kerriae
Cyprurellus noctivagus
Cyprurellus salivans
Cyprurellus transfasciatus
Tinamus osgoodi

CHOCO TINAMOU
 YELLOW-LEGGED TINAMOU
 MAGDALENA TINAMOU
 PALE-BROWED TINAMOU
 BLACK TINAMOU

TINAMIDAE

TINAMIFORMES

Struthio camelus
 ostrich

STRUTHIONIDAE

STRUTHIONIFORMES

Bubo philippensis
Otus mohehensis
Scotopelia ussher

PHILIPPINE EAGLE-OWL
 ANJOUAN SCOPS-OWL
 MOHELI SCOPS-OWL
 RUFIOUS FISHING-OWL

STRIGIDAE

STRIGIFORMES

Agapornis nigrigenis
Amazona arausiaca
Amazona brasiliensis
Amazona guildingii
Amazona ventralis
Amazona versicolor
Amazona vittata
Anodorhynchus glaucus
Anodorhynchus hyacinthinus
Ara ambigua
Cacatua haematuropygia
Cyanopsitta stixii
Nesotor meridionalis
Ognorhynchus icterotis
Tricharia malachitacea

BLACK-CHEEKED LOVEBIRD
 RED-NECKED AMAZON
 RED-TAILED AMAZON
 SAINT VINCENT AMAZON
 IMPERIAL AMAZON
 HISPANIOLAN AMAZON
 SAINT LUCIA AMAZON
 PUERTO RICAN AMAZON
 GLAUCOUS MACAW
 HYACINTH MACAW
 GREAT GREEN MACAW
 PHILIPPINE COCKATOO
 LITTLE BLUE MACAW
 KAKA
 YELLOW-EARED CONURE
 BLUE-BELLIED PARROT

PSITTACIDAE

PSITTACIFORMES

Puffinus gravis
Puffinus creatopus
Pterodroma solandri
Pterodroma magentae
Pterodroma hastata
Pterodroma cambaëa
Pterodroma barau
Pterodroma axillaris
Pseudobulweria rostrata

Great shearwater
 PINK-FOOTED SHEARWATER
 PROVIDENCE PETREL
 CHATHAM ISLAND TAIKO
 BLACK-CAPPED PETREL
 JAMAICA PETREL
 BARAU'S PETREL
 CHATHAM ISLANDS PETREL
 TAHITI PETREL

PROCELLARIIDAE

PROCELLARIIFORMES

Pteroglossus azara
Pteroglossus beaufortensis
Pteroglossus biflorquatus
Pteroglossus castanotis
Pteroglossus erythropygius
Pteroglossus frantzii
Pteroglossus inscriptus
Pteroglossus mariae
Pteroglossus punctinotus
Pteroglossus sanquinius
Pteroglossus torquatus
Pteroglossus vitiis

BLACK-NECKED ARACARI
 IVORY-BILLED ARACARI
 CURL-CRESTED ARACARI
 RED-NECKED ARACARI
 CHESTNUT-EARED ARACARI
 PALE-MANDIBLED ARACARI
 FERRY-BILLED ARACARI
 LETTERED ARACARI
 BROWN-MANDIBLED ARACARI
 MANY-BANDED ARACARI
 STRIPE-BILLED ARACARI
 COLLARED ARACARI
 GREEN ARACARI

Ramphastidae

Campyphilus imperialis

IMPERIAL WOODPECKER

PICIDAE

PICIFORMES

Pelecanus rufescens
 Pink-backed pelican

CROCODYLIA

CROCODYLIDAE

Crocodylus cataphractus
Crocodylus niloticus
Melanosuchus niger
Osteolemmis tetraspis

African slender-snouted crocodile
Nile crocodile
Black caiman
Dwarf crocodile

SQUAMATA

BOIDAE

Python sebae

rock python

IGUANIDAE

Ctenosaura flavidorsalis
Ctenosaura oaxacana
Cyclura carinata
Cyclura eychlura
Cyclura lewisi
Iguana delicatissima

YELLOWBACK SPINY-TAILED IGUANA
OAXACAN SPINY-TAILED IGUANA
BAHAMAS ROCK IGUANA
NORTHERN BAHAMIAN ROCK IGUANA
CAYMAN ISLAND GROUND IGUANA
LESSER ANTLLEAN IGUANA

VARANIDAE

Varanus niloticus

monitor lizard

BATAGURIDAE

Batagur baska
Callagur borneoensis
Chinemys megalocephala
Chinemys nigricans (kwangtungensis)
Chinemys reevesi
Cuora amboinensis
Cuora auracapitata
Cuora flavomarginata
Cuora galbaniifrons
Cuora mccordi
Cuora pani
Cuora serrata
Cuora trfasciata
Cuora zhoui
Cyclemys dentata
Cyclemys tchepoensis
Geoclemys hamiltoni
Geomyda depressa
Geomyda spengleri
Geomyda silvatica
Haradia thuyi
Heosemys grandis
Heosemys spinosa
Heremys amandabei
Kachuga dhongoka
Kachuga kachuga
Kachuga smithi
Kachuga sylhetensis
Kachuga tentoria
Kachuga tivvitata
Leucoccephalon yuwonoi
Malayemys subtrijuga
Mauremys annamensis
Mauremys iversoni
Mauremys mutica
Mauremys pntcharai
Melanochelys edemiana
Melanochelys indopeninsularis
Melanochelys tricarinata
Melanochelys trjuga
Morenia ocellata
Morenia petersi
Notochelys platynota
Ocadia philippeni
Ocadia glyphisstoma
Pxyidea mohoutii
Sacalia bealei
Sacalia pseudocellata

Batagur
Painted batagur
Chinese broad-headed pond turtle
Red-necked pond turtle
Chinese pond turtle
South Asian box turtle
Yellow-headed box turtle
Yellow-margined box turtle
Indochinese box turtle
McCord's box turtle
Pan's box turtle
Flowerback box turtle
Chinese three-striped box turtle
Zhou's box turtle
Asian leaf turtle
Strip-necked leaf turtle
Black pond turtle
Arakan forest turtle
Black-breasted hill turtle
CANE TURTLE
Crowned river turtle
Giant Asian pond turtle
Spiny terrapin
Yellow-headed temple turtle
Three-striped roof turtle
Bengal roof turtle
Brown roofed turtle
Assam roofed turtle
Indian tent turtle
Burmese roofed turtle
Sulawesi forest turtle
Malayan snail-eating turtle
Annam leaf turtle
Fujian pond turtle
Asian yellow pond turtle
Pitchard's pond turtle
Bengal black turtle
Three-keeled land tortoise
Indian black turtle
Bengal eyed terrapin
Indian eyed turtle
Malayan flat-shelled turtle
Guanxi stripe-necked turtle
Philippen's striped turtle
Chinese stripe-necked turtle
Bornean river turtle
Jagged-shelled turtle
Beal's eyed turtle
Chinese false-eyed turtle

| | |
|--------------------------------------|--|
| <i>Sacalia quadricellata</i> | Four-eyed turtle |
| <i>Siebenrockiella crassicolliis</i> | Black mud turtle |
| CARETTOCHELYIDAE | |
| <i>Carettochelys insculpta</i> | Fly river turtle |
| CHELYDAE | |
| <i>Cheilus fimbriatus</i> | Mata mata |
| <i>Cheiodina mccordi</i> | Roti Island snake-necked turtle |
| <i>Chelydra serpentina</i> | Western short-necked turtle |
| PELOMEDUSIDAE | |
| <i>Podocnemis expansa</i> | Giant South American turtle |
| <i>Podocnemis uniflms</i> | Yellow-spotted river turtle |
| PLATYSTERNIDAE | |
| <i>Platysternon megacephalum</i> | Big-headed turtle |
| TESTUDINIDAE | |
| <i>Geochelone chilensis</i> | Argentine tortoise |
| <i>Geochelone dentliculata</i> | Brazilian giant tortoise |
| <i>Geochelone elegans</i> | Indian star tortoise |
| <i>Geochelone plangonia</i> | Burmese starred tortoise |
| <i>Indolestes elongata</i> | Elongated tortoise |
| <i>Indolestes forsterii</i> | Celebes tortoise |
| <i>Kynxix erosa</i> | Forest tortoise |
| <i>Manouria emys</i> | Asian giant tortoise |
| <i>Manouria impressa</i> | Impressed tortoise |
| <i>Testudo horsfieldii</i> | Afghan tortoise |
| TRIONYCHIDAE | |
| <i>Amyda cartilaginea</i> | Asiatic Softshell Turtle |
| <i>Aspideretes gangeticus</i> | Indian softshell turtle |
| <i>Aspideretes hurum</i> | Indian peacock softshell turtle |
| <i>Aspideretes leithii</i> | Leith's softshell turtle |
| <i>Chitra chitra</i> | Striped narrow-headed softshell turtle |
| <i>Chitra indica</i> | Narrow-headed softshell turtle |
| <i>Dogania subplama</i> | Malayan softshell turtle |
| <i>Lissemys andersoni (punctata)</i> | Anderson's flap-shelled turtle |
| <i>Lissemys scutata</i> | Burmese flapshell turtle |
| <i>Nissosmia formosa</i> | Burmese peacock softshell |
| <i>Pataa steindachneri</i> | Wattle-necked softshell turtle |
| <i>Pelochelys bibroni</i> | Asian giant softshell turtle |
| <i>Pelochelys cantoni</i> | Cantor's giant softshell |
| <i>Pelodiscus sinensis</i> | Chinese softshell turtle |
| ANURA | |
| ASTYLOSTERNIDAE | |
| <i>Lepidodactylodon bicolor</i> | HAIRY FROG |
| <i>Trichobatrachus robustus</i> | |
| BUFONIDAE | |
| <i>Bufo bankorensis</i> | |
| <i>Bufo garganzans</i> | Himalayan toad |
| <i>Bufo himalayanus</i> | ASIATIC TOAD |
| HYLIDAE | |
| <i>Hyla annectans</i> | |
| <i>Hyla miotypanum</i> | CALATES |
| <i>Hyla taenopus</i> | RANA-DE ARBOL JARROCHA |
| <i>Phrynohyas coriacea</i> | |
| LEPTODACTYLIDAE | |
| <i>Lepidodactylus fallax</i> | GIANT DITCH FROG |
| <i>Lepidodactylus pentadactylus</i> | SAPOT-TORO COMMUN |
| <i>Telmatobius citharellis</i> | |
| <i>Telmatobius vellardi</i> | |
| MANTELLIDAE | |

Mantidactylus granddien
Mantidactylus guttulatus
Mantidactylus microlympanum
MEGOPHRIDAE
Brachytrachophrys chuannanensis
Brachytrachophrys feae
Brachytrachophrys hainanense
Lepobrachium hainanense
Oreolalax rhodostigmatus
Vibnsaphora leisihanensis
Xenophrys major
MICROHYLIDAE
Calliops stictogaster
Calliella guttulata
Glyptoglossus molossus
Kaloula mediolineata
PIPIDAE
Silurana topocalis
Xenopus andrei
Xenopus fraseri
Xenopus pygmaeus
Xenopus ruwenzoriensis
Xenopus vestitus
Xenopus wittei
RANIDAE
Amolops hainanensis
Chaparana fansipani
Chaparana quadratus
Chaparana uncluanus
Conraua gollathi
Conraua robusta
Discodeltes guppyi
Euphyctis hexadactylus
Fejervarya cancrivora
Fejervarya nepalensis
Hoplobatrachus occipitalis
Hoplobatrachus crassus
Hoplobatrachus tigerrinus
Limnonectes acanthi
Limnonectes blythii
Limnonectes diutlus
Limnonectes gunnieri
Limnonectes ibanorum
Limnonectes kadarsani
Limnonectes macrocephalus
Limnonectes kuhlii
Limnonectes magnus
Limnonectes macrodon
Limnonectes malesianus
Limnonectes shompenorum
Limnonectes visayanus
Limnonectes woodworthi
Paa amoldi
Paa boulengeri
Paa bourreti
Paa exilispinosa
Paa jilongensis
Paa lilii
Paa maculosa
Paa robertingeri
Paa shini
Paa spinosa
Paa verrucospinosa
Paa yunnanensis
Rana aurora
Rana amurensis
Rana andersonii
Rana araki
Rana chensinensis
Rana dybowskii
Rana erythraea
Rana esculenta

TROPICAL CLAWED FROG
 ANDRE'S CLAWED FROG
 FRASER'S CLAWED FROG
 BOUCHIA CLAWED FROG
 UGANDA CLAWED FROG
 KIVU CLAWED FROG
 DE WITTE'S CLAWED FROG
 ASIAN BRACKISH FROG
 SIBERIAN WOOD FROG
 KUHLS CREEK FROG
 SIBERIAN WOOD FROG
 EUROPEAN EDIBLE FROG
 GOLIATH FROG
 KUHLS CREEK FROG
 ASIAN BRACKISH FROG
 SIBERIAN WOOD FROG
 PEREZ'S FROG
 BLYTH'S RIVER FROG
 EASTERN MINDANAO FROG
 CROWNED BULLFROG
 SIBERIAN WOOD FROG
 LUZON FANGED FROG
 FANGED RIVER FROG
 GIANT PHILIPPINE FROG
 MALESIAN FROG
 GIANT VISAYAN FROG

Acanthophorus capensis
Acanthophorus confinis
Acanthophorus maculatus
Acrocinus longimanus

Cerambycidae

Euryscaphus
Scartes
Tricholepsis

Carabidae

Buprestis
Chalcophora
Chrysobothris fatalis
Euchroma gigantea
Psiloptera willmani
Steraspis amplipennis
Sternocera
Sternocera aequisignata
Sternocera feldspathica
Sternocera funebris
Sternocera orissa

Buprestidae

Algrobius
Caryobruchus scheelaee
Neilumius

Bruchidae

COLEOPTERA

Batrachuperus pinchonii
Hynobius dumii
Hynobius stejnegeri
Pachyhynobius shangchengensis
Ranodon shihii
Ranodon tsinpaensis

SALAMANDRIDAE

STREAM SALAMANDER
OITA SALAMANDER
AMBER-COLOURED SALAMANDER
WUSHAN SALAMANDER
TSINPA SALAMANDER

HYNOBIIDAE

CHINESE GIANT SALAMANDER
Andrias davidianus

CRYPTOBRAANCHIDAE

Ambystoma altamirani
Ambystoma nvlare
AJOLOTE (S)

AMBYSTOMATIDAE

CAUDATA

Buergeria oxycephalus
Buergeria robusta
Polypedates feae

RHACOPHORIDAE

Rana guentheri
Rana grahami
Rana huanrenensis
Rana jingdongensis
Rana megapoda
Rana montezumae
Rana nigromaculata
Rana perezii
Rana schmackeri
Rana tiannanensis
Rana tyleri
COMMON GREEN FROG
BLACK-SPOTTED POND FROG
CROWNED BULLFROG
INDIAN BULLFROG
INDIAN BULLFROG

Agronomus spicicollis
Ancyonotus tribulus
Aplagiognathus
Aplagiognathus spinosus
Appectrogastera flavipilis
Apnoma germani
Arophalus rusticus
Bartistus cibarius
Batocera
Batocera numitor
Batocera rubrus
Batocera albofasciata
Callipogon barbatus
Coelosterna
Coelosterna scabrata
Dihammus
Dorythenes forficatus
Endoxyla
Endoxyla eucalypti
Ergates spiculatus
Euryassa odewahni
Hoplocerambyx severus
Hoplocerambyx spiniicornis
Lagocherius rogersi
Macrodontia cervicornis
Macrotoma edulis
Malodon costatus
Memophilus edulis
Monochamus maculosus
Monochamus scutellatus
Neocerambyx parisi
Neocyclus conjunctus
Omacantha gigas
Picoederus fenatus
Pionopus reticulatus
Pionus californicus
Rhagium lineatum
Rhynchophorus phoenicis
Stenodontes damicornis
Stenodontes downesi
Stenodontesmaxillosus
Trichoderes pini
Xylotechus nauticus
Xystrocera
Xystrocera globosa
Zographus ferox

Chrysomelidae
Leptinotarsa decemlineata

Cicindelidae
Cicindela curvata
Cicindela roseiventris
Proagstermus

Corixidae
Cortixa esculenta

Curculionidae
Anthonomus
Cyrtotrachelus longimanus
Eugnoristus monachus
Hypodisa talaca
Hypomeces squamosus
Larnus mellificus
Larnus onopordi
Larnus rudicollis
Larnus syriacus
Metamasius sphinoliae
Polyteis equestris
Polyteis plumbeus
Rhina
Rhynchophorus
Rhynchophorus chinensis
Rhynchophorus cruentatus
Rhynchophorus ferrugineus

Rhynchophorus ferrugineus papuanus
Rhynchophorus palmarum
Rhynchophorus schah
Rhynchophorus bilineatus
Scyphophorus acunpunctatus
Sipalinus aloyssi

Dytiscidae

Cybister
Cybister bengalensis
Cybister explanatus
Cybister guenthi
Cybister hova
Cybister japonicus
Cybister limbatus
Cybister sugillatus
Cybister tripunctatus
Dytiscus
Dytiscus marginalis
Eretes stictus
Eretes stictus sticticus

Elatridae

Pyrrophorus
Tetralobus flabellicornis

Elmidae

Austrelmis chilensis
Austrelmis condimentarius

Histeridae

Homolepta

Hydrophilidae

Hydrophilus olivaceus
Hydrous
Hydrous bilineatus
Hydrous cavistemum
Hydrous hastatus
Hydrous pallidipalpis
Hydrous picicornis
Tropisternus tinctus

Lucanidae

Cladognathus semicomis

Passalidae

Oleus renator
Passalus interruptus
Passalus unctiger

Scarabaeidae

Adoretus compressus
Adoretus convexus
Ancognatha
Anomala antiqua
Anophlognathus viridiaeus
Apogonia
Ateuches sacer
Augosoma centaurus
Blaps
Camanta
Copris
Cyclocephala dimidiata
Cyclocephala villosa
Exopholis hypoleuca
Exopholis punctum
Exoporus
Gnathocera
Golithus
Helicopsis
Helicopsis bucephalus

Oestridae

Musca domestica vicina
Musca domestica

Muscidae

Mossilus tibialis
Hydropyrus hians
Ephydra macellana
Ephydra gracilis
Ephydra cinerea

Ephydriidae

Chaoborus edulis

Chaoboridae

Chrysomyia megacephala

Calliphoridae

DIPTERA

Rhantus
Psodocerus
Psaocthea hilans
Paxillus leachi
Pachyrhynchus monillifrons
Melanaster chinensis
Lamia trbulus

Misc Coleoptera

Tenebrio molitor

Tenebrionidae

Xylotrupes gideon
Xyloryctes
Tenebrio
Strategus
Scarabaeus molossus
Scapanes
Psilophosis
Popillia femoralis
Popillia
Polyphyla crinita
Podischinus agenor
Platygenia barbata
Platygenia
Pimelia
Phylliphaga rubella
Phylliphaga fusca
Phylliphaga
Fachylomera femoralis
Oryctes rhinoceros
Oryctes owaensis
Oryctes monoceros
Oryctes centaurus
Oryctes boas
Oryctes
Onthophagus
Onitis virens
Onitis
Melolontha
Megasoma hector
Megasoma actaeon
Megaceras crassum
Leucopholis rorida
Leucopholis pulverulenta
Leucopholis irrata
Leucopholis
Lepidota vogeli
Lepidota stigma
Lepidota milticollis
Lepidota maszona
Lepidota anatina
Lepidota
Holotrichia

Hypoderma bovis
Oedemagena tarandi

Rhagionidae

Atherix

Simuliidae

Simulium rubrithorax

Stratiomyidae

Chrysochlona

Syrphidae

Copestylum haagii ♀

Tipulidae

Holorusia rubiginosa

Tipula derbyi

Tipula quaylii

Tipula simplex

Ephemeroptera

Caenis kungu

HEMiptera

Belostomatidae

Abdus

Abdus ovalis

Belostoma

Belostomatid sp.

Lethocerus

Lethocerus americanus

Lethocerus indicus

Coreidae

Acanthocephala luctuosa

Pachillus gigas

Corixidae

Corissella merenana

Corissella edulis

Corissella texcocana

Krizousacornixa azteca

Krizousacornixa femoralis

Leptocornixa acuta

Stenomocoris varicornis

Gerridae

Gerris

Gerris spinole

Naucoridae

Sphaerodema molustum

Sphaerodema rustica

Nepidae

Laccotrephes grisea

Nepa

Notonectidae

Notonecta

Notonecta undulata

Notonecta unifasciata

Pentatomidae

Bagrada picta
Cordius chinensis
Cordius nepalensis
Cyclopegia subhimalayensis
Edessa conspersa
Edessa mexicana
Edessa petersii
Erthesina fullo
Euchistus suffusus
Euchistus taxcoensis
Euchistus crenator
Euchistus lineatus
Euchistus strenuus
Euchistus strimuzoptoiensis
Euchostemum delegorguei
Pentascelis remipes
Pentascelis wahibergi
Pharypta fasciata
Tessarotoma javanica
Tessarotoma papillosa

Misc Hemiptera

Brachymona arcane tenebrosa
Nezara robusta
Sphaerocoris

HOMOPTERA

Aphididae

Hyalopterus arundinis
Hyalopterus pruni

Apidae

Apis mellifera

Cicadellidae

Euscelis decoratus
Opsius jucundus

Cicadidae

Atzelada
Baeluna
Cicada
Cicada ventres
Cicadid spp
Cicadina
Cosmopsaltria
Diceroprocta apache
Diceropyga
Dundubia intermerata
Graptopsaltria nigrofasciata
loba leopardina
Loba
Lobo leopardina
Magjicada cassini
Magjicada septendecim
Magjicada tedeccassini
Magjicada tedeccim
Magjicada tedeccula
Monomolapa
Okanagana bella
Okanagana cruentifera
Orapa
Phremnia rubra
Platypledia areolata
Platypledia
Platypleura adouma
Platypleura insignis
Platypleura stridula
Pomponia imperatoria
Proama
Pyoma
Rhiana
Tibicen pullosa

Ugada giovanina
Ugada limbalis
Ugada limbiculata

Coccolidae

Apiomorpha pomiformis
Austrachardia acaciae

Fulgoroidea

Pyrops madagascanensis

Kerriidae

Kerria lacca

Membracidae

Hoplophoron monogramma
Umbonia
Umbonia reclinata
Umbonia spinosa

Pseudococcidae

Naiaccoccus serpentinus

Tabulina

Tabulina mannipara

Psyllidae

Chemmes
Eucalyptolyma
Psylla
Psyllina
Spondylaspis eucalypti

Hymenoptera

Xylocopa confusa
Xylocopa latipes

Apidae

Apis dorsata
Apis florea
Apis indica
Apis labonosa
Apis mellifera adansonii
Apis mellifera capensis
Apis zonata
Bombus appositus
Bombus diligens
Bombus formosus
Bombus medius
Bombus nevadensis
Bombus terricola occidentalis
Bombus vosnesenskii
Leptinella lima
Melipona beecheii
Melipona fasciata guerrerensis
Melipona minima
Melipona vidua
Meliponula bocandei
Oxytrigona
Oxytrigona talata
Paratrigona
Scaptotrigona mexicana
Scaptotrigona nigrohirta
Tetragonisca a. angustula
Trigona
Trigona braunsi
Trigona chanchamayensis
Trigona clavipes
Trigona erythra interposita
Trigona jalyi
Trigona lendiana
Trigona nigra nigra

Trigona occidentalis

Trigona richardsi

Trigona spinipes

Trigona thuidae

Cynipidae

Aulacidea levantina

Diprionidae

Neodiprion guilleleti

Formicidae

Atta cephalotes

Atta laevigata

Atta mexicana

Atta sexdens

Camponotus consobrinus

Camponotus

Camponotus inflatus

Carabara vidua

Colobopsis grasseri

Crematogaster

Formica rufa

Lasius niger

Lometopum apicalatum

Lometopum occidentalelucosum

Melophorus bagoti

Melophorus cowleyi

Melophorus midas

Mymecia pyrfornis

Mymecia sanguinea

Mymecocystus

Mymecocystus melliger

Mymecocystus mexicanus

Mymecocystus horridiorum

Mymecocystus melliger

Mymecocystus mexicanus

Mymecocystus mexicanus

Oecophylla smaragdina

Oecophylla smaragdina longinoda

Oecophylla virescens

Pogonomyx

Pogonomyx californicus

Pogonomyx desertorum

Pogonomyx occidentalis

Pogonomyx owyheei

Polyrhachis vicina

Stenobothrus

Haltidae

Nomia

Perilampidae

Trachilogaster

Sphécidae

Sceliphron

Vespidae

Ammophila

Apoica thoracica

Brachygastera lecheguana

Brachygastera azteca

Brachygastera mellifica

Eumenes petiolata

Mischocyttarus

Parachartegus apicalis

Polistes

Polistes canadensis

Polistes canadensis erythrocephalus

Polistes instabilis

Polistes major

Polistes pacificuspacificus modestus

Polistes versicolor

Cossidae

Bombyx mori

Bombycidae

Arctia caja americana
Diactisla obliqua

Arctiidae

Temes sumatranum
Temes mordax
Temes gabonensis
Temes flavicollis
Temes fatale
Temes destructor
Temes capensis
Temes atrox
Temes
Syntemes snydeni
Syntemes parallelus
Pseudacanthotemes spiniger
Pseudacanthotemes
Odontotemes badius
Odontotemes
Macrotemes vitralus
Macrotemes swaziae
Macrotemes subhyalinus
Macrotemes natalensis
Macrotemes falciiger
Macrotemes bellicosus
Macrotemes barnyi
Macrotemes
Cubitermes
Comitermes
Bellicositermes

Termitidae

Coptotermes formosanus
Reticulitermes flavipes
Reticulitermes tibialis

Rhinotermitidae

Odontotermes feae

Odontotermitidae

Hodotermes
Microhodotermes viator

Hodotermitidae

Isoptera

Xylocopidae

Xylocopa
Polybia
Polybia diguetana
Polybia ignobilis
Polybia occidentalis bohemani
Polybia occidentalis nigratella
Polybia parvilinea
Polybia rejecta
Stelopolybia angulata
Synagris
Vespa
Vespa auraria
Vespa cinctata
Vespa japonica
Vespa
Vespa diabolica
Vespa lewisi
Vespa pennsylvanica
Vespa squamosa

Catoxophylla cyanauges
Comadia redtenbacheri
Cossid spp
Cossus
Xyleutes amphiplecta
Xyleutes biarpitii
Xyleutes boisduvalii
Xyleutes eucalypti
Xyleutes leucomochla
Xyleutes leuconotus
Zeuzera ciliatata
Zeuzera coffeae
Zeuzera eucalypti
Gelechiidae
Pectinophora gossypiella
Geometridae
Synopsia mexicana
Hepialidae
Abanilades marcidus
Hepialus ammonianus Cordyceps
Oxycaenus
Phassus
Phassus trajesa
Phassus triangulatus
Trictena argyrositicha
Trictena argentea
Trictena argyrositicha
Hesperidae
Caeliades libeon
Hyblaeidae
Hyblea puera
Lasiocampidae
Bombycomorpha pallida
Borocera
Borocera madagascanensis
Catalabeda jamsoni
Gonometa postica
Libethra cajani
Malacosoma
Pachypasa bilinea
Rombyx radama
Megathymidae
Aegiale hesperans
Megathymus yuccae
Noctuidae
Agrotis infusa
Ascalapha odorata
Busseola fusa
Heliothis obsolleta
Heliothis zea
Homococcyemis fortis
Hydriodes morosa
Mocis repanda
Nyodes prasinodes
Sphingomorpha chlorea
Spodoptera exempta
Spodoptera frugiperda
Notodontidae
Anaphe
Anaphe infracta
Anaphe panda
Anaphe reticulata

Anaphe venata
Antheua insignata
Desmeocraera
Drapetides uniformis
Elaphrodus lactea
Rhenea medata
Spodoptera exigua

Pieridae

Catantopae leuilla
Euchelone socialis

Psychidae

Claudia moddermanni
Debarrea malagassa
Eumeta cervina
Eumeta rougeoti
Panacela

Pyralidae

Aglossa dimidiata
Bryhaspa atrostigmella
Leniffera cyclades

Saturniidae

Antherea assamensis
Antherea papilia
Antherea pernyi
Antherea roylei
Antherna suraka
Anthocera
Anthocera montipe
Anthocera teftrata
Arsenura amida
Athletes gigas
Athletes semialba
Bunaea
Bunaea alcinoe
Bunaeopsis
Bunaeopsis aurantaca
Cinbra hyperbus
Cinbra butyrospenni
Cinna fordii
Coloradia pandora
Gonimbrasia belina
Gonimbrasia hecale
Gonimbrasia richmanni
Gonimbrasia zambesina
Goodia kuntzei
Goodia kuntzei
Gyanisa
Gyanisa mala
Gyanisa mala ala
Holocerina agomensis
Hyalophora euryalus
Hylesia
Hylesia frigida
Imbrasia
Imbrasia dione
Imbrasia epimethea
Imbrasia erili
Imbrasia macrothyrs
Imbrasia obscura
Imbrasia rubra
Imbrasia truncata
Lobobunaea amphipyroides
Lobobunaea
Lobobunaea christyi
Lobobunaea salunus
Melanocera menippe
Melanocera parva
Microgona ansorgei
Microgona herilla
Microgona herilla
Microgona
Microgona cana

Nudarelia
Nudarelia oyemensis
Pseudanthrerea discrepens
Pseudobunaea
Samia Cynthia
Samia richi
Saturnia marchi
Saturnia pyretorum
Tagaropsis flavinata
Tagaropsis
Urota sinope
Usta tersichore
Sphingidae
Agrus convolvuli
Clanis bilineata
Coenotes eremophilae
Herse convolvuli
Hyles lineata
Hyles lineata livimcolides
Macrosila carolina
Manduca sexta
Nephele comma
Misc Lepidoptera
Coenostegia diegoi
Strigops grandis
Mantodea
Mantidae
Herodula stemosticta
Tenodera
Misc Mantodea
Herodula
Herodula coarctata
Herodula westwoodi
Tenodera sinensis
NEUROPTERA
Corydalidae
Corydalus
Odonata
Aeshnidae
Acisoma parronpales
Aeschna
Anax
Aeshna multicolor
Anax guttatus
Libellulidae
Crocothemis
Libellula pulchella
Neurothemis
Macromiidae
Macromia
Misc Odonata
Epophthemia
Rhyothemis
Orthoptera
Acrididae
Acanthacris ruficornis
Acorypha nigrovirgatata
Acrida bicolor

Acrida gigantea
Acrida lata
Acrida sulphuripennis
Acridium melanocome
Acridium peregrinum
Acridium aenigonosum
Acridium ranunculum
Acrydium rubescens
Aelopus lamulus
Affroxyrthepes
Affroxyrthepes procera
Aldemona azteca
Amblypymus
Ampa
Arphia fallax
Arphia pseudonietana
Bopedon flaviventris
Camnula pellucida
Cantatops
Cantatops ornatus
Cantatops spissus
Cardenopsis guttatus
Chirista completa
Chorticeles tenuifera
Cyathostemum
Cyrtacanthacris
Cyrtacanthacris aenuginosa
Cyrtacanthacris aenuginosa unicolor
Cyrtacanthacris septemfasciata
Cyrtacanthacris tartaria
Encopliophus herbaceus
Gastrimargus africanus
Heteracris guineensis
Homoxyrthepes punctipennis
Locusta
Locusta danica
Locusta m. migratoria
Locusta mahitatum
Locusta migratoides
Locusta migratoria
Locusta migratoria capillo
Locusta migratoria manilensis
Locusta migratoria migratoroides
Locusta tartaria
Locustana pardalina
Mecapoda elongata
Melanoplus
Melanoplus altianis
Melanoplus bivittatus
Melanoplus devastator
Melanoplus differentialis
Melanoplus femurrubrum
Melanoplus mexicanus
Melanoplus sanguinipes
Ochrotettixsalinus
Oedaeus nigrofasciatus
Oedaeus enigma
Omithacris
Omithacris cyanea
Omithacris turbida
Orphulella
Osmilla
Osmilla flavolineata
Oxya chinensis
Oxya japonica japonica
Oxya sinuosa
Oxya velox
Oxya yezoensis
Oxya congoensis
Patanga succincta
Plectrotetra nobilis
Poecilocerastis
Schistocerca
Schistocerca americana cancellata
Schistocerca americana paranensis
Schistocerca gregaria
Schistocerca paranensis
Schistocerca peregrinatora
Schistocerca shoshone
Schistocerca venusta

Spharagemon aequale
Sphenarium
Sphenarium histro
Sphenarium magnum
Sphenarium pupurascens
Timerotops
Tropinotus mexicanus
Tuxaloides constictus
Valanga irguilans
Xanthippus corallipes

Blattidae

Blatta orientalis
Neostylophya
Periplaneta americana
Periplaneta australasiae
Siylophya rhombifolia

Gryllacrididae

Stenopelmatus fuscus

Gryllidae

Acheta
Acheta bimaculatus
Brachytrupes
Brachytrupes aethiops
Brachytrupes membranaceus
Brachytrupes portentosus
Gryllodes melanocephalus
Gryllus
Gryllus assimilis
Gryllus bimaculatus
Gryllus campestris
Gryllus testaceus
Ligyllus bimaculatus
Teleogyllus commodus

Gyllotalpidae

Gyllotalpa
Gyllotalpa africana

Pyrgomorphidae

Zonocerus elegans
Zonocerus variegatus

Romaleidae

Romalea
Romalea colorata
Taeniopoda
Tropidacris c. cristatatareillei

Tettigoniidae

Anabrus simplex Haldeman
Caedicia
Conocephalus angustifrons
Eucocephalus
Holochlora albida
Holochlora indica
Lima cordid
Microcentrum
Ruspolia differens
Ruspolia vicinus
Scuddena
Tettigonia
Valanga

Tettigoniidae

Misc Orthoptera

Thyrotropides dilymus

Phasmatodea

Phasmatidae

Eurycantha horrida

Extatosoma tiaratum

Phyllidae

Mictis

Phasmida

Eurycnema versicolor

Hanilla grayi grayi

Platycreta viridana

Plecoptera

Perlidae

Isoperla

Pteronarcidae

Pteronarcys californica

Trichoptera

Hydropsychidae

Leptonema

Misc Trichoptera

Stenopsyche griseipennis

STYLOMMATOPHORA

HELICIDAE

Helix pomatia

Edible snail

| | | |
|--|-------------------------|--|
| North Africa, Sub-Saharan Africa | VU | |
| Europe | LR/c | |
| Europe | LR/c | |
| Sub-Saharan Africa | LR/c | |
| Europe | LR/c | |
| Europe | LR/c | |
| Europe | NR | |
| Europe | LR/c | |
| South America | LR/c | |
| South America | LR/c | |
| Europe | LR/c | |
| East Asia, South and South and SE Asia, Europe | DD | |
| South and South and SE Asia | LR/c | |
| South and South and SE Asia | VU A1cd | |
| South and South and SE Asia | LR/c | |
| South and South and SE Asia | EN C2a | |
| Sub-Saharan Africa | DD | |
| Sub-Saharan Africa | EN | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | EN | |
| Sub-Saharan Africa | DD | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | EN | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | DD | |
| Sub-Saharan Africa | EN C2a | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | EN B1+2c, C2b | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | NT | |
| Sub-Saharan Africa | CR B1ab(!!!!) | |
| Sub-Saharan Africa | LC | |
| Sub-Saharan Africa | LC | |
| Sub-Saharan Africa, West & Central Asia | LC | |
| Sub-Saharan Africa | LC | |
| Sub-Saharan Africa | LC | |
| Sub-Saharan Africa | EN A1cd | |
| South and South and SE Asia | EX | |
| South and South and SE Asia | LR/c | |
| South and South and SE Asia | LR/c | |
| North Africa, Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | DD | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | EN B1ab(!!!!)+2ab(!!!!) | |
| Sub-Saharan Africa | LC | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | LR/c | |
| Sub-Saharan Africa | LR/c | |
| South and South and SE Asia | VU A2cd | |
| South and South and SE Asia | EN A1ce | |
| South and South and SE Asia | CR A1cd | |
| South and South and SE Asia | EN A1cd+2cd | |
| South and South and SE Asia | VU A1d+2cd | |

| | |
|---|---|
| VU B2ab(i,iii,iv,v) | Caribbean Islands |
| LC | Europe |
| LC | Europe |
| EN C1 | East Asia, North Asia, South and South and SE Asi |
| CR D | Sub-Saharan Africa |
| LC | South and South and SE Asi |
| VU A2bcd | Oceania, South and South and SE Asi |
| VU C2a(i); D1 | Sub-Saharan Africa |
| LC | Europe |
| VU C1 | East Asia, South and South and SE Asi, West/Central Asi |
| LC | Europe |
| EN C2a(i) | East Asia, North Asia, Oceania, South and South and SE Asi |
| VU C2a(i) | East Asia, North America, North Asia, South and South and SE Asi |
| EN C2a(i) | East Asia, South and South and SE Asi |
| EN C2a(i) | East Asia, South and South and SE Asi |
| EN A3c | East Asia, North Asia, South and South and SE Asi |
| EN A2c+3c; C2a(i) | East Asia, North Asia, South and South and SE Asi |
| EN A3cde ver 3.1 (2001) | South and South and SE Asi, West/Central Asi |
| VU A2cd+3cd; C1 | East Asia, South and South and SE Asi |
| VU A2c+3cd | South and South and SE Asi |
| CR D | Sub-Saharan Africa |
| NT | Sub-Saharan Africa |
| EN D | East Asia, North Asia |
| CR A2cd+3cd; C2a(i) | East Asia, South and South and SE Asi |
| CR C2a(ii) | South and South and SE Asi |
| EN C2a(iii) | Sub-Saharan Africa |
| EN C2a(i) | East Asia, North Asia, Oceania, South and South and SE Asi |
| EN C2a(i) | East Asia, South and South and SE Asi |
| EN C2a(i) | East Asia, South and South and SE Asi |
| EN A2c+3cd; C2a(i) | East Asia, North Asia, South and South and SE Asi |
| VU C1 | East Asia, South and South and SE Asi, West/Central Asi |
| LC | Europe |
| VU A2bcd+3bcd | South and South and SE Asi, West/Central Asi |
| VU C2a(i) | Caribbean Islands |
| VU C1 | South and South and SE Asi |
| VU A2cd+3bcd | East Asia, North Asia, South and South and SE Asi, West/Central Asi |
| NT | Caribbean Islands |
| VU B1ab(i,iii,iv,v); C2a(i) | Caribbean Islands, MesoAmerica, North America, South America |
| EN C2a(i) | South America |
| LC | Europe |
| VU C2a(i) | East Asia, South and South and SE Asi |
| VU D1 | Sub-Saharan Africa |
| VU B1ab(i,iii,iv,v)+2ab(i,iii,iv,v); C2a(i) | Sub-Saharan Africa |
| NT | Europe |
| EN A2bcd; B1ab(i,iii,iv,v); C1+2a(i) | Oceania |
| NT | Europe |
| EN B1ab(i,iii,iv,v); C2a(i); D | Oceania |
| VU C2a(i) | Oceania |
| VU A2cd+3cd; C2a(i) | Oceania |
| VU A2bcd+3bcd; C1 | South and South and SE Asi |
| EN B1ab(i,iii,iv,v) | South and South and SE Asi |
| CR B1ab(v); C2a(ii) | Oceania |
| NT | Oceania |
| VU A2cd+3cd; B1ab(i,iii,iv,v); C2a(i) | South and South and SE Asi |

| | | |
|----------------------------|--|--|
| Sub-Saharan Africa | VU C2a(i) | VU C2a(i) |
| Sub-Saharan Africa | VU A2cd+3cd | VU A2cd+3cd |
| MesoAmerica | NT | NT |
| Oceania | EN B1ab(v) | EN B1ab(v) |
| South and South and SE Asi | VU C1 | VU C1 |
| Oceania | EN B1ab(i,ii,iii,iv,v) | EN B1ab(i,ii,iii,iv,v) |
| Oceania | VU C1 | VU C1 |
| South and South and SE Asi | NT | NT |
| South and South and SE Asi | EN A2bd+3bcd | EN A2bd+3bcd |
| South and South and SE Asi | VU A2d+3cd; C1 | VU A2d+3cd; C1 |
| South and South and SE Asi | VU D1 | VU D1 |
| Caribbean Islands | CR C2a(ii) | CR C2a(ii) |
| South America | EN A2cd+3cd | EN A2cd+3cd |
| MesoAmerica | NT | NT |
| South America | NT | NT |
| South America | EN B1ab(i,ii,iii,v); C2a(i) | EN B1ab(i,ii,iii,v); C2a(i) |
| South America | EN A2cd+3cd | EN A2cd+3cd |
| South America | VU B1ab(i,ii,iii,iv,v); C2a(i) | VU B1ab(i,ii,iii,iv,v); C2a(i) |
| South America | VU A2bd+3bcd | VU A2bd+3bcd |
| South America | VU B1ab(i,ii,iii,v) | VU B1ab(i,ii,iii,v) |
| South America | CR C2a(i) | CR C2a(i) |
| South America | NT | NT |
| South America | VU A2cd+3cd; B1ab(i,ii,iii,iv,v); C2a(i) | VU A2cd+3cd; B1ab(i,ii,iii,iv,v); C2a(i) |
| MesoAmerica | EN C2a(i) | EN C2a(i) |
| South America | VU B1ab(i,ii,iii,v) | VU B1ab(i,ii,iii,v) |
| MesoAmerica, South America | NT | NT |
| South America | VU C2a(i) | VU C2a(i) |
| South America | EW | EW |
| South America | VU A2bd+3bcd; C2a(i) | VU A2bd+3bcd; C2a(i) |
| South America | NT | NT |
| South America | EN B1ab(i,ii,iii,v); C2a(i); D | EN B1ab(i,ii,iii,v); C2a(i); D |
| South America | CR A3bcd | CR A3bcd |
| MesoAmerica | NT | NT |
| South America | NT | NT |
| Sub-Saharan Africa | LC | LC |
| Sub-Saharan Africa | VU A2cd+3cd; C2a(i) | VU A2cd+3cd; C2a(i) |
| South and South and SE Asi | CR C1 | CR C1 |
| South and South and SE Asi | VU C2a(ii) | VU C2a(ii) |
| Oceania | VU C2a(iii) | VU C2a(iii) |
| Oceania | LC | LC |
| Sub-Saharan Africa | VU C2a(i); D1 | VU C2a(i); D1 |
| Sub-Saharan Africa | VU A2bd+3bcd; C1+2a(ii) | VU A2bd+3bcd; C1+2a(ii) |
| Sub-Saharan Africa | LC | LC |
| Sub-Saharan Africa | EN B1ab(iii); D | EN B1ab(iii); D |
| Sub-Saharan Africa | LC | LC |
| South America | NR | NR |
| Sub-Saharan Africa | VU B1ab(i,ii,iii,iv,v) | VU B1ab(i,ii,iii,iv,v) |
| Sub-Saharan Africa | LC | LC |
| South and South and SE Asi | VU C2a(i) | VU C2a(i) |
| Caribbean Islands | EN B1ab(i,ii,iii,iv,v) | EN B1ab(i,ii,iii,iv,v) |
| South and South and SE Asi | CR C2a(ii) | CR C2a(ii) |

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|-----------------------------|---|
| South and SE Asia | LC |
| Europe | LC |
| East Asia | VU A2cd+3cd; B1ab(i,iii,iv,v)+2ab(iii,iv,v); C2a(i) |
| South and South and SE Asia | VU B1ab(i,iii,iv,v); C1+2a(i) |
| South and South and SE Asia | EN B1ab(i,iii,iv,v); C2a(i) |
| East Asia | VU B1ab(i,iii,v); C2a(i) |
| South and South and SE Asia | VU C2a(i) |
| East Asia | VU C2a(i) |
| South and South and SE Asia | LC |
| South and South and SE Asia | NT |
| South and South and SE Asia | NT |
| South and South and SE Asia | VU C2a(i) |
| South and South and SE Asia | LC |
| East Asia | VU A2cd+3cd; B1ab(i,iii,iv,v); C2a(i) |
| East Asia | NT |
| Europe | LC |
| East Asia | VU A2cd+3cd; B1ab(i,iii,iv,v); C2a(i) |
| MesoAmerica | EN B1ab(i,iii,iv,v); C2a(i) |
| Sub-Saharan Africa | LC |
| South and SE Asia | VU B1ab(i,iii,v); C2a(i) |
| Sub-Saharan Africa | EN B1ab(i,iii,v); C2a(i) |
| Sub-Saharan Africa | VU B1ab(i,iii,v); C2a(i) |
| Sub-Saharan Africa | EN B1ab(i,iii,v) |
| Sub-Saharan Africa | CR A2bcd+3bcd |
| Sub-Saharan Africa | VU B1ab(i,iii,v); C2a(i) |
| Sub-Saharan Africa | NR |
| LC | |
| East Asia | VU A2cd+3cd; B1ab(i,iii,iv,v); C2a(i) |
| Europe | LC |
| South and South and SE Asia | VU C2a(i) |
| South and South and SE Asia | NT |
| South and South and SE Asia | NT |
| South and South and SE Asia | VU C2a(i) |
| South and South and SE Asia | LC |
| East Asia | EN C2a(i) |
| South and South and SE Asia | VU A2cd+3cd; B1ab(i,iii,v) |
| East Asia | VU C2a(i) |
| East Asia | VU C2a(i) |
| South and South and SE Asia | EN B1ab(i,iii,iv,v); C1+2a(i) |
| South and South and SE Asia | VU B1ab(i,iii,iv,v); C1+2a(i) |
| East Asia | VU A2cd+3cd; B1ab(i,iii,iv,v)+2ab(iii,iv,v); C2a(i) |
| Europe | LC |
| South and SE Asia | LC |
| East Asia | LC |
| Europe | LC |
| East Asia | LC |
| Europe | LC |
| Europe | LC |
| Europe | LC |
| Europe | LC |
| East Asia, North Asia | NT |
| East Asia | NT |
| Europe | LC |
| South and South and SE Asia | VU A2cd+3cd; C1 |
| Sub-Saharan Africa | VU A2cd+3cd; C2a(i) |
| Sub-Saharan Africa | VU A2cd+3cd; B1ab(i,iii,iv,v)+2ab(i,iii,v) |
| Sub-Saharan Africa | VU A3cd |

EN A1d+2d South and SE Asia

VU A1bd South and SE Asia

NR
CR A1d, B1+2e
CR A1c, B1+2c, C1+2b, D
South America
South and SE Asia

LR/cd
NR
South America

EN A1d+2d South and SE Asia

VU a1cd
VU a1cd+2cd
South America

LR/c
CR A1cd+2cd, C2a
EN A1cd+2cd
DD
EN A1cd+2cd
Sub-Saharan Africa
South and SE Asia
VU A2d
VU A1acd, B1+2acd
South and SE Asia

VU A1cd+2cd
VU A1d+2d
VU A1cd+2d
South and SE Asia

VU A1c
CR A1cd, B1+2c
EN A1cd+2cd
LR/c
DD
EN A1cd+2d, B1+2c
EN A1cd+2cd
South and SE Asia
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South and SE Asia

VU B1ab(!!!)
LC
Sub-Saharan Africa
Sub-Saharan Africa

LC
LC
East Asia
East Asia
North Asia, South & SE Asia, West & Central Asia

LC
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VU B1ab(!!!)
LC
East Asia, South and SE Asia
MesosAmerica
MesosAmerica
South America

CR A2ace
LC
CR A2ace:B1ab(!!!,!!!,iv,v)+2ab(!!!,!!!,iv,v)
CR A2ace:B2ab(!!!,!!!,iv,v)
Caribbean Islands
MesosAmerica, South America
South America
South America

AMPHIBIA

MesoAmerica
East Asia

North America
North America
North America, MesoAmerica
MesoAmerica

Sub-Saharan Africa

East Asia

South America
East Asia
South and SE Asia
MesoAmerica
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South and SE Asia
MesoAmerica

MesoAmerica

SC , South and SE Asia, Oceania

MesoAmerica
North Africa, SW Asoa
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East Asia
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South and SE Asia
Sub-Saharan Africa
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Sub-Saharan Africa
North Africa, South and SW Asia
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Sub-Saharan Africa
West/Central Asia, South and SE Asia, Oceania
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Sub-Saharan Africa
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Oceania
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Sub-Saharan Africa
Sub-Saharan Africa
South and SE Asia

North America

North America

South America

South America

MesoAmerica

North America
North America
North America

Sub-Saharan Africa

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MesoAmerica
MesoAmerica, Sub-Saharan Africa
East Asia
MesoAmerica
North America
West/Central Asia, East Asia

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West/Central Asia
West/Central Asia

South and SE Asia
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South and SE Asia
Sub-Saharan Africa, South and SE Asia

South and SE Asia
South and SE Asia
MesoAmerica

Mesopotamia
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Sub-Saharan Africa

South and SW Asia

Mesopotamia, South and SE Asia, East Asia

North America

Mesopotamia
Sub-Saharan Africa

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South and SE Asia
South and SE Asia
South and SE Asia, East Asia

West/Central Asia, South and SE Asia
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Sub-Saharan Africa

South and SE Asia
South and SE Asia

South and SW Asia
South and SW Asia
Sub-Saharan Africa, Oceania
Oceania
Oceania

South and SW Asia
South and SW Asia

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South America

South and SE Asia

Sub-Saharan Africa

Oceania
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Sub-Saharan Africa
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MesoAmerica, East Asia
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MesoAmerica, South America
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Sub-Saharan Africa

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South and SE Asia

MesoAmerica, South America
Sub-Saharan Africa
South and SE Asia
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West/Central Asia, South and SE Asia, Oceania
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South and SE Asia
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Sub-Saharan Africa
Sub-Saharan Africa
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MesoAmerica
South America
MesoAmerica, South America

MesoAmerica

South and SW Asia

Sub-Saharan Africa
Sub-Saharan Africa
South America
South America

Sub-Saharan Africa
Sub-Saharan Africa

South and SE Asia
South and SE Asia

South and SE Asia

South and SE Asia
South and SE Asia
South and SE Asia

South and SE Asia
North America
MesosAmerica, South and SE Asia
West/Central Asia
West/Central Asia

South America

South and SE Asia
West/Central Asia
West/Central Asia
South and SE Asia

Oceania
Oceania

Sub-Saharan Africa
Oceania

Sub-Saharan Africa
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MesosAmerica, North America
Sub-Saharan Africa
Oceania
East Asia
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West/Central Asia

East Asia

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North America

MesosAmerica
MesoAmerica
South America

Sub-Saharan Africa
Sub-Saharan Africa

South and SE Asia, Oceania
Sub-Saharan Africa, West/Central Asia, South and SE Asia

Sub-Saharan Africa
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Sub-Saharan Africa
Sub-Saharan Africa, South and SE Asia
Caribbean Islands
South and SE Asia
West/Central Asia
Oceania

North America

South and SE Asia
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East Asia
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South and SE Asia

MesosAmerica
MesoAmerica
MesoAmerica
MesoAmerica
MesoAmerica
Oceania
Caribbean Islands

NR

Europe

GASTROPODA

East Asia

MesoAmerica, South America

MesoAmerica

North America

South and SE Asia
South and SE Asia

Oceania

Oceania

PRIMATES

| | | | | |
|----------------|------------------------------|--|-------------------|------------------------------|
| ATELIDAE | Oreonax flavicauda | YELLOW-TAILED WOOLLY MONKEY | CR B1+2abcde, C2a | South America |
| Callitrichidae | Saginus nigricollis | Tamarin | NR | South America |
| Cebidae | Saimiri sciureus | Squirrel monkey | NR | South America |
| | Alouatta seniculus | Howler monkey | NR | South America |
| | Ateles hybridus brunneus | Brown spider monkey | ? | South America |
| | Ateles paniscus | Spider monkey | NR | South America |
| | Cacajao spp. | Uakari | NR | South America |
| | Calliobus moloch | Titi monkey | NR | South America |
| | Cebus apella | Capuchin | NR | South America |
| | Cebus xanthosternus | Buff-headed tufted capuchin | ? | South America |
| | Cebus xanthosternus | YELLOW-BREASTED CAPUCHIN | CR A2cd; C2a(i) | South America |
| | Chiroptes spp. | Saki | NR | South America |
| | Lagothrix lagotricha | Humboldt's woolly monkey | NR | South America |
| | Pithecia spp. | Saki | NR | South America |
| | Cercopithecus agilis | Agile mangabey | NR | Sub-Saharan Africa |
| | Cercopithecus albigena | (W&C) Grey cheeked mangabey | NR | Sub-Saharan Africa |
| | Cercopithecus alys lunulatus | White-naped mangabey | ? | Sub-Saharan Africa |
| | Cercopithecus galeatus | CRESTED MANGABEY | LR/nt | Sub-Saharan Africa |
| | Cercopithecus mitis | White-collared mangabey / Samango monkey | NR | Sub-Saharan Africa |
| | Cercopithecus torquatus | collared mangabey (W&C) | LR-nt | Sub-Saharan Africa |
| | Cercopithecus sanjei | Sanje mangabey | ? | Sub-Saharan Africa |
| | Cercopithecus aethiops | Grivet monkey | NR | Sub-Saharan Africa |
| | Cercopithecus ascantius | Red-tailed monkey | NR | Sub-Saharan Africa |
| | Cercopithecus campbelli | Campbell's monkey | NR | Sub-Saharan Africa |
| | Cercopithecus cephus | moustached monkey (W&C) | NR | Sub-Saharan Africa |
| | Cercopithecus denti | Dent's monkey | NR | Sub-Saharan Africa |
| | Cercopithecus diana | DIANA GUNON | EN A1cd+2cd | Sub-Saharan Africa |
| | Cercopithecus dryas | DRYAD MONKEY | DD | Sub-Saharan Africa |
| | Cercopithecus erythrogaster | RED-BELLIED GUNON | EN A1cd | Sub-Saharan Africa |
| | Cercopithecus erythrotis | RED-EARED GUNON | VU A1cd+2cd | Sub-Saharan Africa |
| | Cercopithecus hamyini | owl faced monkey (W&C) | LR-nt | Sub-Saharan Africa |
| | Cercopithecus mitis | samango monkey (E&S) | NR | Sub-Saharan Africa |
| | Cercopithecus neglectus | De Brazza's monkey | NR | Sub-Saharan Africa |
| | Cercopithecus pogonias | Lesser spot-nosed monkey (W&C) | NR | Sub-Saharan Africa |
| | Cercopithecus puerus | crowned guenon (W&C) | EN | Sub-Saharan Africa |
| | Cercopithecus preussi | PREUSS'S GUNON | EN A1cd+2cd | Sub-Saharan Africa |
| | Cercopithecus sclateri | SCLATER'S GUNON | EN B1+2c | Sub-Saharan Africa |
| | Cercopithecus solatus | SUN-TAILED GUNON | VU B1+2abcde, C1 | Sub-Saharan Africa |
| | Cercopithecus mona | Mona monkey (W&C) | NR | Sub-Saharan Africa |
| | Chlorocebus tantalus | Tantalus monkey | NR | Sub-Saharan Africa |
| | Colobus angolensis | Angolan colobus | NR | Sub-Saharan Africa |
| | Colobus badius pennanti | red colobus (W&C) | EN | Sub-Saharan Africa |
| | Colobus guereza | eastern black & white colobus | NR | Sub-Saharan Africa |
| | Colobus polykomos | Black-and-white colobus | LR/nt | Sub-Saharan Africa |
| | Colobus satanas | BLACK COLOBUS | VU A1cd+2cd | Sub-Saharan Africa |
| | Colobus vellerosus | GEOFFROY'S BLACK-AND-WHITE COLOBUS | VU A1cd+2cd | Sub-Saharan Africa |
| | Erythrocebus patas | Patas monkey | NR | Sub-Saharan Africa |
| | Lophocebus atermisus | BLACK CRESTED MANGABEY | LR/nt | Sub-Saharan Africa |
| | Macaca assamensis | ASSAM MACAQUE | VU A1cd | East Asia, South and SE Asia |
| | Macaca fascicularis | Long-tailed macaque | LR/nt | South and SE Asia |
| | Macaca nemestrina | Pig-tailed macaque | VU A1cd | South and SE Asia |
| | Macaca silenus | LION-TAILED MACAQUE | EN C2a(i) | South and SE Asia |
| | Mandrillus leucophaeus | DRILL | EN A1acd+2cd | Sub-Saharan Africa |
| | Mandrillus sphinx | Mandrill | VU A2cd | Sub-Saharan Africa |
| | Miopithecus talapoin | Talapoin (W&C) | NR | Sub-Saharan Africa |
| | Papio anubis | Olive baboon | NR | Sub-Saharan Africa |

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|------------------------------|----------------------|------------------------------|------------------|-----------------------------------|
| Sub-Saharan Africa | LR | Yellow baboon | Hamadryas baboon | Papio cynocephalus |
| Sub-Saharan Africa | LR/nt | Miller's grizzled surili | Hamadryas baboon | Papio hamadryas |
| South and SE Asia | ? | | | Presbytis hosei canicrus |
| South and SE Asia | ? | | | Presbytis melalophos |
| Sub-Saharan Africa | LR/nt | Banded leaf monkey | | Presbytis badus |
| Sub-Saharan Africa | EN A1cd+2cd, B1+2abc | RED COLOBUS | | Procolobus badus |
| Sub-Saharan Africa | EN A2cd | PENNANT'S RED COLOBUS | | Procolobus pennanti |
| Sub-Saharan Africa | CR B1+2abcde, C2a | EASTERN RED COLOBUS | | Procolobus rufomitratus |
| South and SE Asia | VU C2a(i) | BLACK LEAF MONKEY | | Semnopithecus johilli |
| South and SE Asia | ? | Western purple-faced langur | | Semnopithecus velulus nestor |
| South and SE Asia | EN A1cd+2c | PIG-TAILED LANGUR | | Simias concolor |
| South and SE Asia | ? | Delacour's langur | | Tachypithecus delacouri |
| South and SE Asia | NR | Dusky leaf monkey | | Tachypithecus obscurus |
| South and SE Asia | ? | Golden-headed langur | | Tachypithecus poliocephalus |
| Sub-Saharan Africa | LR/nt | Allen's squirrel galago | | Galago alleni |
| Sub-Saharan Africa | LR/nt | Elegant needle-clawed galago | | Galago elegantulus |
| Sub-Saharan Africa | NR | Demidoff's galago | | Galagoides potto |
| Sub-Saharan Africa | ? | Mt. Rungwe galago | | Galagoides sp. nov |
| Sub-Saharan Africa | NR | Greater galago | | Otolemur crassicaudatus |
| HOMINIDAE | | | | |
| Sub-Saharan Africa | EN A2cd | EASTERN GORILLA | | Gorilla beringei graueri |
| Sub-Saharan Africa | EN A2cd | WESTERN GORILLA | | Gorilla gorilla gorilla |
| Sub-Saharan Africa | EN A2cd | BONOBO | | Pan paniscus |
| Sub-Saharan Africa | EN A3cd | CHIMPANZEE | | Pan troglodytes |
| Sub-Saharan Africa | CE | mountain gorilla | | Gorilla beringei beringei |
| Sub-Saharan Africa | CE | Cross River gorilla (W&C) | | Gorilla gorilla ssp. Diehli |
| South and SE Asia | ? | Sumatran orangutan | | Pongo abelii |
| South and SE Asia | EN A2cd | ORANG-UTAN | | Pongo pygmaeus |
| Hylobatidae | | | | |
| South and SE Asia | LR/nt | White-handed gibbon | | Nomascus lar |
| South and SE Asia | VU A1cd+2cd | BUFF-CHEEKED GIBBON | | Nomascus gabrielae |
| East Asia, South and SE Asia | DD | WHITE-CHEEKED GIBBON | | Nomascus leucogenys |
| LORIDAE | | | | |
| Sub-Saharan Africa | LR/nt | GOLDEN ANGWANTIBO | | Arctocebus aureus |
| Sub-Saharan Africa | LR/nt | ANGWANTIBO | | Arctocebus calabarensis |
| Sub-Saharan Africa | NR | potto (W&C) | | Perodictus potto |
| Misc Primates | | | | |
| South America | ? | Northern muriqui | | Brachyteles hypoxanthus |
| Sub-Saharan Africa | ? | White-collared lemur | | Eulemur albocollaris |
| South and SE Asia | ? | Horton Plains slender loris | | Loris lydekkerianus nycticeboides |
| Sub-Saharan Africa | ? | Greater bamboo lemur | | Prolemur simus |
| Sub-Saharan Africa | ? | Silky sifaka | | Propithecus candidus |
| Sub-Saharan Africa | ? | Perrin's sifaka | | Propithecus perreni |
| Sub-Saharan Africa | ? | Grey-shanked douc | | Pygathrix cinerea |

| Principal Orgs | Funders | Activities | Country | Region |
|--|--|---|--------------------------------------|---------------|
| A.K.Taylor International | A.K.Taylor International | Community based conservation initiative, involving environmental education & support programmes, desaring and anti poaching | Kenya | Africa |
| African Wildlife Foundation, Fauna & Flora International, WWF, Office Rwandais de Tourisme et des Parcs Nationaux, Uganda Wildlife Authority, Institut Congolaise pour la Conservation de la Nature (ICCN) | FFI, AWF, WWF | International Gorilla Conservation programme | Rwanda, Uganda, DRC | Africa |
| American Society of Primatologists | | 1. Special bushmeat sessions during ASP annual conferences, 2. Annual small conservation grants | USA | Africa |
| American Zoo & Aquarium Association | | Consensus statement on bushmeat | USA | North-America |
| Ape Alliance | Member organizations | The Great Ape Event | UK | Europe |
| Ape Alliance | Member organizations | Postcard campaign to UK government | UK | Europe |
| Ape Alliance, IFAW, BFF, BCTF, CWAFF, IPP-L-UK, TFF, WSPA | | Bushmeat Working Group | UK | Europe |
| ATBT (Association Technique Internationale des Bois Tropicaux), FRM (Forest Resource Management), CIRAD (International Centre for Agricultural Research for Developing Countries), ONFI (Office National des Forêts International), TWE (Tropical Wood Environment), WWF, ADIE (Agency for the Development of Environmental Information) | | ADIE | Africa | Africa |
| BBC, TVE | | "Newround Extra documentary 'Slaughter of the Apes'" | UK | Europe |
| BBC, TVE | | "The Ape Hunters", bushmeat documentary | UK | Europe |
| BBC, TVE | | "Blood Timber" Earth Report on logging and bushmeat | UK | Europe |
| Beaver College, Arcadia University | Beaver College, CARPE, WWF, Margot Marsh Biodiversity Fund, Beneficia Foundation, Mobil, CMS Foundation, | Beaver College Boko Biodiversity Protection Program | Equatorial Guinea | Africa |
| Berggorilla & Regenwald Direkthilfe (Mountain Gorilla and Rainforest Direct Aid) | EZA | 'Protecting Great Apes in the Wild' | DRC, Uganda, Nigeria, CAR, Cameroon. | Africa |

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| Berggorilla & Regenwald | Stuttgart Zoo, Berggorilla & Regenwald Direktilfe, Association of German Zoodirectors (VDZ), IFAW | | | | | | |
| Berggorilla & Botanikal Zoological & Botanical Gardens Stuttgart, Bonobo in situ project, Rettet den Regenwald, WCF, WSPA, IFAW, GTZ, BCTF, Ape Alliance, Pandillus, Nouvelles Approches | | | | | | | |
| Boulah Land Eco-village Ltd. | | | | | | | |
| Biosynergy Institute | Newman's Own Foundation, Belleve Foundation | | | | | | |
| Biosynergy Institute, Gorilla Foundation, Univ. Toronto, Yaounde Wildlife Sanctuary | Gorilla Foundation, Private Donors Conservation Education Program: Wildlife Fostering Empathy for African Cameroon | | | | | | |
| Bjorn Schulte-Herbruggen Zoo, Univ Edinburgh, RGS, British Ecological Society, Anglo Peruvian Soc., Linnean Soc., Percy Slater memorial Fund, CE Wikstroms Minnesfond, I- objects, Gesamtschule Vornikel, Zeiss, Other Boxes, British Knife Guild | Peru logging & associated subsistence hunting on diurnal mammals | | | | | | |
| Bonobo Conservation Initiative | DRC Gov., CI, Global Conservation Fund, U.S. Fish & Wildlife Service, NGS | Bonobo Community-based Reserves Project | | | | | |
| Bonobo Conservation Initiative | U.S. Fish & Wildlife Service (Great Ape Conservation Fund), | Bonobo Survey and Information Exchange project | | | | | |
| Bonobo Conservation Initiative | | "Shadows in the Forest" Bonobo awareness campaign | | | | | |
| Bonobo Conservation Initiative | The Jazz Scene | Collaboration with Congolese musician to promote bonobo conservation through radio, TV, and CDs. | | | | | |
| Bonobo Conservation Initiative | | Partnerships with religious networks to promote creationist argument for protecting bonobos. | | | | | |
| Bonobo Conservation Initiative | | Biodiversity learning center in Kinshasa | | | | | |
| Bonobo Conservation Initiative | | Great Apes Conservation Act & Millennium Campaign | | | | | |
| Bonobo Conservation Initiative | Congolese government | World Space Digital radio in DRC, with educational programming | | | | | |
| Bonobo Conservation Initiative | DRC Gov., CI, Global Conservation Fund, U.S. Fish & Wildlife Service, NGS | Bonobo Community-based Reserves Project | | | | | |
| Bonobo Conservation Initiative | U.S. Fish & Wildlife Service, NGS | Bonobo Survey and Information Exchange project | | | | | |
| Bonobo Conservation Initiative | | "Shadows in the Forest" Bonobo awareness campaign | | | | | |
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| Bonobo Conservation Initiative | Great Apes Conservation Act & Millennium Campaign | | | | | | |

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| Bonobo Conservation Initiative | Australian government | Community Conservation Centers | DRC | Africa |
| Bonobo Conservation Initiative | IUCN Conservation Breeding Specialist Group (CBSG), Institut Congolais pour Conservation de la Nature (ICCN) | International Bonobo Summit/Population and Habitat Viability Assessment | DRC | Africa |
| Bonobo Conservation Initiative | | Sustainable development | DRC | Africa |
| Bonobo Conservation Initiative | | Eco-tourism | DRC | Africa |
| Bonobo Conservation Initiative | | Capacity-building of local Congolese organisations | DRC | Africa |
| Bonobo Conservation Initiative | | Kinshasa Bonobo Population & Habitat Viability Assessment | DRC | Africa |
| Bonobo Conservation Specialist Group, Congolese Institutions | | Primate Campaign | UK | Europe |
| Bom Free Foundation | | Helping Hands Appeal | UK | Europe |
| Bom Free Foundation, GTZ | | Kahuzi-Biega National Park protection | DRC | Africa |
| Bom Free Foundation, JGI, GTZ | | Lwiro Sanctuary | DRC | Africa |
| Bom Free Foundation, Kenya University, Kenyatta Theatre Group, Youth for Conservation | Animal Welfare Institute, Land Rover | (1) Theatrical production "Carcasses", raising awareness of bushmeat throughout East Africa (2) Surveys to assess impact of play | Kenya | Africa |
| Bom Free Foundation, BFF | | Study of bushmeat in Nairobi markets | Kenya | Africa |
| Boston College, WCS, National Science Foundation | | The role of culture and economics in the consumption of bushmeat | Gabon | Africa |
| Bristol Museum | | The Bushmeat Game | UK | Europe |
| Bristol Zoo Gardens, Living Earth, CWAF, MINEF | U.S. Fish & Wildlife Service Service, Oakland Zoo | Education programme with in-school, at-centre and outreach components | Cameroon | Africa |
| Brookfield Zoo | | Bushmeat Action group | USA | North-America |
| Bushmeat Awareness Group | | Online Discussion group for sharing views and information on the bushmeat crisis. | International | International |
| Bushmeat Crisis Action Group, Oakland Zoo | Oakland Zoo | (1) Bushmeat Crisis Action Group (2) BCAG Information Stations at Oakland Zoo | USA | North-America |
| Bushmeat Crisis discussion group | Seeking funding | Wildlife Conservation education programme | Cameroon | Africa |
| Bushmeat Crisis Task Force | | Information Packet (Fact Sheets) | USA | North-America |
| Bushmeat Crisis Task Force | | Research Archive (Library of reports, peer-reviewed publications and media articles) | USA | North-America |
| Bushmeat Crisis Task Force | | Projects Database | USA | North-America |
| Bushmeat Crisis Task Force | | BCTF Info CD-Rom & Phase I report | International | North-America |

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|--|----------------|---|--------------------------------|-----|--|
| | Africa | African Wildlife Colleges Curriculum Workshops | | JGI | Bushmeat Crisis Task Force |
| | Africa | | | | Bushmeat Crisis Task Force |
| | USA | Support for U.S. Great Ape Conservation Fund | | | Bushmeat Crisis Task Force |
| | USA | Organization and input to policy proposals | | | Bushmeat Crisis Task Force |
| | USA | Bushmeat Information Event on Capitol Hill | | | Bushmeat Crisis Task Force |
| | North-America | | | | Bushmeat Crisis Task Force |
| | USA | BCTF Collaborative Action Planning (CAP) Meeting | | | Bushmeat Crisis Task Force |
| | USA | BCTF Executive Reception at the National Press Club | | | Bushmeat Crisis Task Force |
| | North-America | | | | Bushmeat Crisis Task Force |
| | USA | Media Support | | | Bushmeat Crisis Task Force |
| | North-America | | | | Bushmeat Crisis Task Force |
| | Central Africa | Central Africa Public Awareness Campaign | | | Bushmeat Crisis Task Force |
| | Africa | | | | Bushmeat Crisis Task Force |
| | USA | Public Awareness Resource page | | | Bushmeat Crisis Task Force |
| | North-America | | | | Bushmeat Crisis Task Force |
| | USA | The Bushmeat Promise | | | Bushmeat Crisis Task Force |
| | USA | | | | Bushmeat Crisis Task Force |
| | USA | Cleveland Metroparks Zoo, Columbus Zoo, Oakland Zoo | | | Bushmeat Crisis Task Force |
| | North-America | | | | Bushmeat Crisis Task Force |
| | South Africa | Bushmeat Hunting and Market Sites Questionnaire | | | Bushmeat Crisis Task Force, IUCN Specialist Group (IUCN-CBSG), Endangered Wildlife Trust |
| | | | | | Bushmeat Crisis Task Force, American Zoo & Aquarium Association |
| | USA | Bushmeat Education Resource Guide (BERG) | | | Bushmeat Crisis Task Force, GFW, WRI |
| | North-America | | | | Bushmeat Crisis Task Force, WWF |
| | Africa | Bushmeat Curriculum Development and Course Implementation at Ecole de Faune de Garoua | | | |
| | DRC | Bonobo documentary "Ghosts of Lomako" | Canadian Broadcast Corporation | | Canadian Great Ape Alliance |
| | Africa | | | | Canadian Great Ape Alliance |
| | Central Africa | Documentary: Bushmeat, Slaughter of the Apes | Discovery Channel, Canada | | Canadian Great Ape Alliance, Sir Sandford Fleming College |
| | Central Africa | GIS Applications for Bonobos conservation | | | Canadian Great Ape Alliance, Sir Sandford Fleming College |
| | North-America | | | | Care for the Wild |
| | Africa | Participation in Campaign: "2001 - An Ape Odyssey" | | | Care for the Wild |
| | Africa | Chimp appeal to raise funds for Kenyan sanctuary | | | Care for the Wild |

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| Central African Regional Program for the Environment (CARPE), Congo Basin Forest Partnership | USAID | Small Grants Program for forest and biodiversity conservation in Central Africa | Central Africa | Africa |
| Centre for Animal Rehabilitation and Education (CARE) | | Rehabilitation and reintroduction of orphaned chacma baboons | South Africa | Africa |
| Centre for Applied Biodiversity Science | | Field testing solutions and products: Addressing the problem of bushmeat hunting | West Africa | Africa |
| Cheyenne Mountain Zoo | | Bushmeat Education display | USA | USA |
| Chimpanzee Rehabilitation Trust | | Chimpanzee Rehabilitation Center | The Gambia | Africa |
| CIAD, SNV | | Gorilla research & tourism report | Cameroon | Africa |
| Cincinnati Zoo & Botanic Garden, | | Education Project on the Bushmeat Trade | USA | USA |
| CITES Bushmeat Working Group | Defra, U.S. Fish & Wildlife Service, MacArthur Foundation, USA Department of State, USAID | Training for bushmeat trade law enforcement | Cameroon, CAR, Congo, DRC, Equatorial Guinea, Gabon | Africa |
| CITES Bushmeat Working Group | Defra, U.S. Fish & Wildlife Service, MacArthur Foundation, USA Department of State, USAID | Monitoring and development of bushmeat trade database | Cameroon, CAR, Congo, DRC, Equatorial Guinea, Gabon | Africa |
| CITES Bushmeat Working Group | Defra, U.S. Fish & Wildlife Service, MacArthur Foundation, USA Department of State, USAID | Review of wildlife management authority structures | Cameroon, CAR, Congo, DRC, Equatorial Guinea, Gabon | Africa |
| CITES Bushmeat Working Group | Defra, U.S. Fish & Wildlife Service, MacArthur Foundation, USA Department of State, USAID | Development of wildlife management guidelines within logging concessions | Cameroon, CAR, Congo, DRC, Equatorial Guinea, Gabon | Africa |
| CITES Bushmeat Working Group | Defra, U.S. Fish & Wildlife Service, MacArthur Foundation, USA Department of State, USAID | Public awareness campaigns | Cameroon, CAR, Congo, DRC, Equatorial Guinea, Gabon | Africa |
| CITES Bushmeat Working Group | Defra | Study on wildlife legislation and policies in Central African countries | Cameroon, CAR, Congo, DRC, Equatorial Guinea, Gabon | Africa |
| CITES, Convention on Biological Diversity, UN Food & Agri Org, Int. Tropical Timber Org, WWF, CI, WCS, ECOFAC, WRI, CBF, Central African World Heritage Forest Initiative, | Wildlife Service, Defra, IFAW | CITES Bushmeat Working Group | Cameroon, CAR, Republic of Congo, DRC, Equatorial Guinea, Gabon, Côte d'Ivoire, Ghana, Liberia, Mali, Niger, Sierra Leone, Togo, Zambia | Africa |
| Cleveland Metroparks Zoo | | Survey of Zoo visitor knowledge about bushmeat & preferences for bushmeat education | USA | USA |
| Cleveland Metroparks Zoo | | graphic vs non graphic photos in bushmeat education | USA | USA |
| Cleveland Metroparks Zoo | | education at Cleveland metroparks Zoo | USA | USA |

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| | Central Africa | Plan of Convergence, promoting sustainable forest management in Central Africa | | | Ministres for Forests of Central Africa) |
| Africa | | Ghana | "Say no to Bushmeat: Stop killing wild animals" | | Conservation International |
| Africa | | Central Africa | Sangha River Network, Forest Wildlife Utilisation dynamics in Central Africa and emerging viral diseases | International | Conservation International |
| Africa | | Africa | Hunting and bushmeat utilization in the African rainforest | | Center for Applied Biodiversity Science (CABS) |
| Africa | | USA | Bushmeat workshop | | Center for Applied Biodiversity Science (CABS) |
| USA | | Ghana | Hunting to extinction: addressing the bushmeat crisis in Ghana | Critical Ecosystem Partnership Fund | Conservation International, Government of Ghana |
| Africa | | Ghana | Overview of bushmeat issue in West Africa, Phase 1-3 | | Conservation International, Univ. Science & Tech, Kumasi Ghana |
| Africa | | India | Community Leadership for Wildlife Conservation, Nagarhole Voluntary resettlement | Save The Tiger Fund, WCS | Conservation of Wildlife & heritage of Kodagu |
| Africa | | Sierra Leone | Tacugama Chimpanzee Sanctuary | WSPA, IFFL, Dewart Wildlife Trust | Conservation Society of Sierra Leone, Ministry of Agriculture, Forestry and Marine Resources |
| Africa | | Nigeria | Ecology & Conservation of Cross River Gorillas in Afi Mountains Wildlife Sanctuary | Columbus Zoo, Bernhardine Fund, Royal Rotterdam Zoo & Botanical gardens, Margo Marsh Foundation, Primate Conservation Inc. Inc., | Cross River State Forestry Commission, Pandilus, City University, NY. |
| Africa | | Cameroon | Yaounde Zoo Conservation Centre | Bristol Zoo Gardens, Oakland Zoo, Givskud Zoo, Direct Marketing Support Ltd, Toronto Zoo | CWAF |
| Africa | | Cameroon | | | CWAF |
| Africa | | Cameroon | Human Centred Solutions to the Bushmeat Crisis: Conservation values, Humane values Research programme | Wildlife Protectors Fund, Save The Species Fund, Gorilla Foundation, Biosynergy Institute, Great Ape Fund, Toronto Zoo Great Ape Fund Private Donors | CWAF, Ape Alliance, Univ. Toronto, Wildlife Protectors Fund, Biosynergy Institute, Canadian Great Ape Alliance |
| Africa | | Gabon, Cameroon, Republic of Congo | Development of Protein Alternatives in Central Africa. | European Union | DABAC (Development d'Alternatives au Braconage en Afrique Centrale) |
| Africa | | UK | "If in doubt, leave it out" campaign against illegal meat imports. | | Defra |
| Europe | | | | | |

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| Department for International Development (DFID) | | | | UK | Wildlife and Poverty Study |
| Dele Animal Rescue Trust (DART), The Fund for Animals | | Treatment of snare-injured animals, relocation and rehabilitation | Zimbabwe | Africa | |
| Dian Fossey Gorilla Fund International | USAID, CARPE, Congo Basin Forest | UGADFC (Union des Associations de Conservation des Gorilles pour le Développement Communautaire à l'est de la République Démocratique de Congo (Seven gorilla reserves covering >10,000 km2 including corridor project to Inkaiko NP and the Tayna Gorilla Reserve)) | DRC, Rwanda, Uganda | Africa | |
| Dian Fossey Gorilla Fund International | | Mountain Gorilla Census | DRC, Rwanda, Uganda | Africa | |
| Dian Fossey Gorilla Fund International, USAID, CARPE, CI | | Field Expedition report, Cassilente and Collan | DRC | Africa | |
| Dian Fossey Gorilla Fund International, USAID, CARPE, Congo Basin Forest Partnership, CI | | Tayna Gorilla Reserve | DRC | Africa | |
| Dian Fossey Gorilla Fund International, USAID, CARPE, Congo Basin Forest Partnership, ICN (Institut Congolais pour la Protection de la Nature), International Conservation | | New Conservation programme in Congo, The Maiko Tayna Kahuzi Biega landscape | Congo | Africa | |
| Disney's Animal Kingdom | Disney's Animal Kingdom | Engangered Animal Rehabilitation Centre- Permanent Exhibition | USA | USA | |
| Dr Thompson | Lukuru Foundation, Friends of Lukuru | Lukuru Wildlife Research project | DRC | Africa | |
| Dr Thompson | Lukuru Foundation, Friends of Lukuru | Regional effort | DRC | Africa | |
| Dr Thompson | Columbus Zoo & Aquarium, Margo Marsh Biodiversity Fund | Lukuru Wildlife Research project. Restoring Conservation capacity to protect pan paniscus | DRC | Africa | |
| Dr Thompson | Lukuru Foundation, Friends of Lukuru | Parc National de la Salonga | DRC | Africa | |
| Dr Thompson | Lukuru Foundation, Friends of Lukuru | Bososandja Faunal reserve | DRC | Africa | |
| Dr Thompson, Oakland Zoo | Oakland Zoo & 40 institutions | Outfit a ranger campaign | DRC | Africa | |

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| EZA | EZA, IFAW | EZA Petition against the bushmeat trade | Netherlands | Europe | | | | |
| EZA | ? | Great apes ecology, bushmeat hunting, logging and community based management around the Dja Faunal Reserve, Cameroon: rethinking conservation issues in non protected areas" | Cameroon | Africa | | | | |
| EZA | ? | Bushmeat working Group | Netherlands | Europe | | | | |
| ECOFAc, Government of Republic of Congo | ECOFAc, Ministry of Environment and Forests | Reducing the impact of Ebola on people and great apes in the Congo Basin | Congo Basin | Africa | | | | |
| ECOFAc, Ministry of Water and Forests, WCS | European Dev Fund | Wildlife population in Western Dja Reserve | Congo Brazzaville | Africa | | | | |
| ECOFAc, Ministry of Environment and Forests | WWF, seeking additional funding | Conservation of western lowland gorillas and central chimpanzees in Odzala National Park, Republic of Congo | | Africa | | | | |
| Eco-Portal | Information Source, links to bushmeat-active organisations | Environmental Sustainability | USA | USA | | | | |
| European Commission | EU Action Plan for Forest Law Enforcement, Governance and Trade (FLEGT) | Information Source, links to bushmeat-active organisations | Europe | Europe | | | | |
| European Commission, International governments | African Forest Law Enforcement and Governance (AFLEG) programme | Angola, Belgium, Benin, Botswana, Burkina Faso, Burundi, CAF, Cameroon, Canada, Republic of Congo, Côte d'Ivoire, DRC, Ethiopia, European Commission, France, Gabon, The Gambia, Germany, Ghana, Guinea, Guinea-Bissau, Italy, Kenya, Lesotho, Madagascar, Mauritius, Mozambique, Namibia, Niger, Nigeria, Senegal, Seychelles, South Africa, Switzerland, Togo, Uganda, UK, USA, Zambia, Zimbabwe | | International | | | | |

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| Fauna & Flora International, UN Global Compact Group | Vodafone, ATT, Bell-Canada | Developing market for ethically-sourced coltan | DRC | Africa |
| Forest Conservation Portal | Online information and news service reporting on forest conservation issues | USA | USA | USA |
| Forest Stewardship Council (FSC) | Austrian, Dutch and Mexican governments, European Commission, Ford Foundation, MacArthur Foundation, WWF, IUCN, Swedish Society for Nature Conservation | aimed at protecting species, habitats and controlling hunting in managed areas. | International | International |
| Friends of Bonobos, IFAW/Wasmoth Wildlife Foundation, Columbus Zoo, Oakland Zoo | | Lola Ya Bonobo Sanctuary | DRC | Africa |
| Fund for Animals | Bilateral Ranger training Initiative | Rwanda, Uganda | | Africa |
| Fund for Animals, | Presentation to schools about the interdependency of animals and people | Kenya | | Africa |
| GEF, UNDP, UNOPS, Global Environment Facility | Conservation of Biodiversity through effective management of wildlife trade | Gabon | | Africa |
| WWF | | | | |
| Gilman International Conservation | Gilman International Conservation | Cane Rat domestication Project | DRC | Africa |
| Global Forest Watch (GFW), World Resources Institute (WRI), IUCN, African Forest Industries Association (AIFA), WWF (AFA), WWF | BMZ, World Bank, USFSIP, USAID-CARPE | Forest Concession Monitoring System for Central Africa (FORCOMS) | Central Africa | Africa |
| Gorilla Foundation | Save the Species Foundation | Maui Ape Preserve sanctuary "Michael Leo Rion" sanctuary for gorillas in Mefou NP, Cameroon. | Cameroon | Pacific-islands |
| Gorilla Foundation's Wildlife Protectors Fund, CWF | | | | Africa |
| Government of Republic of Congo, Cameroon, Central African Republic, DRC, Equatorial Guinea, Gabon, USA, UK, Japan, Germany, France and South Africa, Conservation International, WCS, WWF, WRI, Forest Trends, Society of American Foresters, American Forest and Paper Association, ATIBI (Association Technique Internationale des Bois Tropicals), World Bank, ITTO. | USA government, CARPE, EU, G8 nations, private sector, NGO's | Congo Basin Forest Partnership | DRC | International |
| GTZ | ? | Impact of bushmeat hunting on gorilla populations of East DRC | DRC | Africa |
| GTZ, Berggorilla & Regenwald Direkthilfe | Private | Berggorilla & Regenwald Direkthilfe | Central & West Africa | Africa |

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| Heifer International | | South West Farmers Project, Phase I | Cameroon | Africa |
| Humane Society of the US | | Support for anti-poaching efforts in Kruger NP, South Africa, and Emergency Relief Mission for Congo's National Park | Central Africa | Africa |
| ICCN (Congolese Institute for Nature Conservation), CARPE, CITES, MIKE, UNEP/UNESCO GRASP, WCS, Zoological Society of Milwaukee | | Conservation of great apes in the Democratic Republic of Congo | DRC | Africa |
| ICCN, GTZ (German Technical Co-operation) | | Eastern lowland gorilla conservation in Kahuzi-Biega National Park, Democratic republic of Congo | DRC | Africa |
| ICCN, Zoological Society of Milwaukee | | Establishing and managing protected areas for bonobos | DRC | Africa |
| IFAW | | "Protected by Law: the threats facing wild animals hunted for food", Bushmeat education pack for schools. | UK | Europe |
| IFAW | | Monkey Business in Gabon: A case study of bushmeat in Central Africa | Gabon | Africa |
| IFAW-EU, WWF | | Addressing bushmeat transport in Gabon on the Transgabonais railway | Gabon | Africa |
| In defense of animals, DVM | | Saraga-Yong Chimpanzee Rescue Center | Cameroon | Africa |
| In Situ Wildlife Conservation | | Letter to Dutch Students, Petition to Dutch Students | Netherlands | Europe |
| Individuals | | CARPE, AIDIE | Gabon | Africa |
| Individuals | | Yke Pindi Environmental Education centre | Gabon | Africa |
| Individuals | | Oakland Zoo | Uganda | Africa |
| Individuals | | Arua Sensitization Workshop | Uganda | Africa |
| Individuals | | NORAD, NGS, Cleveland Zoo Society, CIJGI | Uganda | Africa |
| Individuals | | Budongo Forest project | Uganda | Africa |
| Individuals | | Chimfunshi Wildlife Orphanage | Zambia | Africa |
| Individuals, Prof kang ethel | | Bushmeat Identification | Kenya | Africa |
| Individuals, Prof kang ethel | | WWF | Kenya | Africa |
| Institute Agriculture, Res & Dev. | | Cane Rat Project | Cameroon | Africa |

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| Int group of social & medical scientists | Int Soc. For Ecosystem health, C.I. McGill Univ, U.S. Fish & Wildlife Service | Working group on Wildlife & Viral disease Emergence in Tropical forests | International | |
| Int African forest industries assoc. | Industrial groups | Social & economic dev. Through wise use of forest resources | Central & West Africa | |
| Int African forest industries Association (IFIA) | | (1) Logging code of conduct, (2) Preparation of Pan-African Forest Certification (PAFC) | Central & West Africa | Africa |
| International Primatological Society, Wisconsin Primate Research Center (University of Wisconsin), American Society of Primatologists, Association Primatologica Espanola, Associazione Primatologica Italiana, Australian Primatological Society, Deutsche Primatologische Gesellschaft, Primate Society of Great Britain, Primate Society of Japan, Societe Francaise de Primatologie | IPPL | (1) IPPL-UK Battles British Bushmeat Trade, (2) THE ISSUE: Bushmeat campaign South American Bushmeat Crisis | UK | Europe |
| IPPL | IPPL | CERCOPAN Centre and Release Site (Centre for Education, Research and Conservation of Primates and Nature) | Nigeria | Africa |
| IPPL, Cross River State Department of Forestry | IPPL, Arcus Foundation | (1) Drill Rehabilitation and Breeding Center ("Drill Ranch" (2) Drill Ranch Chimpanzee Unit | Nigeria | Africa |
| IRAD, DDEG (Projet de developpement au Gabon, de l'Elevage de Gibier, DABAC (Developpement d'Alternatives au Braconnage en Afrique Centrale | EU, DABAC | IRAD Cane rat breeding project | Cameroon | Africa |
| IUCN Conservation Breeding Specialist Group (IUCN-CBSG) | | CBSG Bushmeat Working Group | USA | USA |

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| JUCC Conservation Breeding Specialist Group (JUCC-CBSG) | U.S. National Science Foundation | Models and Meta-Networks for Interdisciplinary Research in Biodiversity Risk Assessment, including models of human biological and social processes driving the bushmeat trade | USA | USA |
| JUCC, EU, UNESCO | European Union Delegation in Gabon | Ipassa M'ingoull Project, engaging the Rougier Group, a timber company operating concessions in the area | Gabon | Africa |
| IUCN-ROCA | BSP/CARPE, GEF, UNDP (United Nations Development Programme) Gov. Netherlands, European Commission, GEFDHAC (Conférence sur les Ecosystèmes de Forêts Denses et Humides d'Afrique Centrale), working on solutions for unsustainable exploitation of wildlife | Cameroun, CAR, DRC, Equatorial Guinea, Gabon, Republic of Congo, Burundi, Rwanda, Sao Tomé, Príncipe | Africa | Africa |
| Jane Goodall Inst, Ministry of the Environment, Ministry of Primary and Secondary Education | Jane Goodall Inst, Ministry, JGI | (1) PLANET programme (Plan d'Action pour la Nature et l'Education à Tchimpounga), Reserve chimpanzee sanctuary, based in Tchimpounga Natural Education in Tchimpounga, with information about the bushmeat crisis and how to resolve it. | Congo Brazzaville | Africa |
| Jane Goodall Inst. | Jane Goodall Inst., WCS | Census programme in Uganda | Uganda | Africa |
| Jane Goodall Inst. | Cleveland Zoo, Funders sought | Country wide Environmental Education for school children & adults | Uganda | Africa |
| Jane Goodall Inst. | Jane Goodall Inst, Oakland Zoo, Brookfield Zoo, Columbus Zoo, IFAW | Snare removal Project in Budongo Forest Reserve | Uganda | Africa |
| Jane Goodall Institute | David Greybeard Chimpanzee Sanctuary | South Africa | Africa | |
| Jane Goodall Institute | Tchimpounga Sanctuary | Congo Brazzaville | Africa | |
| Jane Goodall Institute | UNDP | Kitwe Point Sanctuary | Tanzania | Africa |
| Jane Goodall Institute | Andrus Family Fund | Congo Basin Project to eliminate the illegal commercial bushmeat trade in endangered species | Congo Basin | Africa |
| Jane Goodall Institute | UNDP, GEF | Western Tanzania Biodiversity and Community Development, including assessment of bushmeat hunting. | Tanzania | Africa |

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| Jane Goodall Institute | Consumer Awareness Guide to products having an effect of conservation in Central Africa | USA | | |
| Jane Goodall Institute | Chimpanzee Distribution and Conservation Poster, with information about bushmeat hunting | USA | | |
| Jane Goodall Institute, CAWHFI, CBFPP | Mengame Wildlife Survey, Village Wildlife Program, to determine scale of commercial bushmeat trade. | Cameroon | | Africa |
| Jane Goodall Institute, IFAW, Sudan Cons. Soc., Born Free Foundation, Kenya Wildlife Ser., East African Wildlife Soc. | Sweetwater Sanctuary | Kenya | | Africa |
| Jane Goodall Institute, IFAW, UWEC (Uganda Wildlife Education Center Trust), Born Free Foundation, Zoological Board of New South Wales | Ngamba Island Sanctuary | Uganda | | Africa |
| Jane Goodall Institute, IFAW, UWEC (Uganda Wildlife Education Center Trust), Born Free Foundation, Zoological Board of New South Wales | Oakland Zoo | | | Africa |
| Jane Goodall Institute, WCS, WWF, CI | Central African Forestry World Heritage Initiative, with a focus on market aspects of commercial bushmeat trade | West Africa, Central Africa | | Africa |
| John Aspinall Foundation, Gov Congo | John Aspinall Foundation, Gov Congo | | Projet protection des Gorillas | Congo Brazzaville |
| Gov Congo | | | | Africa |
| Kenya Wildlife Service | Fund for Animals | | Anti-poaching unit | Kenya |
| Last Great Ape Organization | World Bank, seeking additional funding | | Civil Society Watchdog activities | Cameroon |
| Les Amis des Animaux au Congo the Friends of Animals in Congo), DRC | | | AAC Bonobo Sanctuary in Kinshasa | DRC |
| Lincoln Park Zoo | Lincoln Park Zoo | | Bushmeat Education | USA |
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| Lincoln Park Zoo | | | Bushmeat Education, Gorilla Forest exhibit | USA |
| Lusaka Agreement Task Force | Government of Kenya, UNEP, IFAW, David Shepherd Conservation Foundation, U.S. Fish and Wildlife Service, Council of Agriculture of the Republic of China, Humane Society of the U.S.A. | | Law enforcement operations and capacity building throughout Africa | Kenya |
| | | | | Africa |

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| NRI, FFI, ODI | Dept Environment, Transport & Regions, | Bushmeat – pilot study | Africa Central & West | |
| ODI | MacArthur Foundation | Contribution of forest insects to food security and forest conservation: caterpillars in Central Africa | Africa Central Africa | |
| ODI | MacArthur Foundation | The bushmeat trade and fishing license agreements in West Africa | Africa Ghana | |
| ODI | MacArthur Foundation | Barren ground caribou co-management in the Eastern Canadian Arctic: lessons for bushmeat management | North-America Canadian Arctic | |
| ODI | MacArthur Foundation | Wild meat harvest and trade in Liberia: managing biodiversity, economic and social impacts | Africa Liberia | |
| ODI | MacArthur Foundation | The Bushmeat commodity chain: patterns of trade and sustainability in a mature urban market in West Africa | Africa West Africa | |
| ODI, | MacArthur Foundation | Wild meat, Livelihoods security and conservation in the tropics | Africa International | |
| Oxford University (Wildlife Conservation Research Unit) | Norwegian Research Council (Norges Forskningsråd) | Bushmeat hunting, trade and consumption study. | Africa Equatorial Guinea | |
| PAAZAB | | Awareness Campaign | Africa | |
| PAAZAB | | Supply of equipment and anti-poaching patrols in Cross River NP, Nigeria | Africa Nigeria | |
| PAAZAB | | Bushmeat poster | Africa | |
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| Pan African Association of Zoological Gardens, Aquaria and Botanic Gardens (PAZAB), Montecasino Bird Gardens, Monkey Land, East London Aquarium, Mitchell Park Zoo | | Bushmeat Working Group | Africa | |
| Pan African Sanctuary Alliance | EZA, IFAW, Oakland Zoo | Collaboration with 19 primate sanctuaries | Africa | |
| Pandillus, MINEF | Pandillus, Int. Primate Protection League, Int. Dev Fund (Cameroon), Arcus Gov. Cameroon, Local Business, UK Gov. Foundation, Pro Wildlife, Gorilla Haven, Columbus Zoo, Brigitte Bardot Foundation | Limbe Wildlife Centre | Cameroon | |
| PeopleandPlanet.net | | Bushmeat Newsletter | UK | Europe |

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| Philadelphia Zoo | | USA | | | | | | |
| Philadelphia Zoo, Grand Gedge Community Servant Association | Critical Ecosystem Partnership Fund | Libera | Libera | Bushmeat awareness and sustainable development in southeast Liberia | | | | |
| Philadelphia Zoo, Society for the Conservation of Nature of Liberia, Forestry Development Authority, University of Liberia, Cuttington University College, Concerned Environmentalists for the Enhancement of Biodiversity, One with Nature, National Environmental Commission of Liberia, Talking Drums Studios, Tomo Theatre Productions Society, Society Against Environmental Degradation | American Zoo & Aquarium Association, Conservation International | Libera | Libera | 1. Urban public opinion and bushmeat survey, 2. Rural public opinion and bushmeat survey, 3. National public awareness campaign | | | | |
| PEEA (Projet Promotion de l'Elevage d'Aulacodes) | | Benin | Benin | Cane Rat Raising Promotion Project | | | | |
| Primate Conservation Inc., Inc. | | International | Asia, Africa, South Madagascar, South | Provision of grants to support researchers and conservationists in the field, including those involved with bushmeat | | | | |
| Primate Preservation Group | ???, Funding needed Primate Preservation Group | Africa | Nigeria | Only Livestock Organisation | | | | |
| Primate Society of Great Britain | | Europe | UK | PSGB Conservation Working Party, involved with research and allocation of bi-annual grants for Primate Conservation Inc. | | | | |
| Project Primate Inc. & Primates Guinea | HSUS, WSPA, Arcus Foundation, Edith J Goode Foundation, Prince Bernard Fund, Private donors | Africa | Guinea | Chimpanzee Conservation centre | | | | |
| Prospect Park Zoo | | USA | USA | Bushmeat Curriculum for 7th grade | | | | |
| Purdue Univ., Univ Toronto | WWF-US, CARPE | Africa | Central Africa | The effects of interacting Human disturbances on African Forestry mammal communities | | | | |
| Rainforest Action Network | Richard and Rhoda Goldman Fund | Africa | Central Africa | Campaign to protect rainforest and wildlife in the Congo basin | | | | |
| Rainforest Foundation | | Africa | Cameroon | Community Hunting Zone, Djaposten, Cameroon | | | | |

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| Rougier-Gabon, IGD (Gabonese Institute of Support for Development) | Rougier-Gabon | Programme of Agricultural Training in the forest concession of Haut-Abanga, Gabon. | Gabon | Africa |
| Royal Zoological Society of Antwerp, University of Antwerp, Antwerp | Royal Zoological Society of Antwerp, KBC, Leakey Foundation, King Leopold III Lomako, Equateur Province, DRC. | The Bonobo in situ Project (Iyema-DRC) | DRC | Africa |
| SABC, Discovery Communications Europe | Humane Soc. Of USA, World Conservation Union, Real Networks, My Acre of Africa | "Africa's New Refugees" documentary | South Africa | Africa |
| Sky Calypso Society | Sky Calypso Society: Airship in Kruger | Libera Bushmeat Working Group | Libera | Africa |
| Society for the Conservation of Nature of Liberia, AIESEC-Libera, BIOSA-Biology Students Association, University of Liberia, CEEB (Concerned Environmentalists for the Enhancement of Biodiversity), CEEP, Conservation International, Culture Art Studio, Cuttington University College, FACE, FAO, FFI-Libera, Fiomoto Theatre, Forestry Development Authority, GECOMSA, Liberian Senate Committee on the Environment, Radio Veritas, SAED, SAMFU, Talking Drum Studio, WWF-Libera | | Breeding and local food production | Gabon | Africa |
| Solcomhouse | Bushmeat information page on website | | USA | Africa |
| Species Survival Network | Primates working Group, Wildlife Use Working Group | | USA | USA |
| St Louis Zoo | ? | St Louis Zoo Biodiversity Project | Nicaragua | Latin America |
| Toronto Zoo | | Bushmeat Education | USA | USA |
| Toronto Zoo | | Canadian Association for Bushmeat Awareness (CABA) | USA | USA |

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| TRAFFIC | | Review of bushmeat trade in East and Southern Africa | Africa | |
| Traffic, Univ Alberta, | Primary Investigators | Wildlife Trade at Tachilek | South east Asia | Asia |
| Traffic, Univ Alberta, | Primary Investigators | Trade & Status of Serow | South East Asia | Asia |
| Tulsa Zoo | Tulsa Zoo | Conservation kiosks | USA | USA |
| UK Government, ZSL, IFAW, BFF, Ape Alliance, Ciel Logistics, EAZA, | | The Bushmeat Campaign Group | UK | USA |
| Zoological Gardens of FFI, Federation of Great Britain & Ireland, WWF-UK, | | | | Europe |
| UK Tropical Forest Forum (comprising 19 organizations) | Defra | Bushmeat Working Group | UK | Europe |
| UNEP, UNESCO, Scientific and Cultural Organization, IFAW, BFF, CI, Ape Alliance, CITES, Convention on Biological Diversity, Convention on Migratory Species, African Wildlife Foundation, (AWF), Bristol Zoo Gardens, Gardens, BCTF, DFGF, FFI, The International Gorilla Conservation Programme (IGCP), The Institute for Tropical Forest Conservation, JGI, The Orangutan Foundation, PASA, UNEP World Conservation Monitoring Centre (WCMC), Wild Chimpanzee Foundation (WCF), WCS, WWF, Care for the Wild | Brigitte Bardot Foundation, DHL | GRASP (Great Ape Survival project) | USA | International |
| UNESCO, ICN, IUCN, GTZ, WWF, WCS, Zoological Society of Milwaukee, International Rhino Foundation | The UN Foundation | The UN Foundation, providing financial support for DRC's world heritage sites (Virunga NP, Kahuzi Biega NP, Garamba NP, Salonga NP, Okapi Wildlife Reserve) | DRC | Africa |
| Univ Alberta | Calgary Zoo, WCS, NSERC | Canadian Bushmeat Initiative | Canada | North-America |

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| Univ Alberta, WCS, Canadian International Dev. Agency | WCS, Canadian International Dev. Agency | The Analysis of bushmeat Utilization in Phu Kheio Wildlife Sanctuary | Thailand. | Thailand. | Asia |
| Univ Alberta, WCS, Maejo University | Maejo University | A Pilot study of Bushmeat Utilization in Sri Lanka | Thailand | Thailand | Asia |
| Veterinaire sans Frontiere | European Union | Developement au Gabon de l'Elevage de Gibier | Gabon | Gabon | Africa |
| Wasmoeht Wildlife Foundation | Wasmoeht Wildlife Foundation | "Project Congo", Coffee-growing project in DRC to encourage alternative economic opportunities to the bushmeat trade | DRC | DRC | Africa |
| Wasmoeht Wildlife Foundation | Wasmoeht Wildlife Foundation | Funded publication of "Consuming Nature" photo-essay and distributed 700 copies to European Parliamentarians in Brussels. | Europe | Europe | Europe |
| WCS | WCS, USAID, MacArthur Foundation | Community based management of hunting in Madidi | Bolivia | Bolivia | Latin America |
| WCS | WCS | 1. Jaguar hunting impact assessment | Brazil | Brazil | Latin America |
| WCS | Liz Claiborne & Art Ortenberg Foundation, Liz Claiborne & Art Ortenberg Support Program, Liz Claiborne & Art Ortenberg Foundation | Economics and dynamics of bushmeat trade | Cameroon | Cameroon | Africa |
| WCS | WCS, Biodiversity Support Program, Liz Claiborne & Art Ortenberg Foundation | Studying ways to enhance the sustainability of duiker hunting through community participation and controlled access in Lobeke region | Cameroon | Cameroon | Africa |
| WCS | WCS, Nat Fish & Wildlife Foundation, Cline Family | Conservation education on the use of wildlife products, esp for traditional Chinese medicine | China | China | Asia |
| WCS | WCS | Sustainability of hunting & effects of hunting on the biology and ecology of hunted species | DRC | DRC | Africa |

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|-----|---------------------------------------|---|-------------------|---------------|
| WCS | WCS | Determining economics of bushmeat trade, sources and destinations of meat | Gabon. | Africa |
| WCS | WCS | Compilation & synthesis of data on the sustainability of hunting in tropical forests world wide | International | International |
| WCS | WCS | Study of hunting for subsistence & trade in Maya Biosphere Reserve | Guatemala | Latin America |
| WCS | WCS, Natural Resource management/EPIQ | The effect of hunting & wildlife trade on wildlife populations in North Sulawesi | Indonesia | Asia |
| WCS | WCS | Study of the Wildlife trade in South West Laos | Laos | Asia |
| WCS | WCS | Meat & ammunition prices in Latin America | Latin America | Latin America |
| WCS | WCS | Sustainability of hunting in Sarawak and Sabah | Malaysia | Asia |
| WCS | WCS | Study of hunting of endangered wildlife populations in Northern Myanmar | Myanmar | Asia |
| WCS | WCS, Durrell Institute, Univ of Kent | Monitoring and co-management with local communities of subsistence and commercial hunting in Northern Peruvian Amazon | Peru | Latin America |
| WCS | WCS | Management study of the sustainability of garden hunting in Tambopata | Peru | Latin America |
| WCS | WCS, Columbus Zoo, Busch Gardens | Mbeli Bai Gorilla Study | Congo Brazzaville | Africa |
| WCS | WCS, Columbus Zoo & Aquarium | Mombongo Conservation & research Project | Congo Brazzaville | Africa |

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|----------------|---|--|-------------------|---------------|
| WCS | WCS, American Zoo & Aquarium Association, Columbus Zoo & Aquarium | Research Project Goualougo Triangle Chimpanzee | Congo Brazzaville | Africa |
| WCS, | WCS, USAID, Liz Claiborne & Art Ortenberg Foundation, Shared Earth Foundation | 1. Studies sustainability of hunting for subsistence trade in Gran Chaco | Bolivia | Latin America |
| WCS, | WCS, USAID | Management plan for sustainable harvesting of bushmeat in Okapi Wildlife Reserve | DRC | Africa |
| WCS, Bronx Zoo | WCS Pattycake Fund | Working with the national government to establish new protected areas for gorillas in the highlands of Cameroon and Nigeria | Cameroon | Africa |
| WCS, Bronx Zoo | WCS Pattycake Fund | Community campaigns to raise awareness about poaching of gorillas and reinforce traditional hunting bans to protect gorillas around Takamanda Forest Reserve | Cameroon | Africa |
| WCS, Bronx Zoo | WCS Pattycake Fund | Activities to block major bushmeat trade routes such as railway through central Cameroon | Cameroon | Africa |
| WCS, Bronx Zoo | WCS Pattycake Fund | Creation of protection and anti-poaching patrols for isolated gorilla populations in central Cameroon | Cameroon | Africa |
| WCS, Bronx Zoo | WCS Pattycake Fund | Anti-poaching patrols in and around Mbam Djerem NP | Cameroon | Africa |
| WCS, Bronx Zoo | WCS Pattycake Fund | of park guards in Nouabale Ndoki NP, Koukouati-Douli NP & Lac Tele Community Reserve | DRC | Africa |
| WCS, Bronx Zoo | WCS Pattycake Fund | Environmental education and community awareness campaigns about the protected status of gorillas and other wildlife | DRC | Africa |
| WCS, Bronx Zoo | WCS Pattycake Fund | Establishment of new protected areas for gorillas | Gabon | Africa |
| WCS, Bronx Zoo | WCS Pattycake Fund | Anti-poaching patrols around the Gamba Reserve and the Langouevindo area | Gabon | Africa |

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| WCS, Bronx Zoo | WCS Patycake Fund | Working with national governments to reduce the illegal trade in bushmeat | Gabon | Africa |
| WCS, Bronx Zoo | WCS Patycake Fund | Campaigns to raise awareness about laws protecting gorillas and other wildlife. | Gabon | Africa |
| WCS, Bronx Zoo | WCS Patycake Fund | Research to find better ways to monitor the populations of gorillas in protected areas and to reduce the impacts of poaching | Gabon | Africa |
| WCS, Bronx Zoo | WCS Patycake Fund | Community awareness and environmental education campaigns about gorillas and hunting laws | Nigeria | Africa |
| WCS, Bronx Zoo | WCS Patycake Fund | Working with the government to reinforce the protection of gorillas in protected areas | Nigeria | Africa |
| WCS, Bronx Zoo | WCS Patycake Fund | Training of national staff and park guards to manage and better protect national parks | Nigeria | Africa |
| WCS, CIB, Congolese Ministry of Forest Economy and the Environment (MEFE) | CIB, WCS, USAID, CARPE, ITTO, U.S. Fish and Wildlife Service, Columbus Zoo, Government of Switzerland, Government of Japan, Government of the USA, Government of France | Project for Biodiversity Management and Conservation adjacent to a Totally Protected Area (Nouabal National Park, Northern Congo). | Congo Brazzaville | Africa |
| WCS, Congolaise Industrielle de Bois, Ministere de L'Economie Forestiere | WCS, USAID, U.S. Fish & Wildlife Service | Management of hunting and bushmeat trade in a CIB logging concession and associated protected areas | Congo Brazzaville | Africa |
| WCS, DFW | UK Gov, World Bank, WCS, TRAFFIC, WWF | Pilot study of wildlife trade | Cambodia | Asia |
| WCS, Gabonese Ministry of Water and Forests, Gabonese Wildlife Department, Max Planck Institute, Smithsonian Institution, Kyoto University, University of Wageningen | WWF, seeking additional funding | Great ape monitoring and development of ecotourism in Gamba Protected Areas Complex, Gabon. | Gabon | Africa |
| WCS, Gov, Cameroon, | WCS, Liz Claiborne & Art Ortenberg Foundation, Dutch Gov. | Sustainable management of bushmeat hunting in Bangyang-Mbo | Cameroon | Africa |

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| WCS, Mysore Centre for Ecological Research | WCS | Impact of hunting on large mammals in Nagarhole | India | Asia |
| WCS, PNPO | WCS, Bay Foundation, NGS, WWF | 1. Evaluating the impact and sustainability of subsistence hunting in Amazon | Brazil | Latin America |
| WCS, Royal Thai Forestry Dept., Wildaid | WCS | Study and management of wildlife hunting associated with the illegal collection of aloé-wood in Khao Yai | Thailand | Asia |
| WCS, Sarawak Forest Dept | WCS, Sarawak Forest Dept | The impact of logging roads on wildlife densities & hunting patterns of the Penan | Malaysia | Asia |
| WCS, Sarawak Forest Dept | WCS, Sarawak Forest Dept | A Master Plan for Wildlife in Sarawak | Malaysia | Asia |
| WCS, The environment ministries of Cameroon and Nigeria, Nigerian Conservation Foundation, Fauna and Flora International | WWF, seeking additional funding | Transboundary conservation of cross river gorillas and Nigeria chimpanzees in Cameroon and Nigeria | Cameroon & Nigeria | Africa |
| WCS, Univ Minnesota, Roger Williams Park Zoo | WCS, USAID, Lincoln Park Zoo, UMN, | Comparison of methods for monitoring the effects of hunting on game populations in a forestry concession | Congo Brazzaville | Africa |
| WCS, Univ New Mexico | WCS | Long term community based monitoring and management of subsistence hunting by Ache Indians | Paraguay | Latin America |
| Wellington Zoo | Wellington Zoo | Report to Pan African workshop, Press releases, Bushmeat info evening, Raised NZ\$3000, Display to zoo goers | Australia | Oceania |
| WesternGorilla.org | U.S. Fish & Wildlife service | Network of researchers and conservationists working in all major Western Gorilla research and conservation sites | Central Africa | Africa |
| Wild Chimpanzee Foundation | Columbus Zoo & Aquarium, Private donors | (1) Chimpanzee conservation through Nat Park (2) Educational play | Ivory Coast | Africa |
| Wildlife & Environmental Society of Malawi | | Collaboration with communities to develop guinea fowl rearing, bee keeping and production of baobab and tamarind fruit juices as alternative livelihood options to bushmeat hunting | Malawi | Africa |

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| Wildlife Conservation Society, American Zoo & Aquarium Association of Zookeepers, American Society of Primatologists, American Zoo & Aquarium Association, Conservation The Fund for Animals, African Wildlife Foundation International Center for Applied Biodiversity Science, Center for Conservation and Behaviour – Georgia Tech, Chicago Zoological Society – International, WWF-USA, Brookfield Zoo, Cincinnati Zoo and Botanical Garden, Cleveland Metroparks Primatologists, Jane Goodall Institute, Philadelphia Zoo, Philadelphia Zoo, Lincoln Conservation Fund, The Fund for Animals, Gorilla Fund International, Disney Wildlife Conservation Fund, The Fund for Animals, Happy Hollow Zoo, Houston Zoo, Humane Society of the United States, International Fund for Animal Welfare, Jane Goodall Institute, Lincoln Park Zoological Gardens, Louisville Zoological Garden, Oakland Institute, Bushmeat Crisis Discussion Group, Bristol Zoo Gardens Wildlife First | African Wildlife Foundation, American Association of Zookeepers, American Society of Primatologists, American Zoo & Aquarium Association, Conservation The Fund for Animals, African Wildlife Foundation International Center for Applied Biodiversity Science, Center for Conservation and Behaviour – Georgia Tech, Chicago Zoological Society – International, WWF-USA, Brookfield Zoo, Cincinnati Zoo and Botanical Garden, Cleveland Metroparks Primatologists, Jane Goodall Institute, Philadelphia Zoo, Philadelphia Zoo, Lincoln Conservation Fund, The Fund for Animals, Gorilla Fund International, Disney Wildlife Conservation Fund, The Fund for Animals, Happy Hollow Zoo, Houston Zoo, Humane Society of the United States, International Fund for Animal Welfare, Jane Goodall Institute, Lincoln Park Zoological Gardens, Louisville Zoological Garden, Oakland Institute, Bushmeat Crisis Discussion Group, Bristol Zoo Gardens | Wildlife First | ? | Wildlife First | India | USA |
| Wildlife First, WCS | Wildlife First, WCS | Save The Tiger Fund, WCS | Community Leadership for Wildlife Conservation, Bhadra | India | Asia | |
| Wildlife First, WCS | Wildlife First, WCS | Save The Tiger Fund, WCS | Community Leadership for Wildlife Conservation, Kudremukh | India | Asia | |
| Wildlife First, WCS | Wildlife First, WCS | Save The Tiger Fund, WCS | Community Leadership for Wildlife Conservation, Nagarhole | India | Asia | |
| Wisconsin Primate Research Center (University of Wisconsin) | International Primate Society, Primate Society of Great Britain | (1) Primate Info Net, information service for Primate Conservation Inc. and research, (2) Educational resources for teachers | USA | USA | USA | |
| World Bank | World Bank | CEO Working Group, acts to reduce the impact of the bushmeat trade. | USA | USA | USA | |
| World Bank, | World bank | Role of forest industry in improved forest management in tropical Africa | Africa Central & West | Africa | Africa | |
| World bank, WWF | World Bank, WWF | Gabon protected areas evaluation | Gabon | Africa | Africa | |

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| ZSL | Bushmeat Research Programme | International | | | | |
| ZSL | Bushmeat and Forests Conservation Programme | Equatorial Africa | | | | |
| ZSL, Cambridge Univ., DWCT (Durrell Wildlife Conservation Trust), Imperial College London, UCL (University College London), Oxford University (Wildlife Conservation Research Unit) | Darwin Initiative, ESRC (Economic and Social Research Council), NERC (Natural Environment Research Council) | Cameroon, DRC, Equatorial Guinea, Sierra Leone | Bio-economic modelling of bushmeat harvest systems | | | |
| ZSL, DWCT, Oxford University, Institute Zoology | ESRC, NERC | Cameroon, Nigeria | Solutions to bushmeat exploitation in the Sanga-Cross region | | | |
| ZSL, Imperial Coll. London, DWCT (Durrell Conservation Wildlife Conservation Trust), Cambridge Univ. | ESRC (Economic and Social Research Council), NERC (Natural Environment Research Council) | Equatorial Guinea | Incentives for the sustainable hunting of bushmeat | | | |
| ZSL, UCL | ESRC, NERC | Ghana | Trade & sustainability along a bushmeat commodity chain | | | |
| ZSL, UCL | ESRC | Sierra Leone | Habitat quality & bushmeat surveys | | | |

| Categories | Keywords | Dates | Contact | Update |
|--|------------------------|----------------|-----------------------------------|---------------------------------|
| Anti poaching, Education, Community, Awareness, Data collection, Provision of veterinarian, Wildlife rescues | Protection | 1999-Present | Explore@akayl.or.com | Project update in appendix, * |
| Conservation plan, Tourism, Management, Transfrontier, Education, Communities, Training, Anti poaching, Equipment, Gorillas, Capacity building, Collaboration, Monitoring, Community, Policy | Protection | 1990-2010 | Alanjuuw@awrk*.e.org | |
| Funding, Symposia | Collaboration, Funding | 1997-present | Janette Wallis | |
| Consensus, Collaboration | Collaboration | 1999 | | 59 signatories as of March 2000 |
| Events, Awareness | Events | 2000 | Katrin Jedamzik, kathy@4apes.co | |
| Campaigning, Policy | Policy | ? | Katrin Jedamzik, kathy@4apes.co | |
| Awareness, Code-of-conduct | Collaboration | ? | Katrin Jedamzik, kathy@4apes.co | |
| Management, Sustainability, Community, Bushmeat | Management | 2001 - present | Christina Connolly | |
| Media, Documentaries, Apes | Media | 1995 | Marshall Corwin | |
| Media, Documentaries, Apes | Media | 2002 | Jeremy Bristow | |
| Media, Documentaries | Media | 2004 | Rob Sullivan | |
| Bushmeat, Data collection, Education, census, Sea Turtles, Mammals | Protection | 1996-Present | Dr Gail Hearn, Hearn@beaver.edu * | |
| Rangers equipment, Land Purchase, Information workshops, Local initiatives | Protection | | | |

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|---|-----------------|----------------|--|--|
| Exhibitions, Education, Awareness | | 2000 - 2001 | Irs Weiche, Dr Marianne Holtkötter | |
| Community, Partnerships, Education, Tourism, Health, Sustainability, Development, Campaigning, Exhibitions, Sanctuaries, Rabbits, Sheep, Pigs, Ducks, Chickens, Donkeys, Training, Management | Education | 2004 | Lydia Hall, Lydia@beulahand.co.uk | |
| Collaboration, Awareness, Information, Funding | Education | 2000 | Dr Anthony Rose, Rose@biosynergry.org | |
| Bushmeat, Education, Gorillas | Education | 2000 | Dr Anthony Rose, Rose@biosynergry.org | |
| Bushmeat, Logging, Economics, Mammals, Black Spider Monkey, Red Howler Monkey, Brown capuchin monkey, Peccaries | Research | 2002-Present | Bjorn Schulte-Herbruggen, Bjorn@savemoneykeys.com | |
| Media, Education, Awareness, Education, Sustainable development, AIDS/HIV, Media | 2004-Present | 2004-Present | Bjorn Schulte-Herbruggen, Bjorn@savemoneykeys.com | |
| Creation of Park, Awareness, Feasibility study, Surveys, Expedition, Music/media, Office, Summit, Information exchange, Government, Education, Management, Surveys, Research | Protected-Areas | 2004-present | g. Sally Jewell, g.Sally.jewell@bonobo.org, g. Sally Jewell, g.Sally.jewell@bonobo.org | |
| Information exchange, Government, Education, Management, Surveys, Research | Ongoing | Ongoing | g. Sally Jewell, g.Sally.jewell@bonobo.org | |
| Campaigning, Media, Taboos, Education, Education | In development | In development | g. Sally Jewell, g.Sally.jewell@bonobo.org | |
| Media, Education | In development | In development | g. Sally Jewell, g.Sally.jewell@bonobo.org | |
| HIV/AIDS, Religion, Campaigning | In development | In development | g. Sally Jewell, g.Sally.jewell@bonobo.org | |
| Education, Awareness, Research, Information, Campaigning | In development | In development | g. Sally Jewell, g.Sally.jewell@bonobo.org | |
| Campaigning, Media | In development | In development | g. Sally Jewell, g.Sally.jewell@bonobo.org | |

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|--|---------------|----------------|---|--|--|--|--|--|--|
| Surveys, Research, Community | Research | Ongoing | bc@bonobo.org | | | | | | |
| Meetings | Research | In planning | bc@bonobo.org | | | | | | |
| Agriculture, Development, Sustainability, Herbal Medicine | Development | In planning | bc@bonobo.org | | | | | | |
| Ecotourism | Tourism | In planning | bc@bonobo.org | | | | | | |
| Research, Management, Collaboration | Policy | | bc@bonobo.org | | | | | | |
| Symposia, Policy, Research, Census | Research | In development | bc@bonobo.org | | | | | | |
| Campaigning, Primates | Campaigning | | David@brontre.org.uk | | | | | | |
| Campaigning, Primates | Campaigning | | David@brontre.org.uk | | | | | | |
| Rangers, Vehicles, Animals: East lowland Gorillas | Protection | 2000 | David@brontre.org.uk | | | | | | |
| Sanctuary, Rescue, Medical, Enclosures, Animals: Chimps | Sanctuaries | 2003 | David@brontre.org.uk | | | | | | |
| Theatre, Awareness | Education | 2004 - present | David@brontre.org.uk | | | | | | |
| Research | Research | 2004 | David@brontre.org.uk | | | | | | |
| Busmeat, Economics, Culture, Consumption | Research | 2001-14 | months Dr David Wilkie, WCS, 001 718 894 9605, Fax | | | | | | |
| Education, Awareness | Education | 2005 | Ed Drevitt, ed_drevitt@bristol-city.gov.uk | | | | | | |
| Education, Awareness | Education | 2001 | Bryan Carroll, bcarr@bristol-zoo.org.uk | | | | | | |
| Symposia, Policy | Collaboration | 2000 | busmeataware nessgroup@hottmail.com, Tim Sinclair-Smith | | | | | | |
| Awareness, Busmeat | Collaboration | 2000-Present | Anne Warner, Anne@oaklandzoo.org | | | | | | |
| Awareness, Busmeat, Information, Legislation, Campaigning | Collaboration | 2001-present | Samuel Fopa, Samfopa@yahoo.com | | | | | | |
| Education, Awareness, Training, Busmeat | Education | 2000 | Heather Eves, info@busmeat.org | | | | | | |
| Education, Awareness, Information, Publications | Education | 2000 | Heather Eves, info@busmeat.org | | | | | | |
| Research, Publications, Education, Awareness, Information, Media, Database | Information | 2000 - present | Heather Eves, info@busmeat.org | | | | | | |
| Information, Education, Awareness, Projects, Database | Information | 2000 - present | Heather Eves, info@busmeat.org | | | | | | |
| Information, Education, Awareness | Information | 2004 - present | Heather Eves, info@busmeat.org | | | | | | |

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|--|----------------|---|---|
| Education, Awareness, Training | 2001 - 2002 | Heather Eves, info@bushmeat.org | Currently encouraging funding and adoption of bushmeat curricula. |
| Funding, Policy | 2000 | Heather Eves, info@bushmeat.org | Monitoring implementation & renewal |
| Policy, Symposia | 2000 - present | Heather Eves, info@bushmeat.org | Ongoing |
| Symposia, Policy | 2000 | Heather Eves, info@bushmeat.org | Brought National attention to the bushmeat crisis |
| Symposia, Policy | 2001 | Heather Eves, info@bushmeat.org | Proceedings available online |
| Policy, Symposia | 2004 | Heather Eves, info@bushmeat.org | |
| Events | 2000 - present | Heather Eves, info@bushmeat.org | Ongoing |
| Media, Awareness, Education | 2000 - present | Heather Eves, info@bushmeat.org | |
| Campaigning, Awareness, Education | 2003 - present | Heather Eves, info@bushmeat.org | In development with CARPE |
| Awareness, Education | 2004 - present | Heather Eves, info@bushmeat.org | Ongoing, periodically updated. |
| Education, Bushmeat | 2002 | Dr Kristen Lukas, Kel@clevelandmetroparks.com | * |
| Education, Awareness, Training, Curriculum, Zoos, Evaluation | 2001 - 2004 | Heather Eves, info@bushmeat.org | Six-CD sets distributed in 2003-2004. Now available online. |
| Information, Analysis, Education, Awareness, Database, Management, Legislation, Research, Media, Logging, Private-sector, Settlements, Populations, Species-distribution, Oil, Gas, Coltan, Cobalt, Mining, Pipelines, Protected-areas, Development, Forests, Governments, Trade | 2003-present | Heather Eves, info@bushmeat.org | Ongoing, beta version available online. |
| Information | 2002 - (2006) | Heather Eves, info@bushmeat.org | Bushmeat course running since 2003. |
| Awareness, Education | 2002-3 | Dr Kerry Amman, Jeff Amman, Dupain | |
| Awareness, Education | 2001 | Dr Kerry Amman, Karl Bowman, Amman | |
| Mapping, Deforestation, Data Collection, Bonobos | | | |
| Research | | | |
| Campaigning | 2002 | | |
| Campaigning | | | |
| Campaigning, Sanctuaries | | | |

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|---|------------------|-----------------------------------|--|--|
| Funding, Research | 1995 - present | | | |
| Sanctaries | 1989 | info@primateca re.org.za | | |
| Baboons, Rehabilitation, Reintroduction, Orphans | 1999-Present | * | | |
| Research, Biodiversity, Health, Hunting, Economics, Social | 2003 | | | |
| Information, Awareness, Education | 1969 - present | Stella Marsden | | |
| Chimpanzees, rehabilitation | 2000 | Anthony Rose,* | | |
| Bushmeat, Tourism, Gorillas | Research | Bushmeat@aol. com | | |
| Education, Awareness, Campaigning, Bushmeat, legal | 2001-Present | Penny Jarrett,* Cincinnati Zoo | | |
| Publications, Policy, Livelihoods, Sustainability, Information-gathering, Management, Training, Databases, Law- enforcement, Awareness, Research, Policy, Training | 2002-2004 | | | |
| Information, Databases, Trade, Monitoring, Awareness | Information | | | |
| Research, Management | Research | | | |
| Management, Logging, Forests, Private-sector, Sustainability | Private-Sector | | | |
| Awareness, Campaigning, Education, Information, Campaigning, Policy, Publications, Policy, Institutions, Legislation, Research | Campaigning | 2003 | Yadi Bello | |
| Conference, Trade, Management, Solutions, Research, Governments, Legislation, Forests, Alternatives, Collaboration, Communities, Benefit- Sharing, Governance, Monitoring, Institutions, Information, Capacity- building, Education, Communication, Sustainability, | Research, Policy | 2000-2003 | marcellinagnan a@yahoo.fr Phase I completed 2003. Now in Phase II. | |
| Survey, Bushmeat, Education | Collaboration | 2002 | Dr Kristen Lukas, metroparks.co | |
| Education, Bushmeat | Research | 2002-2003 | Chris Kmieck, Cdk@cleveland metroparks.co | |
| Education | Education | | | |

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| Sustainability, Management | | 2002 | intocomitac@wrcampo.org | US\$22 million received for priority objectives 2003-2005. | Policy | Media, Documentaries | Media | 2002 | Favila Castro, video@conservallon.org | Health, Hunting, Monitoring, Management | Research | Publications, Education, Research | Symposia | Collaboration | 2001 - 2003 | Policy | Awareness, Conservation | Research | 2001-present | William Oduro, Eureka Adomako, Mohamed Bakar | Anti poaching, Education, Consumption, Communities, Resettlement, Tiger | Protection | Sanctuaries, Sanctuaries, Chimpanzees, Rehabilitation, Rescue, Ophans | Economics, Training, Sanctuary, Management, Research, Law enforcement, Awareness | Sanctuary, Animal - Welfare, Education, Release, Primates, Chimpanzees, Gorillas, Monkeys | Sanctuaries | 1995 - present | Bala Amarasekaran, sab@sierrelas | Project Update, * | Project Update, * | 1996-present | Kelley McFarland, Argonilla@netzero.net | Protection | Sanctuary, Animal - Welfare, Education, Release, Primates, Chimpanzees, Gorillas, Monkeys | Sanctuaries | 1997-present | Neil Madison, Nmaddison@bristolzoo.org.uk | Project update in appendix, Enclosures, educational facility, dev 1044 hectare site | Education, Research, Training, Museum | Education | 1999-present | Dr Rose, Rose@biosynetgy.org | Education, Awareness, Business, Research, Data collection, Ecology, Humane values, Conservation values, Biosynetgy, Gorillas, Antitides, Beliefs, Surveys | Research | Protein Alternatives, Rodents, Livestock, Breeding | Protein-Alternatives | 2002 | Dabac@assala.net | | Campaigning, Imports, Trade | Campaigning | 2004 | Lord Whitty | |
|----------------------------|--|------|-------------------------|--|--------|----------------------|-------|------|---------------------------------------|---|----------|-----------------------------------|----------|---------------|-------------|--------|-------------------------|----------|--------------|--|---|------------|---|--|---|-------------|----------------|----------------------------------|-------------------|-------------------|--------------|---|------------|---|-------------|--------------|---|---|---------------------------------------|-----------|--------------|------------------------------|---|----------|--|----------------------|------|------------------|--|-----------------------------|-------------|------|-------------|--|

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|------|--|--|--|--|-----------------|--|
| 2002 | Joanna Elliott (j.elliott@dfid.gov.uk) | | | | Law-enforcement | Equipment |
| | | | | | Protected-Areas | Data collection, Bonobos |
| | | | | | Protected-Areas | Community, Funding, Equipment, Maintenance buildings |
| | | | | | Research | Equipment, Data collection, Bonobos |
| | | | | | Research | Data collection |
| | | | | | Research | Community, Education, Campaigning, Relief Mission densities, Population |
| | | | | | Sanctuaries | Research, Education, Bushmeat |
| | | | | | Protected-Areas | Awareness, Conservation, Education |
| | | | | | Protected-Areas | Eastern Lowland Gorillas, Owl, Chimps, Elephant, Leopard, Congo Bay Peacock, Okapi, Nile Croc, Congo Agriculture, Animals; Vehicles, Anti poaching, corridors, Equipment, reserves, Biological |
| | | | | | Protected-Areas | Community nature reserves, Biological corridors |
| | | | | | Research | Community nature reserves, Biological corridors |
| | | | | | Research | E. L. Gorillas |
| | | | | | Research | Animal Trade, Animals; Economics, Pollution; Data collection, Mining |
| | | | | | Protected-Areas | Equipment |
| | | | | | Protected-Areas | Census, Monitoring, Protection, Training |
| | | | | | Sanctuaries | Reserves, Protection, Gorillas |
| | | | | | Sanctuaries | Rehabilitation, Relocation |
| | | | | | Research | Agriculture, Employment, Sustainability, Management, Communities, Governance, Private-sector, Tourism, Governments, Donors, Food-security, Policy, Institutions, Livelihoods, Poverty |

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| Coltan, Mining | | | 2002 | Karen Hayes | Coltan processors are showing support for the initiative. |
| Information, Education | | 1993 - present | | Glen Barry, GlenBarry@EcologicalInternet.org | |
| Timber, Certification, Forestry, Communities, | | 1993 - present | | Mathew Weban-Smith, s@fsc.org | |
| Sanctuaries, Education, Creation of Reserve, Animals; Bobobos | Sanctuaries | | 1994 | | |
| Training, Information Sharing, Law enforcement | Training | | | Chns Wolf, | |
| Education, Awareness | Education | | | Chns Wolf | |
| Conservation plan, Management, Legal, Training, Monitoring, Trade, Bushmeat, Socio-economic, Community, Regional development | Management | | 1994-1997 | Mathenau Agha, @undp.org | |
| Alternatives, Bushmeat, Management, Cane rat, Red Dukker, Blue Dukker, | Protein-Alternatives | | 1996-present | Karlr@woullma.n.com, Karl or Fostie Rul | |
| Information, Forest Companies, Logging, Sustainability, Forest Management, Monitoring, Private Sector, Legality, Timber | Private-Sector | | 2004 - present | Com.fita@wana.doo.fr | Carried out missions to Cameroon, Republic of Congo & Gabon. Results of trials to be discussed at steering committee meeting, April 2005. |
| Sanctuaries, Gorillas | Sanctuaries | | 2004 - present | | |
| Sanctuaries, Gorillas | Sanctuaries | | 2001 - present | Anthony Rose, rose@gonlla.org | In-progress Mau sanctuary |
| Partnerships, Economic-development, Poverty-alleviation, Improved-governance, Protection, Reserves, Management, Communities, Sustainability, Livelihoods, Concessions, Logging, Agriculture, Ecotourism, Governance, Law-enforcement, Anti-poaching | Sanctuaries | | 2002 - present | | |
| Bushmeat, Hunting, Conservation plan, Data collection, meetings, Community, Gorillas | Research | | 2000 | Neil@nchampion.junglelink.co.uk | |
| Anti poaching, Equipment, Training, Education, Research, Awareness, Western Lowland Gorillas | Protection | | 1982-present | Wleiche@L-Anela.meder@online.de @L-online.de | Project update in appendix, * |

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|--|----------------------|------------------------|---|-------------------|---|
| Protein-alternatives, Livestock, Bees, Pigs, Trees | Protein-Alternatives | 2001 - 2005 | | | |
| Campaigning, Funding | | | | Teresa Telecky | |
| Bonobos, Gorillas | Protection | July 2002 to June 2005 | Peter Stephenson PStephenson@wwfint.org | | |
| Anti-poaching patrols, Gorillas, Equipment, Training, Monitoring, Census | Protection | Jan 2004-Dec 2005 | Peter Stephenson PStephenson@wwfint.org | | |
| Bonobos, Park, Protection, Equipment, Anti-poaching patrols, Training, Surveys, Census | Protection | Jan 2004-Dec 2005 | Peter Stephenson PStephenson@wwfint.org | | |
| Education, Awareness, Schools, | Education | 2004 | Clare Wallerstein, cwallerstein@faw.org | Available online. | |
| Research | Research | 2001 | | | |
| Transport, Bushmeat | Trade | In development | | | |
| Sanctuaries, Education, Campaigning, Rehabilitation, Chimpanzees | Sanctuaries | 1999 | Shert Speede, Speede@idajsa.org | * | |
| Campaigns, Petition | Campaigning | 2004 | www.f-wc.org | | |
| Education, Community values, Training, Economics, Animals; Butterflies | Education | 2000 | Jason Glass Jenny Myers | * | |
| Education, Law enforcement; Awareness | Education | 2000 | Cheryl Montgomery, Chimpidy@imul.com | * | |
| Conservation, Research, Education, chimps | Protection | 1990-Present | Fred Babweteera, Bfp@afriacaonline.com, Prof. Vernon Reynolds, Vernon.reynolds@bioanth.ox.ac.uk | | Project update in appendix, * |
| Rescue, Rehabilitation, Sanctuary, Chimps, Equipment | Sanctuaries | 1983-Present | Doug CressSB DougCress@aol.com | * | |
| Bushmeat, Identification | Research | 2002-2003 | Traffic@incom.net.co.ke, Rob Barnett, Prof. Kangethe, Ekangethe@wananchi.com | * | |
| Alternatives, Breeding, Training | Protein-Alternatives | 2000-03 | Chris Wanzi | | Ian Redmond video'd Chris showing his project in 2003 |

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|--|----------------------|----------------|--|---|
| Policy making, Exchange info, Discussion, Feedback, Health | Health | 2001-2004 | Rebecca Hardin, Rebecca Hardin, @mcgill.ca, Adienne Minster, Minister, Minster@fas.harvard.edu | * |
| Timber, Forest resources, Economic dev., Information network, Social dev., Local industrialisation, International representation | Development | 1996-present | 106422.71@columbia.edu, Jean Jacques Landrot | * |
| Private sector, Logging, Information-sharing, Management, Legislation, Reforestation, Training, Training, Development, Breeding, Pisciculture, Agro-forestry, Employment | Private-Sector | 1996 - present | lifa@wanadoo.fr | |
| Information, Research, Primates | Information | | Richard Wrangham, wrangham@fas.harvard.edu | |
| Legal, Trade, Identification, Media awareness | Campaigning | 1973- present | Steven Brend | |
| Trade, Subsistence hunting | Campaigning | 2003 | Lucy Mollison | |
| Rescue, Rehabilitation, Mangabey's, Sanctuaries | Sanctuaries | 1995 - present | Zena Tooze, zena.cercofan@yahoo.co.uk | |
| Rescue, Rehabilitation, Release, Sanctuaries, Drills, Chimpanzees | Sanctuaries | 1996 - present | Liza Gadsby & Peter Jenkins | |
| Domestication, Breeding, Protein Alternatives, Cane rats | Protein-Alternatives | 2000 | C.S.Wanzie, wanziec@yahoo.com | Over 50 farmers from all over Cameroon trained as of Feb 2003 |
| | Collaboration | 1999 - present | Phillip Miller, pmiller@cbsg.org | |

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|---|----------------|----------------|---|---|--|--|--|---|
| Population-Viability-Analysis, Models, Economy, Sociology, Political, Harvesting-rates, Data-collection, Management, Analysis, Logging conduct, Primates, Elephants, Buffaloes | Research | 1995 | Phillip Miller, pmiller@cbsg.org | | | | | |
| Conference, Sustainable forest management, Information-sharing, Protection | Private-Sector | 1996 | Roca.lucn@ca-net.cm, Angu.cet@ca-net.cm, lucn@camnet.cm | | | | | Project failed, since Rougier did not adhere to agreements. |
| Development, Farming, Agriculture, Sustainability, Chimpanzees, Pet-trade, rehabilitation, Protection, Education, Awareness, Teaching, Schools, Students, Learning, Sustainability, Training, Library, Curriculum, Capacity-building, Authorities, Institutions | Education | 2003 - present | Deby Cox, Jane Goodall programme of activities in the nearby inst., Chimpdy@mul.com | UCI implements a programme of activities in the nearby inst., Chimpdy@mul.com and Tchissanga surrounding the Reserve. As of Sep 2004, Tchimpounga has received 53 school excursions and 940 students as well as private and local companies, development and national institutions, NGOs and government bodies, | | | | |
| Education, Awareness, Busineat | Information | | | | | | | |
| Density, Chimps | Research | 1999-2002 | Deby Cox, Jane Goodall Inst., Chimpdy@mul.com | | | | | |
| Education, Communities, Conservation, Chimps | Education | 2003-2006 | Deby Cox, Jane Goodall Inst., Chimpdy@mul.com | | | | | |
| Protection, Snare removal, chimps | Protection | 1997-Present | Deby Cox, Jane Goodall Inst., Chimpdy@mul.com | | | | | |
| Sanctuaries, Education | Sanctuaries | 2001 | | | | | | |
| Sanctuaries, Chimpanzees | Sanctuaries | 1992 | | | | | | |
| Sanctuaries, Chimpanzees | Sanctuaries | 1994 | | | | | | |
| Trade, Regulation, Sustainability, Management, Collaboration, Governments, Private-Communities, Stakeholders | Protection | | Christina Ellis, cells@janegoodall.org | | | | | |
| Chimpanzees, Agriculture, Communities, Development, Management, Sustainability, Refugees, Hunting, Fuelwood | Development | 2002 | Christina Ellis, cells@janegoodall.org | | | | | |

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|---|-----------------|----------------|---|--|
| Awareness, Timber, Furniture, Coltan, Mobile-phones, Computers, Diamonds, Gold | Consumersm | ? | Christina Ellis, cellis@janego dall.org | |
| Chimpanzees, Information, | Information | ? | Christina Ellis, cellis@janego dall.org | |
| Communities, Surveys, Research, Trade, Development, Sustainability, Livelihoods, Institutions, Training, Governments, Census, Communities, Surveys, Monitoring, Habituation, Gorillas, Chimpanzees, Elephants, Eco-guards, Apes, Health, Tourism, Forestry, Stakeholders, Reproduction, Education | Research | 2002 | Christina Ellis, cellis@janego dall.org | |
| Rescue, Rehabilitation, Animals; Chimps | Sanctuaries | 1994 | | |
| Sanctuaries, Relocation, Populations, Data collection, Eco tourism, Education, Outreach, Animals; Chimps | Sanctuaries | 1998 | | |
| Collaboration, Markets, Communities, Development, Sustainability, livelihoods Stakeholders | Protected-Areas | | Christina Ellis, cellis@janego dall.org | |
| Rehabilitation, Confiscation, trade, Release, Bushmeat, Trade, Awareness | Sanctuaries | 1986-Present | Mr Amos Courage/Sue Hunt, Aspinall Foundation, 0207 235 2768 | |
| Anti-poaching, Law-enforcement | Law-enforcement | | Chris Wolf | |
| Law-enforcement, Investigations, Prosecution, | Law-enforcement | 2004 - present | Giuseppe Toba, giopa@worldbank.org | |
| Bonobos, Sanctuaries, Education, Private-sector, Lobbying, Protection, Schools, Diseases, Governments, Media | Sanctuaries | 1995 | | |
| Education, Awareness, Bushmeat, website | Education | 2001-2004 | Kristen Lukas, * lucas@dpzo.org, Robert Davis, B Davis@dpzo.org | |
| Information, Awareness, Exhibitions, Gorillas | Education | | | |
| Law enforcement, Protection, Capacity-building | Law-enforcement | 1999 - present | Emily S Kisaam, administrator@lusakaagreeme.nl.org | |

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|--------------------------------|--|------------|---------------------|---|--------------------------------|------|-----------------------|---|
| Anti-poaching, Law-enforcement | Trade, Government, Private-sector | | | | | | | |
| | | Trade | | | | | | |
| | Chimpanzees, Capacity, Monitoring, Awareness, People, Park, Protection, Training, Equipment, Surveys, Education, Communities | Protection | Jan 2004 – Dec 2006 | Peter Stephenson @wfmn.org | Javier Garcia, David Fernandez | 2002 | No follow-up was made | |
| | Disease | Health | 1997 - present | Nathan Wolfe | | | | |
| | Licensing, Sustainability, Quotas, Sanctions, Monitoring, Control, Management, Policy, Community, Livelihoods, Protection, Capacity-exchange, Publications | Management | 1994 - present | Kristin Olsen, OLSEN927@aol.com | | | | |
| | Community, Hunting, Research, Bushmeat, Education, Monitoring, Training, Chimps | Management | 1997-present | Alex Forbes, Amforbes@compuserve.com, (Edinburgh) | | | | |
| | | | | | | | | compliant, nevertheless non-members are in place. Some subsistence hunting their right to agreed to suspend members have MWWA and WMC hunting permits. reduction in cost of negotiated a 60% authorities and hunters to register encouraged all local WMCs have committee. The off-take sub-WMC has a bushmeat exploitation, Batoke sharing from wildlife more equitable benefit successful in securing villages and has been |

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|---|-----------|---|---|--|--|---|------|----------|---|----------|-----------------------------------|----------|---|------------------|------------------|------------------|------------------|---------------------------|--|--|---|--|---|-------------|--|------------------------------------|------------------------|-------------------------------|-------------|--|-------------|---|-------------|
| Project update in Resources Institute, 01634 883 051, E.Robinson@gre enwch.ac.uk NRI, Ehno2@compus erve.com(FI), d.brown@odi.or g.uk(ODI) | 2004-2001 | 2004 Paul Vantomme, paul.vantomme fao.org | 2004 Ian Watson, fishwatson@a ol.com | 2004 Andrew Hurst, a.hurst@odi.org | 2004 Reginald Hoyt, reg.hoyt@forest partnersinternat ional.org | 2004 Guy Cowlishaw, guy.cowlishaw @ioz.ac.uk | 2004 | Research | Policy Briefing, Animals; caterpillars | Research | Policy Briefing, Animals; Fish | Research | Policy Briefing, Communities, Economics | 2004 Research | 2004 Research | 2004 Research | 2004 Research | 2001 Lise Abrechsen | Karl Westphal, daveisp@iaffc urban.gov.za, kartiw@prcsud a.com | Karl Westphal, daveisp@iaffc urban.gov.za, kartiw@prcsud a.com | Information, Publications, Education | Information, Publications, Education, Anti- poaching, Equipment, Eco-guards | Information, Publications, Education | Information | 2001 - present Karl Westphal, daveisp@iaffc urban.gov.za, kartiw@prcsud a.com | 2003 Plane121@total se.co.uk | Information, Awareness | Sanctuaries, Apes, Orphans | Sanctuaries | 1994- present Davis Lucas, info@limbwildl ife.org | Sanctuaries | Information, Awareness Training, Baboons, Ungulates, Guenons, Mandrills, Gorillas, Chimpanzees, Awarness, Primates, Rehabilitation, Rescue, Education, | Information |
| Project update in appendix, * | 2000-2001 | 2004 Paul Vantomme, paul.vantomme fao.org | 2004 Ian Watson, fishwatson@a ol.com | 2004 Andrew Hurst, a.hurst@odi.org | 2004 Reginald Hoyt, reg.hoyt@forest partnersinternat ional.org | 2004 Guy Cowlishaw, guy.cowlishaw @ioz.ac.uk | 2004 | Research | Policy Briefing, Animals; caterpillars | Research | Policy Briefing, Animals; Fish | Research | Policy Briefing, Communities, Economics | 2004 Research | 2004 Research | 2004 Research | 2004 Research | 2001 Lise Abrechsen | Karl Westphal, daveisp@iaffc urban.gov.za, kartiw@prcsud a.com | Karl Westphal, daveisp@iaffc urban.gov.za, kartiw@prcsud a.com | Information, Publications, Education | Information, Publications, Education, Anti- poaching, Equipment, Eco-guards | Information, Publications, Education | Information | 2001 - present Karl Westphal, daveisp@iaffc urban.gov.za, kartiw@prcsud a.com | 2003 Plane121@total se.co.uk | Information, Awareness | Sanctuaries, Apes, Orphans | Sanctuaries | 1994- present Davis Lucas, info@limbwildl ife.org | Sanctuaries | Information, Awareness Training, Baboons, Ungulates, Guenons, Mandrills, Gorillas, Chimpanzees, Awarness, Primates, Rehabilitation, Rescue, Education, | Information |
| Project update in appendix, * | 2000-2001 | 2004 Paul Vantomme, paul.vantomme fao.org | 2004 Ian Watson, fishwatson@a ol.com | 2004 Andrew Hurst, a.hurst@odi.org | 2004 Reginald Hoyt, reg.hoyt@forest partnersinternat ional.org | 2004 Guy Cowlishaw, guy.cowlishaw @ioz.ac.uk | 2004 | Research | Policy Briefing, Animals; caterpillars | Research | Policy Briefing, Animals; Fish | Research | Policy Briefing, Communities, Economics | 2004 Research | 2004 Research | 2004 Research | 2004 Research | 2001 Lise Abrechsen | Karl Westphal, daveisp@iaffc urban.gov.za, kartiw@prcsud a.com | Karl Westphal, daveisp@iaffc urban.gov.za, kartiw@prcsud a.com | Information, Publications, Education | Information, Publications, Education, Anti- poaching, Equipment, Eco-guards | Information, Publications, Education | Information | 2001 - present Karl Westphal, daveisp@iaffc urban.gov.za, kartiw@prcsud a.com | 2003 Plane121@total se.co.uk | Information, Awareness | Sanctuaries, Apes, Orphans | Sanctuaries | 1994- present Davis Lucas, info@limbwildl ife.org | Sanctuaries | Information, Awareness Training, Baboons, Ungulates, Guenons, Mandrills, Gorillas, Chimpanzees, Awarness, Primates, Rehabilitation, Rescue, Education, | Information |

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|---|------------------------------|----------------|--|---|--|--|--|------------------------|
| Information, Awareness, Exhibitions | Education | | | | | | | |
| Economic-alternatives, livestock, awareness, surveys, communities, protected areas | Economic-alternatives | 2002-2003 | | | | | | |
| Research, Surveys, Pygmy hippopotamus, Forest elephant, veniks, duiker, Awareness, Economics, Data collection, Training, Education, Campaigning, Community, Radio, Theatre, Communities | Research, Surveys, Awareness | 2001-2004 | Reg Hoyt, Hoyt.reg@phillyzoo.org | | | | | |
| Protein Alternatives | Protein Alternatives | | | | | | | |
| Research, Funding | Research, Funding | 1992 - present | Noel Rowe, rowe@primate.org | | | | | |
| Bushmeat, Research, Education, Protection, Gorilla, Colobus, Chimps | Protein-Alternatives | 1998-2000 | Ernest Ike Nwufor, Epsilon@beta.lnkserve.com | | | | | |
| Surveys, Research, Education, Training, Funding | Research, Funding | 1997 - present | Dr C. Harcourt, cwp@psgb.org | Several bushmeat-supported (e.g. "Trade in primate meat in the Oban Hills region of Nigeria" (Edem Eniang, 1999), "Discontinuous great ape density in hunting areas versus protected research areas" (Jef Dupain, 2003)). | | | | |
| Trade, Sanctuary, Release programme, Campaign, Hunting, Education, Awareness, Chimpanzees | Sanctuaries | 1996-2006 | NieBailey@aol.com Nancy Bailey, Estelle Raballand, Estelle@yahoo.com | | | | | |
| Education | Education | | | | | | | |
| Human induced disturbance, Hunting, Data collection, Research, Primates, Ungulates, Carnivores, Rodents, Shrews | Research | 2001-2004 | Justina.ray@utoronto.ca * | | | | | |
| Campaigning, | Campaigning | 1998 | Erick Brownstein | | | | | |
| Community, Controlled Hunting | Management | 2004 | | | | | | First phase completed. |

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|---|----------------------|----------------|---|---|
| Self-sufficiency, Food-security, Food-alternatives, Agriculture, Crop-raiding, Training, Development, Management, Communities | | 2003 - present | Eric Chezeaux | the programme to other Gabonese concessions. Micro-projects including chicken and cattle rearing are to be implemented. |
| Protection, Reserves | Protected-Areas | 1996 - 1998 | Jet Dupain | Project site had to be vacated due to outbreak of war |
| Media, Documentaries, Chimpanzees | Media | 2000 | Danic van der Valt?? | |
| Monitoring, Anti-poaching, Videos/media, Data collection, Web site, Educational, Video links | Media | 2003 | Catherine Amelink, Camelink@sky calypso.com | * |
| Partnerships, Education, Research | Collaboration | 2002 - present | James Coleman, scnil2001@yahoo.com | |
| Protein Alternatives, Breeding, Fish, Wild boar, Rodents, Livestock | Protein-Alternatives | 1990-1995 | sodepa@netlly JL | |
| Information, Education | Information | 1999 – present | Charles Welch, contact@solco mhouse.com | |
| Collaboration | Collaboration | 1992 - present | lilo@ssn.org | |
| Conservation plan, Training, Bushmeat, Consumption, Community, Data collection, Monitoring, Distribution, Mammals, Birds | Research | 2001 | Cheryl Asa | * |
| Information, Awareness, Exhibitions | Education | | | |
| Awareness | Awareness | | Kim Meehan, kimsemi@hotmail.com | |

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|--|-----------------|----------------|--|-------------------|--|--|--|--|--|
| Research | | 1998-2000 | Rob Barnett, traff@connect t.co.ke thought: The 2000 report "Food for utilization and trade of wild meat in eastern and southern Africa". | | | | | | |
| Surveys, Trade, Trophies, Traditional medicine, Law enforcement, Bushmeat, Awareness, Research | Research | 1998-2002 | Chns Shepherd Nolan Magnus, @hotmail.com | * | | | | | |
| Anti poaching, Trade, Protection, Hunting, Traditional medicines, Trophies, Serow | Research | 2000-Present | Chns Shepherd Nolan Magnus, @hotmail.com | * | | | | | |
| Education | Education | 2003-Present | Kathleen Buck, Kathleenbuck @ct.tuisa.ok.us | Project update, * | | | | | |
| Conference, Campaigning | Policy | 2002 | Adam Mathews, British MP's signed an Early Day Motion calling for international action to address the bushmeat crisis. | | | | | | |
| Logging, Management, Policy, Code-of-conduct, Communities, Forests | Collaboration | 1999 - present | Jane Thorback, J.Thorback@b internet.com | | | | | | |
| Protection, Fund-raising, Governments, Policy, Communication, | Policy | 2001 - present | Jim Sniffen, sniffen@unep.org Melanie Virtue @unep.org | | | | | | |
| Protection, National- Parks, Funding | Protected-Areas | 2003-2007 | | | | | | | |
| Bushmeat, Education, Research, Awareness, Dev bushmeat programme. | Education | 2001-2003 | Nolan Magnus @hotmail.com | | | | | | |

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|---|-----------------------|--|--|--|----------------|--|--|
| Bushmeat, Utilization, Data Sustainability, Data collection, Hunting, Primates, Tiger, Elephants, Butterfly lizard, Deer, Boar, White breasted water hen, Squirrels, Tre shrews, rats | Research | | | Nolan magnus, @hotmail.com | 2000-2002 | Nolan magnus, @hotmail.com | |
| Hunting, Bushmeat, Surveys, Consumption, Identification | Research | | | Nolan magnus, @hotmail.com | 2000 | Nolan magnus, @hotmail.com | |
| Breeding techniques, Game rearing, Alternatives, Training, Bushmeat, Cane rat, Porcupine, Rodents, Duker, River hog, African snails, Francolines | Research | | | Patrick Houben david Ederal, vsigab2@inter netgabon.com | 1997-2000 | | |
| Alternatives, Agriculture, Economies | Economic-Alternatives | | | info@wasmoet wildlife.org | 2001 - present | The project has had limited success in reducing poaching and the Wasmoeth Wildlife Foundation has announced a moratorium on buying the coffee in 2005. Purchase may resume in 2006 if certain conditions are fulfilled. If not, the project will be closed. During 2005, a "correction, education and enforcement" program will be put in place to establish communication networks and a team of ecoguards. | |
| Funding, Publications | Funding | | | 2003 info@wasmoet wildlife.org | | | |
| Community, Hunting, Management, Biology, Land rights | Management | | | WCS, | 1999-2007 | | |
| Hunting, Jaguars | Research | | | Dr Alan Rabinowitz, WCS, Bronx, USA | 1999-present | | |
| Bushmeat, Economics | Research | | | Dr Wilkie, DrWilkie@rcn.co | 2000-2003 | | |
| Community, Hunting, Data collection, Blue Duker, Red Duker, | Research | | | Dr Peter Howard, WCS, Phoward@wcs.org | 1994-1996 | | |
| Traditional medicine, Awareness, Law enforcement, Forensics, Education, Campaigning, Training, Monitoring, Tiger | Education | | | Dr Zhang, + 86 21 62861965 (fax), Dr Joshua Ginsberg, WCS, Bronx | 1996- present | | |
| Hunting, Ecology, Biology, Data Collection, Duker | Research | | | Dr John hart, WCS, Bronx, 001 718 364 4275 (fax) | 1978-present | | |

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|--|---|--------------|--|------------|---|
| | Dr Peter Heward, Phward@wcs.org | 2000-2002 | | Research | Bushmeat, Trade, Sources, Economics |
| | Dr Elizabeth Bennett, WCS, Sarwak, Dr John Robinson, WCS Bronx | 2000-Present | | Research | Hunting, Data collection, Awareness, legal |
| | Dr Andrew Taber, WCS Bronx | 2000 | | Research | Hunting, Trade, Consumption, Sustainability |
| | Project update in appendix, * Bronx | | | Research | |
| | Dr Rob Lee, WCS, Sulawesi | 1994-1997??? | | Research | Hunting, Trade, Population densities, Bushmeat, Legal, Data collection, Human activities, Awareness, Monitoring, Training, Barbusa, Anoa, Crested Black Magaque, Flying foxes |
| | Dr Srikosmatara, Dept Conservation Biology, Mahidol Univ, Bangkok | 1991-1992 | | Research | Trade, Bushmeat, Traditional Medicine, Pets, Trophies, Mammals, Birds, Reptiles |
| | Dr David Wilkie, Dwikie@wcs.org | 2002-2003 | | Research | Data collection, Bushmeat, Economics, Ammunition, |
| | Dr Eliz Bennett, WCS, Sarwak | 1993-1995 | | Research | Hunting, Food, Economics, Data collection, Community, Management, Primates, Hornbills, Deer, Figs |
| | Dr Mahdu Rao, WCS, Bronx | 1990-2001 | | Research | Biology, Economics, Traditional medicine, Food, Data Collection, Densties, Tigers, Deer, Bears, Otters, Rhinos |
| | Dr Richard Bodmer, Univ Kent | 1992-Present | | Research | Communities, Monitoring, Densties, Trade, Bushmeat, Management, Tapir, Primates |
| | Dr Lisa Naughton, Dr Andrew Taber, WCS, Bronx | 2000 | | Management | Hunting, Crop raiding, Sustainability, Bushmeat, Communities |
| | Dr Emma Stokes, Mbeil@compuserve.com | 1995-Present | | Research | Behaviour, Education, Research, habituation, Data collection, Training, Monitoring, Anti poaching, Gorillas, Elephants |
| | Paul & Sarah Ekan, Ekan@ssmail.net | 1996-Present | | Research | Ecology, Community, Legal, Land-use, Campaigning, Monitoring, Safari Hunting, Data collection, Educational, Awareness, Behaviour, Training, Research, Soil use, Habitat, Wildlife protection films, Mammals, Antelope |

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|---|-----------------|--------------|--|---|
| Population, Density, Foods, Research, Training, Data Collection, Logging, Chimps, Gorillas, Elephants | Research | 1998-Present | David Morgan, Bomassa@ass, mail.net | * |
| Hunting, Trade, Communities, Monitoring, Training, Densities, Biology | Research | 1991-2007 | Dr Andrew Noss, WCS Bolivia | * |
| Community, Hunting, Busineat, Data collection | Management | 2000-2003 | Dr Howard, WCS, Bronx, R.Mwinyihau | * |
| Policy, Government, Protection, Gorillas | Policy | 2002 | Stephen Sauter, org.john Delaney, ssauter@wcs, idelaney@wcs, org | |
| Campaigning, Community, Awareness, Gorillas, Hunting bans | Campaigning | 2002 | Stephen Sauter, org.john Delaney, ssauter@wcs, idelaney@wcs, org | |
| Trade, Transport | Trade | 2002 | Stephen Sauter, org.john Delaney, ssauter@wcs, idelaney@wcs, org | |
| Protection, Anti-poaching, Gorillas | Protection | 2002 | Stephen Sauter, org.john Delaney, ssauter@wcs, idelaney@wcs, org | |
| Anti-poaching, Protection | Law-enforcement | 2002 | Stephen Sauter, org.john Delaney, ssauter@wcs, idelaney@wcs, org | |
| Anti-poaching, Training, Guards, Gorillas | Law-enforcement | 2002 | Stephen Sauter, org.john Delaney, ssauter@wcs, idelaney@wcs, org | |
| Education, Community Awareness, Campaigning, Gorillas | Education | 2002 | Stephen Sauter, org.john Delaney, ssauter@wcs, idelaney@wcs, org | |
| Protection, Gorillas | Protected-Areas | 2002 | Stephen Sauter, org.john Delaney, ssauter@wcs, idelaney@wcs, org | |
| Anti-poaching, Protection | Law-enforcement | 2002 | Stephen Sauter, org.john Delaney, ssauter@wcs, idelaney@wcs, org | |

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|--|---|--------------------|---------------------|---|--|
| | Stephen Sautner, org, John Delaney, ssautner@wcs.org, Delaney@wcs.org | 2002 | Policy | Gorillas, Trade | |
| | Stephen Sautner, org, John Delaney, ssautner@wcs.org, Delaney@wcs.org | 2002 | Policy | Gorillas, Government, Campaigning, Awareness, Laws, Gorillas | |
| | Stephen Sautner, org, John Delaney, ssautner@wcs.org, Delaney@wcs.org | 2002 | Education | Awareness, Laws, Gorillas | |
| | Stephen Sautner, org, John Delaney, ssautner@wcs.org, Delaney@wcs.org | 2002 | Research | Research, Monitoring, Protection, Gorillas | |
| | Stephen Sautner, org, John Delaney, ssautner@wcs.org, Delaney@wcs.org | 2002 | Education | Community, Awareness, Education, Campaigns, Gorillas, Laws | |
| | Stephen Sautner, org, John Delaney, ssautner@wcs.org, Delaney@wcs.org | 2002 | Education | Government, Policy, Protection, Gorillas | |
| | Stephen Sautner, org, John Delaney, ssautner@wcs.org, Delaney@wcs.org | 2002 | Policy | Training, Guards, Management, Protection | |
| | Stephen Sautner, org, John Delaney, ssautner@wcs.org, Delaney@wcs.org | 2002 | Training | Regulations, Bushmeat, Hunting, Snare, Exportation, Concessions, Protection, Zoning, Communities, Education, Awareness, Ecoquads, Protein-alternatives, Research, Surveys, Monitoring | |
| | Dr Paul Eikan, * Dr Peter Howard, WCS, Bronx | 1998-2005 | Management | Community, Logging, Hunting, Trade, Management, Legal, Law enforcement, Training, Gorilla, Chimps, Elephant, Leopard, Bongo | |
| | Dr Colin Poole, * WCS, Cambodia | 2000-2001 | Management | Trade, Law enforcement, Legal, Training | |
| | Peter Stephenson PJStephenson@wfmrl.org | Jan 2004-June 2005 | Research | Communities, Monitoring, Protection, Development, Research, Ecotourism, Distribution, Density, Sustainability, Livelihoods, Awareness | |
| | Dr Howard, * Phoward@wcs.org | 1996-present | Protection, Tourism | Bushmeat, Management, Densties, Economics, Education, Data collection, Community Management | |

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|--------------------------|---|--|--|----------------------|---|
| 1994-1996 | Dr K.Ullas Karanth, WCS Borix | | | Research | Law enforcement, Hunting, Densties, Large Mammals |
| 1987-1996 | Dr Carlos Peréz, Univ East Anglia, Norwich | | | Research | Evaluation, Hunting, Densties, Comparson habitats, Primates, Ungulates, Squirrels, Rodents, Cracids, Tinaous, Turnpeters, Wood-qualis, Tortoises |
| 2000-2002 | Dr Anthony Lynam, WCS | | | Research, Management | Hunting, Trade, Law enforcement, Training, Densties, Monitoring, Anti poaching, Tiger, Wild Dogs, Aipe-wood |
| 1999-2000 | Cynthia Chin, WCS, Bronx | | | Research | Conservation Plan, Management, Hunting, Awareness, Education, Campaigning, Legal Policy |
| 1995-Present | Dr Eliz Bennett | | | Policy | Gorillas , Chimpanzees, Park, Protection, Legislation, Assessment, Management, Training, Staff, Rangers, Education, Awareness, Communities, Monitoring, |
| 1999-2001 | Paul Ekan, Ekan@ssmail. net | | | Research | Research, Hunting, Densties, Monitoring, Training, Logging, Management, |
| 1980-1985 & 1994-2004 | Dr Kim Hill, Dept Univ New Mexico | | | Research | Hunting, Monitoring, Management, Densties, Data collection, Bushmeat, Community |
| 2001-2003 | Alexis Manrakiza@wc c.govt.nz | | | Management | Education, Bushmeat, Awareness |
| 2003 - present | info@westerng orilla.org | | | Research | Research |
| 2000-Present | Wc@wildchimp s.org | | | Research | Awareness, Education, Habitat conservation, Anti poaching, Conflict reduction, Campaigning, Chimps |
| | | | | Education | Agnculture, Breeding, Protein-alternatives, Baobab, Tamahnd, Communities, Sustainability, AIDS |
| | | | | Education | Protein-Alternatives |

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|--|-------------|--|---------------|--|--|--|----------------|-----------------------|-----------------------|--|---------------------------------|---|---------------|----------------|---|--|----------------|--------------|--------------------------------------|--|-----------|----------|--|
| Trade, Governments, Information-sharing, Policy, Databases, Awareness, Media, Education, Campaigning, Collaboration, Partnerships, Fundraising, Action-planning, Decision-making, Publications, Development, Institutions, Curriculum, Teaching, Institutions, | 1999 - 2007 | Heather Eves, info@bushmeat.org Phase I completed at end of 2004, Phase II now in progress. | Collaboration | Anti poaching, Education, Consumption, Tiger Communities | Law enforcement, Training, Anti poaching, Equipment, Welfare, Education, Management, Tiger | Law enforcement, Training, Anti poaching, Equipment, Welfare, Education, Management, Tiger | 2010-Permanent | Sanjay Gubbil, a.orgl | Sanjay Gubbil, a.orgl | Anti poaching, Education, Consumption, Tiger Communities | Information, Research, Primates | Management, Forests, Private-sector, Partnerships, Code-of-conduct, Law-enforcement | Collaboration | 1997 - present | Giuseppe Topa, giopa@worldbank.org, Juerger, Blaser, blaser@worldbank.org | Management, Bushmeat, Economics, Trade, Anti poaching, Training, Curriculum, Policy Implementation, Planning | Private-Sector | 1998-present | Simon Reiberger, IUCN, Gland, Switz. | Andre Kamden* Toham, Kamden.toham@intermeigabon.com | 2000-2001 | Research | Evaluation, Creating national Parks, Database, Data collection, Logging, Mining, Human activities, Legal, Creation sanctuaries, National conferences |
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| | Andre Kamden Kamden.toham @intermegabon.com | 2000-2001 | Trade | Bushmeat, Trade, Data collection, Education, Campaigns, Law enforcement, Economics, Animals; Mandrill, Apes | |
| | Paul de Wachter, Dewachter.p@intermegabon.c | 2000 | Protected-Areas | Conservation plan, Management, Alternatives, Infrastructure, Funding | |
| | Andre Kamden Kamden.toham @intermegabon.com | 2001-2002 | Protected-Areas | Bushmeat, Trade, Economics, Population assessment, Monitoring, Management, Law Awareness, Alternatives | |
| | Andre Kamden Kamden.toham @intermegabon.com | 2001 | Training | Training, Monitoring, Butterflies, Ants, Mammals, Birds, Plants, Fish, Snails, Frogs, Fruit Files | |
| | Deirdre Smith, dsmitth@hermes.s.geog.umd.edu | 1995-2015 | Forests, Deforestation, Management, Stakeholders, Sustainability | | |
| | Dr Mike Loomis (NC Zoo) | | Research, Satellite & Radio-tracking, Elephants | | |
| | Sangha@yale.edu, du, Theresa Silla | 1997-Present | Protected-Areas | Education, Research, Training | |
| | | | Law-enforcement | Anti-poaching, Law enforcement, Equipment, Transport, | |
| | Gayr@uwmm.edu, u, Dr Gaye Reinartz | 1997- present | Protection | Data collection, Awareness, Education, Conservation plan, Census | |
| | Emmanuel de Merode | 1996-1997 | Protection | Availability of prey, Hunters, Consumption, Sales/Economics, Data collection, Park management, Military conflict, | |
| Published 2000-2001 | | | | | |

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|--|-----------------------|----------------|--|--|--|
| Research, Modeling, Birds, Fish, Primates, Population Viability, Analysts, Geese, Chameleons, Tortoises, Policy, Sustainability | Research | | | Guy Cowlishaw, Marcus Rowcliffe | |
| Protection, Management, Sustainability | Protection | 1994 - present | | | |
| Data Collection, Hunters, Population dynamics, Economics, Policies, Management, Animals, Squirrels, L.T. macaque, B. Leard macaque, D. Leard monkey, B. Intung, Gibbon | Research | 2000-Present | | Marcus Rowcliffe, Guy Cowlishaw, Janice Long | |
| Supply/demand bushmeat, Species biology, Landscape ecology, Nutrition, Market Surveys, | Research | 2001-03 | | John Fa, David MacDonald, Rajan Amin, Marcus Rowcliffe, Guy Cowlishaw, | |
| Hunters, Socio economic, Subsistence hunting, Commercial hunting | Economic-Alternatives | 2001 - present | | Noelle Kumpel, Marcus Rowcliffe, Guy Cowlishaw, E.J. Milner-Gulland, John Fa | |
| Social processes, Economic processes, Traders, Hunters, Wholesalers, Outlets, Data collection, Transport | Research | 1999- present | | Samantha Mendleson, Guy Cowlishaw, Katherine Homewood | |
| Ecological studies, Population densities, Data collection, Hunter reports with 1950's, Socioeconomic, Animals; Antelope, Primates | Research | ? | | Glyn Davies, Paul Richards | |

Acronym **Organisation**

| | |
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| AWF | African Wildlife Foundation |
| | A.K.Taylor International |
| | African Conservancy |
| ADIE | Agency for the Development of Environmental Information |
| | AIESEC-Libera |
| | Aicla University |
| | American Association of Zookeepers |
| | American Forest and Paper Association |
| | American Society of Primatologists |
| | American Zoo & Aquarium Association |
| | Andrus Family Fund |
| | Anglo Peruvian Society |
| | Animal Welfare Institute |
| | Ape Alliance |
| PAAZAB | Pan African Association of Zoological Gardens, Aquaria and Botanic Gardens |
| | Arcadia University |
| | Arcus Foundation |
| VDZ | Association of German Zoodirectors |
| | Associazione Primatologica Italiana |
| | Asociacion Primatologica Espanola |
| ATIBT | Association Technique Internationale des Bois Tropicaux |
| | Atlanta Zoo |
| ATT | Australian government |
| | Australian Primatological Society |
| | Austrian |
| | Bay Foundation |
| | BBC |
| BCTF | Bushmeat Crisis Task Force |
| | Beaver College |
| | Bell-Canada |
| | Bellerive Foundation |
| | Beneficia Foundation |
| | Berggorilla & Regenwald Direkthilfe |
| | Bernhardine Fund |
| | Beulah Land Eco-village Ltd. |
| BFF | Born Free Foundation |
| BSP | Biodiversity Support Program |
| | BioSA-Biology Students Association |
| | Biosynergy Institute |
| | Bjorn Schulte-Herbruggen |
| BMZ | Bonobo Conservation Initiative |
| | Bonobo EEP. |
| | Bonobo in situ project |
| | Boston College |
| | Brigitte Bardot Foundation |
| | Bristol Museum |
| | Bristol Zoo Gardens |
| | British Ecological Society |
| | British Knife Guild |
| | Bronx Zoo |
| | Brookfield Zoo |
| | Busch Gardens |
| | Bushmeat Awareness Group |
| | Bushmeat Crisis Action Group |
| | Bushmeat Crisis Discussion Group |
| | Calgary Zoo |
| | Cambridge Univ. |
| | Cameron |
| | Cameron Development Corporation plantation |

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| MINEF | Cameroun government Cameroun Ministry of Environment and Forests |
| CAMRAIL | Cameroon Cameroon National Railway |
| CARE | Centre for Animal Rehabilitation and Education Care & Health Program Care for the Wild |
| CARPE | Central African Regional Program for the Environment |
| CAWHFI | Central African World Heritage Forest Initiative |
| CBFP | Congo Basin Forest Partnership |
| CEEB | Concerned Environmentalists for the Enhancement of Biodiversity |
| CEEP | Center for Conservation and Behaviour – Georgia Tech |
| | Central African Republic |
| | Conservation International Centre for Applied Biodiversity Science |
| | CERCOPAN |
| | Cheyenne Mountain Zoo |
| | Chicago Zoological Society – Brookfield Zoo |
| CI | Chimpanzee Rehabilitation Trust |
| CIAD | Chiel Logistics Conservation International |
| CIRAD | Cincinnati Zoo and Botanical Garden International Centre for Agricultural Research for Developing Countries |
| CITES | City University |
| | Cleveland Metroparks Zoo |
| | Cleveland Zoo Society |
| | Cline Family |
| | CMS Foundation |
| COMIFAC | Council of Ministers for Forests of Central Africa |
| CIB | Congolaise Industrielle de Bois |
| | Congolese government |
| | Congolese institutions |
| MEFE | Congolese Ministry of Forest Economy and the Environment Conservation of Wildlife & heritage of Kodagu Conservation Society of Sierra Leone Convention on Biological Diversity Convention on Migratory Species Council of Agriculture of the Republic of China Cross River State Department of Forestry Cross River State Forestry Commission Culture Art Studio |
| CWAF | Cuttington University College Cameron Wildlife Aid Fund |
| DABAC | Développement d'Alternatives au Braconnage en Afrique Centrale Dallas Zoo |
| | Darwin Initiative |
| Defra | David Shepherd Conservation Foundation Department for the Environment, Food and Rural Affairs |
| DFID | Department for International Development |
| | Department for Nature Protection |
| DART | Dept Environment Dete Animal Rescue Trust |
| | Detroit Zoological Park |
| | Dewer Wildlife Trust |
| DFGF | Dian Fossey Gorilla Fund |
| DFW | |

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| DGEG | Projet de Développement au Gabon de l'Élevage de Gibier |
| DGIS | |
| DHL | |
| | Direct Marketing Support Ltd |
| | Discovery Channel |
| | Discovery Communications Europe |
| | Disney Wildlife Conservation Fund |
| | Disney's Animal Kingdom |
| | Dr Thompson |
| DRC | DRC Gov. |
| | DRC Ministry of Environment |
| | Deutsche Primatologische Gesellschaft |
| | Durrell Institute |
| | Durrell and Mexican governments |
| | Dutch Gov. |
| DVM | |
| DWCT | Durrell Wildlife Conservation Trust |
| | East African Wildlife Soc. |
| | East London Aquarium |
| EAZA | European Association of Zoos and Aquaria |
| ECOFAC | Eco-Portal |
| | Edith J Goode Foundation |
| | Endangered Wildlife Trust |
| | Equatorial Guinea |
| ESRC | Economic and Social Research Council |
| | European Union |
| | European Commission |
| | European Dev Fund |
| | European Union Delegation in Gabon |
| FACE | |
| FAO | Food and Agricultural Association |
| FFI | Fauna & Flora International |
| | Federation of Zoological Gardens of Great Britain & Ireland |
| | Flomo Theatre |
| | Folsom Children's Zoo and Botanical Garden |
| | Ford Foundation |
| | Forest Conservation Portal |
| FSC | Forest Stewardship Council |
| | Forest Trends |
| | Forestry and Marine Resources |
| | Forestry Development Authority |
| | France and South Africa |
| | Friends of Bonobos |
| | Friends of Lukuru |
| FRM | Forest Resource Management |
| | Fund for Animals |
| | Primate Preservation Group |
| | G8 nations |
| | Gabon |
| | Gabonese Ministry of Water and Forests |
| | Gabonese Wildlife Department |
| | GAP Project |
| GECOMSA | |
| GEF | Global Environment Facility |
| | Germany |
| | Gesamtschule Vowinkel |
| GFW | Global Forest Watch |
| | Gilman International Conservation |
| | Givskud Zoo |
| | Global Conservation Fund |
| | Gorilla Foundation |

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| | Gonilla Haven | |
| | Gov Congo | |
| | Gov. Cameroon | |
| | Gov. Netherlands | |
| | Government of France | |
| | Government of Ghana | |
| | Government of Japan | |
| | Government of Kenya | |
| | Government of Republic of Congo | |
| | Government of Switzerland | |
| | Grand Gadeh Community Servant Association | |
| | Great Ape Fund | |
| | German Technical Co-operation Service | |
| | Happy Hollow Zoo | |
| | Harvard University | |
| | Heifer International | |
| | HEVECAM rubber plantation | |
| | Houston Zoo | |
| | HSUS | |
| | Humane Society of the U.S.A. | |
| ICCN | Institut Congolais pour la Protection de la Nature (Congolese Institute for Nature Conservation) | |
| IDA | International Fund for Animal Welfare | |
| IFAW | | |
| IGAD | Gabonese Institute of Support for Development | |
| | Imperial College London | |
| | In defense of animals | |
| | In Situ Wildlife Conservation | |
| | Inc. | |
| | Innovative Resources Management | |
| | Individuals | |
| | Industrial groups | |
| | Institute Agriculture | |
| | Institute Zoology | |
| | Int group of social & medical scientists | |
| | Int Soc. For Ecosystem health | |
| | Int. Primate Protection League | |
| IFIA | InterAfrican Forest Industries Association | |
| | International governments | |
| | International Primatological Society | |
| | International Rhino Foundation | |
| | Subjects | |
| IPPL | International Primate Protection League | |
| IRAD | | |
| ITTO | International Tropical Timber Organisation | |
| IUCN | World Conservation Union | |
| JGI | Jane Goodall Institute | |
| | Japan | |
| | John Aspinall Foundation | |
| KBC | | |
| | Kenya Wildlife Service | |
| | Kenyatta University raveling Theatre Group | |
| | King Leopold III Fund for Nature Exploration and Conservation | |
| | Kumasi Ghana | |
| | Kyoto University | |
| | Land Rover | |
| | Last Great Ape Organization | |
| | Leakey Foundation | |
| | Les Amis des Animaux au Congo the Friends of Animals in Congo) | |
| | Libertan Senate Committee on the Environment | |
| | Lincoln Park Zoological Gardens | |
| | Linnean Soc. | |
| | Living Earth | |

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| Liz Claiborne & Art Ortenberg Foundation | |
| Local Business | |
| Louisville Zoological Garden | |
| LTS International | |
| Lukuru Foundation | |
| Lukuru Wildlife Research Project | |
| Lusaka Agreement Task Force | |
| Macarthur Foundation | |
| Maejo University | |
| Margo Marsh Foundation | |
| Max Planck Institute | |
| McGill Univ | |
| MCP Community Support Fund | |
| Member organizations | |
| MIKE | |
| Monitoring of Illegal Killing in Elephants | |
| MINEF | |
| Ministry of Environment and Forests | |
| Ministere de L'Economie Forestiere | |
| Ministry of Agriculture | |
| Ministry of Defense | |
| Ministry of Environment | |
| Ministry of External Relations | |
| Ministry of Forestry | |
| Ministry of Health | |
| Ministry of Primary and Secondary Education | |
| Ministry of the Environment | |
| Ministry of Water and Forests | |
| Mitchell Park Zoo | |
| Mobil | |
| Monkey Land | |
| Montecasino Bird Gardens | |
| Mount Cameroon Project | |
| Mount Cameroon Region Conservation Foundation. | |
| My Acre of Africa | |
| Mysore Centre for Ecological Research | |
| National Environmental Commission of Liberia | |
| Nat Fish & Wildlife Foundation | |
| NASA | |
| National Aeronautics and Space Administration | |
| National Park Service | |
| National Science Foundation | |
| Natural Resource management/EPIQ | |
| Natural Environment Research Council | |
| NERC | |
| Newman's Own Foundation | |
| NGO's | |
| NGS | |
| Nigerian Conservation Foundation | |
| NORAD | |
| North Carolina Zoo | |
| Norwegian Research Council (Norges Forskningsråd) | |
| Nouvelles Approches | |
| NRI | |
| NSERC | |
| NY. | |
| Oakland Zoo | |
| ODI | |
| Office Rwandais de Tourisme et des Parcs Nationaux | |
| Oklahoma City Zoo | |
| One with Nature | |
| ONFI | |
| Office National des Forêts International | |
| Otter Boxes | |
| Oxford university | |
| PAAZAB | |
| Pan African Association of Zoological Gardens | |
| Pan African Sanctuary Alliance | |
| PASA | |
| Pandillus | |

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| Peace Corps | |
| PeopleandPlanet.net | |
| Percy Slater memorial Fund | |
| Philadelphia Zoo | |
| Pittsburgh Zoo | |
| PNPQ | |
| Projet Promotion de l'Elevage d'Aulacodes | |
| Pride Zoo | |
| Primary Investigators | |
| Primate Conservation Inc. | |
| Primate Preservation Group | |
| Primate Society of Great Britain | |
| Primate Society of Japan | |
| Prince Bernhard Fund | |
| Private | |
| Private Donors | |
| private sector | |
| Pro Wildlife | |
| Prof kang ethie | |
| Project Primate Inc. & Primates Guinea | |
| Prospect Park Zoo | |
| Purdue Univ. | |
| Radio Veritas | |
| Rainforest Action Network | |
| Rainforest Foundation | |
| Real Networks | |
| Res & Dev. | |
| Rettet den Regenwald | |
| RG5 | |
| Richard and Rhoda Goldman Fund | |
| Roger Williams Park Zoo | |
| Rouquier-Gabon | |
| Royal Rotterdam Zoo & Botanical gardens | |
| Royal Thai Forestry Dept. | |
| Royal Zoological Society of Antwerp | |
| Rural village sites | |
| SABC | |
| SAED | |
| SAMFU | |
| San Antonio Zoological Gardens and Aquarium | |
| Sarawak Forest Dept | |
| Save the Species Foundation | |
| Save The Tiger Fund | |
| Scientific and Cultural Organization | |
| Sedgwick County Zoo | |
| Shared Earth Foundation | |
| Sir Sandford Fleming College | |
| Sky Calypso Society | |
| Smithsonian Institute | |
| SNV | |
| Societe Francophone de Primatologie | |
| Society for the Conservation of Nature of Liberia | |
| Society of American Foresters | |
| La Societe d'Exploitation du Parc de la Lekédi | |
| Solcomhouse | |
| Species Survival Network | |
| Stuttgart Zoo | |
| Sudan Cons. Soc | |
| Summerlee Foundation | |
| Swedish Society for Nature Conservation | |
| Talking Drum Studio | |
| Tropical Forest Forum | |
| TFF | |
| SODEPAL | |

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| IGCP | The environment ministries of Cameroon and Nigeria The Institute for Tropical Forest Conservation International Gorilla Conservation Programme The Jazz Scene The Little Rock Zoo The Orangutan Foundation UN Foundation Toronto Zoo |
| TRAFFIC | Transport & Regions Tulsa Zoo Tusk Trust Tropical Wood Environment TVE |
| TWE | U.S. Fish & Wildlife Service U.S. National Science Foundation University College London Uganda Wildlife Authority University of Liberia UK UK Government UK Gov. Int. Dev Fund (Cameroon) |
| UMN | UN Global Compact Group United Nations Development Programme United Nations Environment Program GASP |
| UNESCO | Universidad Nacional de Guinea Ecuatorial United States Department of Agriculture Forest Service Univ Alberta Univ Edinburgh Univ Minnesota Univ New Mexico Univ of Kent Univ of Kent Univ. Science & Tech Univ. Toronto University of Antwerp University of Maryland University of Virginia University of Wageningen University of Yaoundé |
| UNOPS | US Embassy USA USA Department of State USA government |
| USAID | USAID-CARPE USFSIP |
| UWEC | Uganda Wildlife Education Center Trust Veterinaire sans Frontiere Vodafone |
| WCS | Wasmoeth Wildlife Foundation Wildlife Conservation Society Wellington Zoo |
| WCF | WesternGorilla.org Wild Chimpanzee Foundation Wildaid Wildlife & Environmental Society of Malawi Wildlife First Wildlife Protectors Fund |

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| Wisconsin Primate Research Center (University of Wisconsin) | |
| World Bank | WRI |
| World Resources Institute | WSPA |
| World Society for the Protection of Animals (WSPA) | WWF |
| World Wildlife Fund | |
| Yale Univ | |
| Yaounde Wildlife Sanctuary | |
| Youth for Conservation | |
| Zambia's Northern Province Honorary Wildlife Police Officers Unit | |
| Zambian Wildlife Authority | |
| Zeiss | |
| Zoo New England | |
| Zoological Society of Milwaukee | |
| Zoological Board of New South Wales | |
| Zoological Society of Philadelphia | |
| Zoological Society of San Diego | |
| Zoological Society of London | ZSL |

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UK Department for International Development (DFID)

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| 4 | Lincoln Park Zoo |
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| 2 | Kenya Wildlife Ser. |
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| 23 | Jane Goodall Inst., Jane Goodall Inst., The Jane Goodall Institute |
| 13 | IUCN Conservation Breeding Specialist Group, IUCN Conservation Breeding Specialist |
| 3 | Int. Tropical Timber Org |
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| 6 | IPPL-UK |
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| 3 | Interrfrican forest industries assoc. |
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| 2 | Imperial Coll. London |
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| 17 | IFAW-EU, Int Fund Animal Welfare |
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| 7 | Institut Congolaise pou la Conservation de la Nature (ICCN), Institute Congolaise pour |
| 4 | Humane Soc. Of USA, Humane Society of the United States, Humane Society of the U |
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| 9 | GTZ (German Technical Co-operation) |
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| 2 | Governments of Republic of Congo |
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| Talking Drums Studios | 2 |
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| St Louis Zoo | 2 |
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| World Resources Institute (WRI) | 2 |
| WWF-Liberta, WWF-UK, WWF-US, WWF-USA | 42 |
| Yale Univ. | 1 |
| Youth for Conservation | 2 |
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| Zoo soc Milwaukee | 4 |
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