UK BUSHMEAT WORKING GROUP

Meeting report: bushmeat indicators, databases and monitoring

Prince Albert Suite, Zoological Society of London, 18th October 2013, 14:00-17:00

AGENDA

Chair: Dr Noëlle Kümpel

1400 - 1415	Noëlle Kümpel, Zoological Society of London (ZSL) *Welcome remarks and introductions*
1415 - 1435	Stéphane Ringuet, TRAFFIC International *SYVBAC: development of a Central African bushmeat monitoring system*
1435 - 1455	Gemma Taylor, University of Oxford / ZSL *The Central and West Africa Bushmeat Database*
1455 - 1505	Doug Cress, UNEP Great Apes Survival Partnership (GRASP; by skype) *A new Great Apes Illegal Trade Database*
1505 - 1520	Tea and coffee
1520 - 1530	Marcus Rowcliffe, ZSL Institute of Zoology *What makes a good indicator?*
1530 - 1615	Working groups to discuss SYVBAC indicators given data availability, ease of collection, cost, robustness, etc.
1615 - 1645	Report back and plenary discussion
1645 - 1655	Noëlle Kümpel, ZSL *Summary, next steps and ideas for future meetings*
1655 - 1700	AOB (and move to pub for further discussion)

PARTICIPANTS

Attendees

Noëlle Kümpel	Zoological Society of London (ZSL)
Stéphane Ringuet	TRAFFIC International
Doug Cress (via skype)	Great Apes Survival Partnership (GRASP)
Gemma Taylor	University of Oxford
Marcus Rowcliffe	ZSL Institute of Zoology
Jorn Scharlemann	University of Sussex
Dan Ingram	University of Sussex
Ian Watson	Watson Fish Consulting
David Brown	Overseas Development Institute (ODI)
Neil Maddison	Bristol Conservation and Science Foundation
Lios McGilchrist	Living Earth Foundation
Kate Abernethy	University of Stirling
Gill Conquest	University College London (UCL)
Ashley Vosper	Wildlife Conservation Society (WCS)
Sylvia Wicander	University of Oxford
James McNamara	ZSL Institute of Zoology / Imperial College London
Natalie Swan	University of Lancaster
Patricia Cremona	UNEP World Conservation Monitoring Centre
Alex Quinn	ZSL
Juliet Wright	ZSL Institute of Zoology / Imperial College London
Mark Abrahams	University of East Anglia

Apologies

	Cardiff University
John Fa	Durrell Wildlife Conservation Trust
Mike Riddell	Bioclimate
Jerome Lewis	UCL
Matthew Hatchwell	WCS
Simon Mickleburgh	Rufford Foundation
Mark Baxter	Defra
Luke Parry	University of Lancaster
Katherine Homewood	UCL
Eric Blencowe	Defra
E.J. Milner-Gulland	Imperial College London
John Hart	TL2 Project
Karen Hayson	Bat Conservation Trust
Robert Nasi	Centre for International Forestry Research (CIFOR)
Mike Bruford	Cardiff University
David Macdonald	University of Oxford
Guy Cowlishaw	ZSL Institute of Zoology
Ana Nuno	Imperial College London
Paul De Ornellas	ZSL
Chris Ransom	ZSL
Dan Stiles	IUCN SSC African Elephant Specialist Group
Helga Rainer	Arcus Foundation
Edgar Kaeslin	Food and Agriculture Organization of the United Nations (FAO)
Dilys Roe	International Institute of Environment and Development (IIED)
Ruth Malleson	UCL
Adam Phillipson	Arcus Foundation
Edmund Kingcott	Ex-Food Standards Agency

MINUTES

The Chair of the group, Noelle Kumpel of ZSL, outlined the purpose of the Defra-funded UK Bushmeat Working Group (UKBWG) as a forum for discussion on bushmeat-related research and policy amongst government, industry, NGOs and academia, particularly, but not exclusively, in relation to the UK. She then ran through the agenda, highlighting the focus on bushmeat indicators and monitoring systems, and allowing everyone in the room to introduce themselves, before welcoming the first speaker to present.

SESSION ONE: PRESENTATIONS

Stéphane Ringuet, TRAFFIC International
SYVBAC: development of a Central African Bushmeat Monitoring System

Stéphane updated the group on the development of SYVBAC - *Système de suivi de la filière Viande de Brousse en Afrique Centrale* (Central African Bushmeat Monitoring System). The available information on bushmeat harvest and trade in Central Africa is fragmented and uncoordinated between sites, and one of the recommendations of the CBD Liaison Group on Bushmeat was that standardised methods to assess and monitor the status of wildlife populations should be developed and implemented. He emphasised the need for an appropriate monitoring system of bushmeat harvest and trade and argued that this should be developed based on an integration of traditional, indigenous and scientific knowledge and implemented at national level, while allowing for comparability of bushmeat harvest and trade at the regional level.

The general aim of SYVBAC is to generate the information needed to support the development of policies and strategies that aim to bring the bushmeat trade to sustainable levels, with specific objectives to monitor:

- the levels and the evolution of bushmeat use and trade
- the factors that influence bushmeat trade and use
- the impacts of this trade on endemic/rare/protected species
- the importance of bushmeat to national economies, poverty reduction and to the nutrition and health of human populations.

Stéphane explained the participatory process in which SYVBAC has been developed to date:

- Consolidation of the institutional framework – with Bushmeat Focal Points and Ministries, COMIFAC (Central African Forest Commission), FORAF (African Forests Observatory project) and OFAC (*Observatoire des Forets d'Afrique Centrale*)
- Technical workshops (Douala, December 2008, Douala, February 2010, Libreville, June 2010)

- Involvement of working groups – involving the private sector (in particular the forestry sector), selecting sites at national level (via the focal points) and developing indicators
- Communication/advocacy – with GTBAC/COMIFAC, IUFRO, SBSTTA-CBD, CITES, CMS, GRASP

He explained that SYVBAC will work by centralising all available information on bushmeat harvest and trade in six of the COMIFAC countries (Cameroon, Central African Republic, DRC, Equatorial Guinea, Gabon and the Republic of Congo). The long term sustainability of SYVBAC will be ensured by OFAC acting as institutional home, with TRAFFIC providing initial technical support. SYVBAC will build partnerships with national bushmeat focal points that will be in charge of collecting data at the national level. SYVBAC will also build partnerships with NGOs, the private sector, local wildlife committees and universities or other scientific and technical institutes to collect data at the site level (in six types of sites: villages, community hunting zones, sport hunting areas, logging/mining concessions, protected areas and buffer zones). The system will be adaptive, with data collected opportunistically and not all indicators being collected at each site. Information reported via SYVBAC will maintain its original source citation and/or metadata. Validation of reported data will occur on a regular schedule, through designated national validation committees set up by OFAC in each of the participating countries.

SYVBAC will collect data in pre-selected sites to contribute to a list of pre-defined indicators (80 monitoring sites – of which 34 have been identified from a literature review as already having relevant information on certain indicators - have been proposed by national focal points for the collection of information to inform the choice of 65 identified indicators). These indicators cover all levels of the commodity chain from hunters to final consumers (see Annex at end) and the data collected will be synthesised and regularly included in the State of the Forest for the Congo Basin report published by OFAC.

Stéphane noted that a number of lessons had been learnt:

- much data is available but not always accessible or digestable to policy-makers and is usually in English [for a mainly French/Spanish-speaking region]
- the need to integrate relevant stakeholders via a participatory process to develop SYVBAC
- the need for systematic time-series monitoring
- the lack of regional consolidation of information reduces the visibility and importance of the bushmeat issue at both national and regional levels
- the need to describe the complex bushmeat issue via simple indicators
- the need for explanatory notes for the current draft list of indicators, as their exact formulation or method or measurement is otherwise open to interpretation
- the need to complete the list of sites (e.g. DRC and Equatorial Guinea)
- the need for qualified and dedicated staff (the process of developing SYVBAC has been held up as a result)
- the need to involve national bushmeat focal points, COMIFAC and the private sector from the outset
- the importance of integrating SYVBAC into OFAC for legitimacy
- the importance of learning lessons from the development of OFAC
- the need for long-term vision and implication of multiple donors (and at first Central African countries themselves)
- the need for international support and coordination (given the cross-border and international nature of the trade) and strong, strategic partnerships at institutional or technical levels.

Stéphane noted that at the end of this development phase, the following has been achieved: (1) buy-in of national/regional actors, (2) institutional linkages/support of COMIFAC, (3) validation of a structural and functioning model and (4) interest from the international community. During the next, operational phase, TRAFFIC plans to assure the implementation and coordination of the operational structure for SYVBAC to function with the OFAC, test SYVBAC in pilot sites and generate and communicate the necessary information to guide management decisions on sustainable use of bushmeat.

Stéphane closed by thanks AFD, BMZ, WWF and IUCN for support for SYVBAC and saying that TRAFFIC was very keen to get input from scientific experts on which indicators to use for the database.

Neil Maddison asked how it was suggested that NGOs engage in the process. **Stéphane** replied that they had a role in validation of the indicators at a scientific level [the indicators have not yet been tested] and encouraged anyone with relevant expertise to get in touch with feedback. He said that it is important to make sure scientific institutions are involved and good ideas are shared.

Gemma Taylor, Oxford University/ZSL
The Central and West Africa Bushmeat Database

Gemma described the structure and content of the database which was first created in June 2012 as part of her MSc thesis at Oxford University with Dr Lauren Coad and in collaboration with Dr Jorn Scharlemann at UNEP-World Conservation Monitoring Centre (now at Sussex University) and with subsequent support from ZSL. The current database now holds data of bushmeat offtake, consumption and sales from 268 sites and 11 countries across West and Central Africa, from 67 publications collected via a quantitative literature search of published and grey literature and emails to bushmeat researchers via a snowball technique. For data to be included they had to consist of a quantitative measure of bushmeat offtake, consumption and/or market sales (carcasses or biomass), be collected via non-biased data collection methods and be at species level and not grouped at a higher taxon level (e.g. 'ungulates').

Gemma then described the database structure. Created in Microsoft Access, it contains four main, linked data tables, entitled 'Reference', 'Site', 'Sample' and 'Bushmeat'. 'Reference' refers to the publication source of the data (i.e. peer reviewed paper/grey literature/unpublished raw dataset) and holds publication details (e.g. first author, year of publication and the type of publication). The 'Site' table refers to the geographical location where the data was collected and holds information on the site location (e.g. geographic coordinates, country, settlement type, population size). The 'Sample' table records the data collection period, site and data type as well as the sampling dates of the data type (consumption/market/offtake) and the sampling methods and effort. The 'Bushmeat' table refers to the species hunted, sold or consumed and holds data on the number or biomass of each species recorded for each sample. It links to the 'Species Lookup' table, which provides morphological and ecological information on each species.

Gemma explained that data were categorised as one of three different data types: 'Market', 'Consumption' and 'Offtake' for data collected on the number/biomass of each species sold at a market, consumed by a household or caught by a hunter or household, respectively.

The initial descriptive results were presented: The majority of sites (79%) are in Central Africa, and the majority of studies which have collected quantitative data on bushmeat have been market studies (57%), followed by offtake (25%) and finally consumption studies (18%). A concentration of sites exists around the Cross-Sanaga region of Nigeria and Cameroon, where market data were collected at 86 sites by Fa *et al*. (2006). In West Africa consumption data has been collected at only two sites (both in Liberia). Although the first samples were collected in 1981, the majority of samples were collected between 2001 and 2011. The ratio of ungulates to rodents was reversed between West and Central Africa, with a higher proportion of ungulates found in both market and offtake in Central Africa.

The purpose of these initial descriptive statistics is to synthesise what we already know about consumption, offtake and sales of bushmeat across the region in order to glean a larger-scale picture of the situation at national and regional level. However this also highlights geographical and research gaps; mainly there is a paucity of studies from West Africa, and a paucity of consumption studies from both regions. Another key point that became apparent is the lack of time series data (available in only 42 sites), which is crucial if we are to monitor changes in bushmeat use over time.

Gemma ended by summarising the next steps for the database: identification of further datasets, regional analysis of the predictors of bushmeat offtake, consumption and market sales, possible linkages with SYVBAC and identification of ongoing funding, an institutional home and access to wider audience. Finally, she thanked the very long list of data providers, and the Oxford Martin School and John Fell Fund, Oxford University, CARPE (Central African Regional Program for the Environment) and ZSL for funding the development of the database.

Ian Watson asked how biases in sampling effort (with regard to effort, method, focus of research, etc.) are accounted for in the database. **Gemma** responded that it was highlighted in the database which studies are suitable for consumption analysis, species composition analysis and so on, meaning that when queries are run on the database only relevant studies are included in the analysis.

Neil Maddison suggested distributing the fields in the database to researchers so that they know what data to collect. **Gemma** agreed that this would be a good idea, as at present researchers often did not report important information such as what percentage of total hunters in an area were surveyed.

Lios McGilchrist asked whether the database would be made available for others to use. **Gemma** replied that this is indeed the plan, with the next step being a decision on the best place to house the database and agreement over who should maintain it.

Doug Cress, UNEP Great Ape Survival Partnership (GRASP; via Skype)
*A new Great Apes Illegal Trade Database*

Doug reported that the United Nations Environment Programme (UNEP) Great Apes Survival Partnership (GRASP) is developing a Great Apes Illegal Trade Database to help monitor the illicit traffic in chimpanzees, gorillas, orangutans and bonobos and support law enforcement and conservation efforts. The database is being developed in partnership with the UNEP World

Conservation Monitoring Centre (WCMC) and GRASP partners, which include range states, wildlife authorities, conservation organisations, UN agencies and research institutions. It will be launched next month at the Interpol-UNEP International Environmental Compliance and Enforcement Conference at UNEP headquarters in Nairobi, Kenya, and is planned to be operational by the first quarter of 2014. The information in many databases is driven by what a country chooses to report, meaning that information collected can be skewed. The GRASP database will however contain information from all 90 GRASP partners including NGOs as well as government.

Neil Maddison asked what data should be collected for the database. **Doug** answered that arrival rates of confiscated apes at sanctuaries are one possible measure, along with information on where they came from and whether there was there an arrest. He added that this data needs to be verifiable.


Marcus Rowcliffe, ZSL Institute of Zoology
What makes a good indicator?

Marcus explained that it helps to think about why indicators are useful, since different uses may prioritise different attributes. He noted that indicators are important for three reasons: (1) to raise awareness and will to galvanise action among managers, policy-makers and the public, (2) to determine intervention success and (3) to inform intervention choices by predicting what interventions are most likely to work in the future. These uses of indicators require that there is a strong process-based understanding of causal links between intervention, system and indicator, as captured in the diagram below.
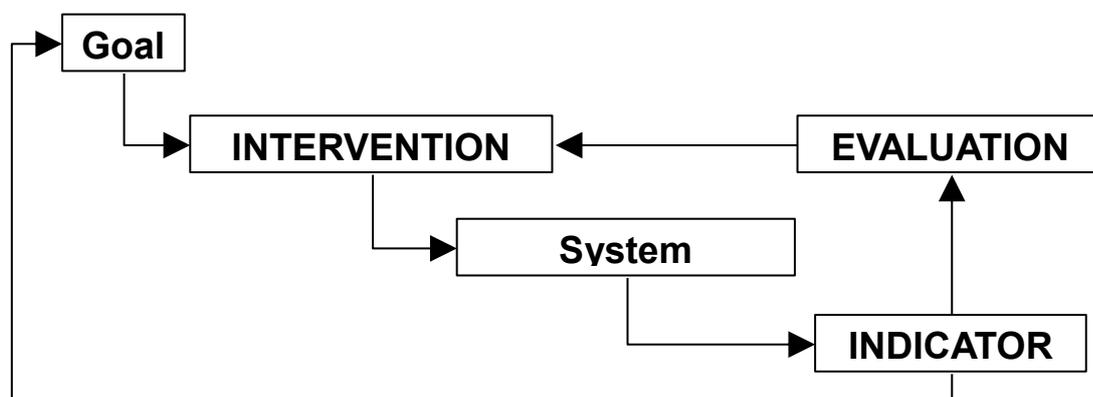
He noted that understanding (or being clear about where we don't understand) causal links requires a clear system model and suggested that the Driver-Pressure-State-Response (DPSR) framework is useful for this (see below). Indicators need to be clear about which part of the system they are indicating. The links between boxes are easily conceptualised as causal, but we need to be sure that indicators are measuring things that really do have the causal effects we think they do. An indicator that turns out to bear no relation to the underlying process is at best useless, at worst actively misleading. **Marcus** noted that clear causal links are arguably easiest to draw between pressure and

state; it is much more difficult to know what's going on with response-pressure/driver linkages, although important to improve our understanding of these.
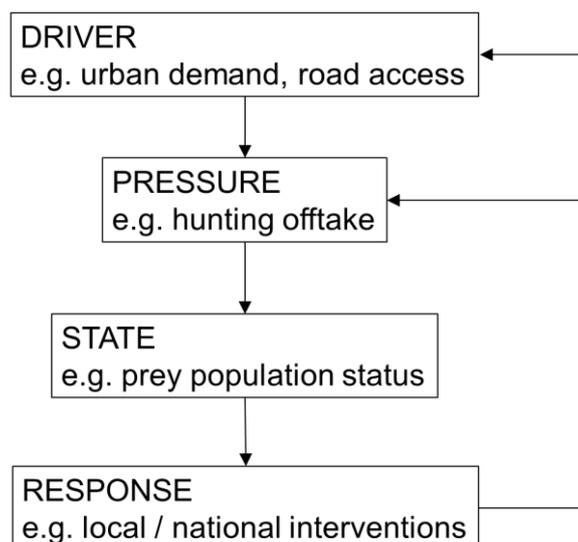
Marcus suggested the key points that make a good indictor are:

- Unambiguous signals: the indicator (or underlying measure it indirectly indicates) should have a clear meaning in terms of how the system is changing, with clear implications for the overall policy/management goal. This requires us to have the clear process model above, setting out the important causal links.
- Learning potential: learning about the system is not a good justification for monitoring indicators in itself, but where there are critical gaps that limit understanding of how interventions are likely to play out, indicators that inform critical causal links are desirable.
- Direct relationship: usually we can't measure the things we want to directly or comprehensively; in this case, we need indicators that co-vary reliably and sensitively with what we really want to know. Indicators are less good if they are affected by other less relevant factors.
- Good precision: therefore capable of measuring change confidently.
- Achievable, affordable: unattainable indicators are obviously useless; in principle value should exceed cost.
- Rapidly reportable: indicators that are slow to emerge have limited value to decision-makers.
- Scalability: interventions can take place locally, nationally, regionally or globally; indicators that can work at all these scales are desirable.
- Clear meaning: decision makers are more likely to engage with and respond to indicators that they "get". Additional considerations may be the ease of using the indicator to create press coverage and raise awareness. Indicators that capture the imagination are more likely to influence wider goals and help set the policy agenda.

He summarised these as three questions: "Does it mean anything? Can you do it? Is it easily communicable?"

Marcus then commented that in a complex system such as for bushmeat, no one indicator is usually adequate. Multiple indicators can give a more complete picture, and it is possible to aggregate them into a single index, but this requires common units and a robust system model. He advised that for development of appropriate bushmeat indicators, we need to identify a limited set of indicators

which are most promising in terms of meaningfulness and achievability, and improve gaps in process understanding.

David Brown remarked that we need indicators that don't have behavioural implications, to which **Marcus** replied that this can actually be a good thing, giving positive feedback, though admitted that this can sometimes lead to confusion. **Noelle** commented that if you are looking at the whole system then you should account for change in your study. **David** added that usually a behaviour change reversed as soon as funding stopped.

Ian Watson stated that definitions need to be clear – for example, what is a hunter? Is there any way with bushmeat to infer the number of animals from pieces of meat? **Marcus** noted that this was difficult. **Natalie Swan** questioned whether indicators could really be scaled up to a landscape level. **Marcus** replied that in this context the key thing was to get something that worked in Central Africa, adding that scalability is desirable but not essential. **Ashley Vosper** said that an indicator that would work for all of Central Africa was probably not possible given different hunting styles across the continent. **Marcus** agreed and reiterated that scalability is desirable rather than essential.

SESSION 2: WORKING GROUPS

The attendees split into four working groups and each was given one category of the Driver-Pressure-State-Response (DPSR) framework of SYVBAC indicators, **as detailed in the Annex below,** to evaluate. Note that 'Drivers' are termed 'Context' in the Annex/under SYVBAC. Unfortunately discussion time in the event was limited to under 30 minutes, after which each group then briefly reported back in plenary. Some points arising from participants during the discussion were:

- **Kate Abernethy**, reporting for the Pressure indicators group and also present at the SYVBAC 2010 workshop, said that we had learnt a lot since then. Drivers must exert pressure – i.e. there needs to be a causal link between the indicators. We can identify tipping points now – e.g. what makes hunters hunt or not.
    - With respect to the *number of hunters* indicator, **Kate** noted that hunter impacts can be very skewed, with 10% of hunters often responsible for >80% of offtake, which will affect any indicator using number of hunters.
    - Revisiting areas is important, and **Kate** noted that this would be particularly interesting in Equatorial Guinea given the rapid changes there, as well as Congo Brazzaville. Tracking indicators will help inform us how strategies are working – and test the impacts of changes in drivers – this will inform the efficacy of alternative livelihood strategies, infrastructure development etc. and whether there is a change in behaviour over time. Relevant ministries need to be involved here.
- **James McNamara,** reporting for the State indicators group, made some comments on specific indicators:
    - *Annual revenues for the local communities generated by sport hunting* – this was thought to not apply to many sites and to not be very relevant
    - *Revenue generated by the selling of game per vendor and per year* may be more static and less informative than *Revenue generated by the hunting per hunter and per year.* These may not reflect changes in abundance.
- Other comments included:

- o The change in wealth of a population may be a good indicator in repeat surveys.
- o There is a risk of getting carried away with indicators and not giving enough focus to interventions.
- o Explanatory notes are needed with indicators to ensure there is no confusion over what they mean.
- o **David Brown** noted that this was an interesting long list but that we have been talking for 30 years about this. During discussions on monitoring and evaluation in agriculture in the 1980s resulted in cutting down the list of indicators to remove those that have multiple causes and focus instead on interventions as the only clear relationship is between intervention and impact via a logframe approach. He suggested it would be worth revisiting the literature on this and reconsidering what is being measured here.

Some general suggestions for possible new indicators or tweaks to/confirmation of current indicators included:

- Some measure of human population's nutritional status?
- A measure of zoonoses – a shift to smaller species results in more disease
- Species composition in markets
- Relative price of bushmeat compared to inflation and other proteins: an increase relative to inflation may reflect decreased supply or increased demand
- A measure of species fecundity (suggested by **Neil Maddison**); **Noelle** noted that the indicator of changes in average Rmax (a species' maximum rate of reproduction) of a market/offtake sample suggested at the 2010 workshop had been removed, but reiterated that while Rmax per se as a term was not very comprehensible to the public, it was a relatively accurate, easy to interpret and simple State indicator.

Stéphane responded by agreeing that there needs to be a clear definition of each word in an indicator, that explanatory notes are needed, and that the system should be adaptive. He expressed interest in taking advantage of experts working in other areas, and stated that he would like to send out the English version of the indicators (which had only been translated and provided in hard copy for the UKBWG meeting) to the group in order to get further, more considered feedback.

As time was running short for further discussion, **Noelle** thanked the speakers and participants for a stimulating discussion, encouraged follow-up comments by email and welcomed ideas for the next UKBWG meeting. She drew attention to the flyers detailing a new collaborative project carrying out a systematic review of alternative livelihoods and conservation and encouraged everyone to send relevant information to the contacts therein and pass on the message[1]. She gratefully recognised the support of Defra for the UKBWG, wrapped up the meeting and thanked everyone for coming.

Many thanks to all who attended

---

[1] A call for contributions in the form or data or projects was sent out to UKBWG members and distributed at the meeting; the project flyer can be downloaded here: http://pubs.iied.org/pdfs/G03697.pdf

ANNEX – CURRENT LIST OF SYVBAC INDICATORS

CONTEXT INDICATORS	
Governance	Number of Minutes linked to hunting/trade/transport per inhabitant
	Number of national control agents for wild fauna/ hectare of forest
	Existence of laws regulating bush meat trade
	Existence of bylaws clarifying the minimal requirements in the taking into account of fauna in the forestry concessions
	Existence of local hunting management committee
	Presence of representatives of all the local population ethnical groups (Pygmies, Bantus…) in the hunting management committees
	Percentage of land officially managed by local communities
	Percentage of land officially managed by the State
	Percentage of land officially managed by the private sector (forestry concessions, hunting guides…)
	Index of political instability (e.g. Viewswire)
	Index of corruption (e.g. Transparency International)
Economic	Price / kg of fresh meat of blue duiker (*Cephalophus monticola*) compared to the most consumed alternative fresh proteins
	Price of the kilo of the most available protein form (adjusted to inflation and the minimum salary)
	Monetary revenues per household (and per year?)
	GDP per habitant
Social and cultural	Average human population density in forestry zones
	List of the three first types/species of protein preferred by the consumers
	Percentage of the urban population
Ecological	Index of the forestry fragmentation
	Number of hectares of forest
	Number of hectares of crop on stubble-burning (fallow, secondary forests, fields)
	Number of hectares of permanent crops
	Number of kilometres of roads per hectare of forest
	Number of hectares FSC forests
	Number of hectares of protected areas
	Number of hectares of production forests

PRESSURE INDICATORS	
Hunting	Number of hunters
	Percentage of carcasses having being caught with traps per year
	Percentage of carcasses having been hunted with guns per year
Pressure - markets	Percentage of carcasses sold smoked-dried per market and per year
	Average number of vendors (of bush meat) per market and per year
Pressure - consumption	% of the revenue/household/year allocated to the purchase of bush meat
	Proportion of bush meat dishes consumed per household and per day

STATE INDICATORS	
State - human lifestyles	Proportion of dishes containing animal proteins(fish, meat, caterpillars, snails…) per household
	Revenue generated by the selling of game per vendor and per year
	Revenue generated by the hunting per hunter and per year
	Annual revenues for the local communities generated by sport hunting
	Number of human contagion cases linked to zoonosis of wild origin
State - fauna	Proportion of animals in categories A, B and C on the stalls in the markets per year
	Number of carcasses of the X species (to be given) in the market per year
	Average weight of the hunting game (all species) per year(calculated by adding le weight of all the carcasses divided by the total number of carcasses)
	Number of captures per unit of effort (CPUE)
	Index of abundance of the species X (to be given) in the given site (ind/km)

RESPONSE INDICATORS	
Management	Presence of a fauna inventory database
	Presence of a follow up system of the impacts (direct or indirect) of forestry/mining exploitation on fauna
	Presence of a follow up protocol on the long run of completely and partially protected fauna
	Presence of clauses concerning fauna in the policies and procedures (règlement intérieur)
	Presence of a procedure manual for the taking into account of fauna
	Number of operational community management hunting zones per country
	Presence/absence of a national "bushmeat" strategy
Protein alternatives	National production of farmed meat (in tons): pork (FAO stat)
	National production of farmed meat (in tons): beef (FAO stat)
	National production of farmed meat (in tons): chicken (FAO stat)
	National production of farmed meat (in tons): ovine et goats (FAO stat)
Communication, awareness raising and training	Number of intergovernmental meetings on the "bush meat" problematic
	Presence of formal multi-actor (private sector, government, local communities and NGOs) partnerships (contract, MoU) for the management of wildlife and hunting
	Presence of functional platforms through participatory management and multi actors
	Percentage of employees having been warned by the rules and laws regarding hunting, selling and transport of game through various and adapted outreach methods (meetings, documents...)
	When a procedure manual on fauna exists, percentage of workers having been trained to enforce the manual
	Average number of general public communications (radio, TV, press) per month on the illegal hunting/trade of bush meat, carried out by the governmental institutions
Control	Existence of a seizure database (species, machine, location)
	Presence of a regular monitoring programme on the implementation of the …. policies and procedures (règlement intérieur)
	Number of investigations, per year, leading to seizures and prosecutions (with sanctions) for illegal hunting/trade of bushmeat
	Number of official reports of offenses to the policies and procedures (règlement intérieur)