Assessment of the people-predator conflict through thematic PRA in the surroundings of Waza National Park, Cameroon

2

H. Bauer and S.Kari

Introduction

Exploratory PRA (participatory rapid appraisal) is generally used to get an overview of the way of life of community members, a qualitative assessment of their production methods, a descriptive assessment of their history and culture, and an introductory dialogue on problems etc. A conservation and development project organised a series of these exploratory PRA's in communities living close to Waza National Park (Waza NP), Cameroon. Scholte *et al.* (1999a) reported on these PRA's and on the specificity of PRA in a situation of conflict between park management and surrounding communities. The authors of this article participated in most of the PRA's in key communities and had separate thematic sessions in additional communities with a specific objective: to assess the conflict between livestock and wild predators. This article presents the results and discusses the usefulness of thematic PRA.

The area

Waza NP is situated in the Far North Province of Cameroon, with a Soudano-Sahelian climate and vegetation. Temperatures range from 15ºC (January) to 48ºC (April), rainfall is irregular between years, with an annual mean of 700 mm in one rainy season from June to October. Half the park is part of an 8000 km^2 floodplain ecosystem that retains water until December; the other half is on higher sandy soils. Waza NP is a biosphere reserve of approximately 1600 km^2.

Waza NP is one of the most valued parks of West and Central Africa, with large populations of elephants (*Loxodonta africana*), various species of antelopes and monkeys and an extremely diverse avifauna (Tchamba & Elkan, 1996; Scholte *et al.,* 1999b). There are populations of lion (*Panthera leo*) and both spotted and striped hyena (*Crocuta crocuta* and *Hyaena hyaena*, respectively). Ngog Nje (1986) and unpublished data of the park warden and the authors indicate population estimates between 25 and 100 lions and between 100 and 800 hyenas. Reliable data of counts using appropriate methods is not available. There are populations of unknown size of smaller predators, such as the common jackal (*Canis aureus*), honey badger (*Mellivora capensis*), small spotted genet (*Genetta genetta*), civet (*Viverra civetta*), serval (*Leptailurus serval*), caracal (*Caracal caracal*), pale fox (*Vulpes pallida*) and various species of mongoose (family Herpestinae).

Several ethnic groups use the area around Waza NP. Among the pastoralists the Fulbé are predominant, followed by Arab Choa. Both can be divided into three groups: resident, transhumant and nomadic. Residents are found mainly in the south of the research area; the number of animals they keep in the vicinity of the village during the dry season is limited by water and pasture availability, the rest is sent to the floodplain. Transhumants come to the area with their herds during the dry season. Their villages can be anywhere in the province, but mostly in the area south of Maroua. Nomads do not have a permanent base; they move around following more or less the same pattern of movement as the transhumants. The term 'settlement' is used instead of 'village' throughout this article to express the inclusion of nomads' camps. Often ethnic groups in the floodplain, such as the Kotoko, are mainly involved in fisheries, or, like the Mousgoum, are involved in agriculture, fisheries and small-scale animal husbandry.

The management plan for Waza NP and surrounding areas takes into account the results of the PRA and proposes an evolution towards a co-management approach, in an attempt to integrate the interests of the park and the population (Bauer, 1999; Scholte *et al*., 1996).

Methods

The methods used for the exploratory PRA were described by Scholte *et al*. (1999a). The tools included historical diagramming, participatory mapping, transect walks, semi-structured interviews and participatory problem analysis. During these sessions and during separately organised thematic sessions, the authors had focused on the problem of stock raiding by wild carnivores. If the problem came up during the plenary sessions it was discussed in little detail in order not to introduce an external bias. Details were later discussed with those that had appeared to be particularly involved. Additional thematic PRA were organised in a few settlements that were not visited by the team for regular PRA.

Specific tools for the thematic PRA were designed and used. Pictures of predators were photocopied from a field guide and used for visual identification and to discuss differences between sex and age classes of the species. People were asked to draw footprints in the sand and to

imitate animal sounds. Possible variations in sex, age and behaviour of the animal were also discussed. If it appeared, from these tools, that people had detailed ecological knowledge, discussions continued on predator diet, reproduction, hunting strategy etc. In some cases, incidents were 'reconstructed' as a play, with a particular focus on environmental factors of importance during various stages of stock raiding.

Participatory mapping on a supra settlement territory scale was used by the people to show the extent of the people-predator conflict and was used to discuss links between predator distribution, habitat features and human activity. In each settlement, informants were asked to estimate the loss of livestock due to predation. Interviews with key informants such as the park warden gave additional information. Sometimes information was gathered in the surroundings, at markets or from passing nomadic shepherds.

Discussions were held in the local language; the first author was assisted by an interpreter (second author) and had a list of the most relevant words in the four most common local languages.

Results

Local ecological knowledge

The presence of predators in a given area could easily be assessed with the use of colour pictures. In all settlements on the park border, everyone recognised the main species. In addition, the other tools demonstrated much ecological knowledge. Settlements slightly further away from the park to the north and east were less successful. An adolescent in Ngodeni interpreted a lion picture as showing a monkey; people in Arainaba called a lion a hyena and a mongoose a fish. In these areas, people generally agreed that the species did not occur near their settlement.

To compare the results between different settlements, an indicator was used that combines the level of detail with the validity as compared to scientific knowledge. Local ecological knowledge was classified as detailed and valid if several people were able to give details on at least one species with each tool that was used and if a majority of those details corresponded with scientific knowledge. The results are shown in table 1. Based on proximity and similarity of responses, settlements were stratified into geographic units, zone 1 to 4. The reliability of this method is indicated by the consistency of responses by individuals in different settlements within a zone. Applicability of this method may depend on local circumstances, however. An important factor is the virtual absence of schools or other institutions where people could learn about animals without actually being face to face.

There was also a picture of leopards (*Panthera pardus*), which led to some discussion. Older men recognised the animal but disagreed on current distribution. The last time anyone spotted a leopard was over fifteen years ago and most people concluded that the population is extinct. Others, however, who knew that it is one of the most secretive and best camouflaged felids, did not exclude the possibility that there is still a small population of extremely cautious and exclusively nocturnal leopards. However, as park personnel and trackers have not seen footprints for at least a decade, the presence of leopards might be a thing of the past.

Two men had visited a zoo with spotted hyena, but when asked to select its picture they pointed at the image of striped hyena instead. From interviews on animal ecology it also appeared that people could hardly differentiate between the two species. A majority considered them two varieties of the same species with identical behaviour. Only one of the local languages, Mousgoum, has different words for striped and spotted hyena. Other local languages depend on adjectives or descriptions, like English, to distinguish the two species. These factors indicate that people may have difficulties with the species determination of hyenas, despite the

Table 1: Visual identification and ecological knowledge of different species of predators during group interviews in the settlements around Waza NP matching with (+) or different from (–) scientific descriptions

Zone	Settlement	Photo recognition			Ecological knowledge		
		lion	hyena	other	lion	hyena	other
1	Badaday	+	+	+	+	+	+
	Amaheiri	+	+	+	+	+	+
2	Andirni	+	+	+	+	+	+
	Dieguere	+	+	+	+	+	+
	Tchede	+	+	+	+	+	+
	Camp 1	–	+	+	+	+	+
3	Mahe	+	–	–	+	+	+
	Camp 2	+	+	+	+	+	+
	Camp 3	+	–	+	–	–	+
4	Zina	+	–	+	–	+	+
	Camp 4	–	–	+	–	+	+
	Sifna	–	–	+	–	–	+
	Camp 5	–	–	–	–	+	+

N.b. Numbered camps are temporary nomadic settlements close to the settlement that precedes it in the table.

many morphological, ecological and behavioural differences that biologists have described. This could be explained by the fact that hyenas in the research area are mostly nocturnal, and so consequently it is difficult to observe them. The silhouettes of the two species of hyenas are indeed quite similar.

Table 2: Declared herd size and declared annual loss from predation by large carnivores around Waza NP

Zone	Settlement	Large stock			Small stock		
		herd	loss	%	herd	loss	%
1	Badaday	300	20	6.7	100	30	30
	Amaheiri	400	20	5	150	30	20
2	Andirni	680	5	0.7	450	75	16.7
	Dieguere	80	0	0	300	30	10
	Tchede	0	–	–	150	25	16.7
	Camp 1	400	5	1.3	0	–	–
3	Mahe	40	2	5	325	60	18.5
	Camp 2	400	4	1	50	0	0
	Camp 3	1100	4	0.4	300	5	1.7
4	Zina	0	–	–	200	8	4
	Camp 4	350	1	0.3	125	0	0
	Sifna	150	0	0	200	3	1.5
	Camp 5	700	0	0	350	0	0

Local ecological knowledge was very detailed in communities on the border of the park. A striking example of the level of detail is the analysis of the use of claws by lions: several people knew that lions have retractile claws that are used only for increased grip during the final stage of a hunt and for slaying prey. Interpretations of some details tended towards anthropomorphism, that is, the projection of meaning of human behaviour on similar animal behaviour. Hyenas observed in pairs are often said to be male and female. This implies the ability to distinguish between sexes on the basis of body size. In fact, the sexual differences, or dimorphy, in spotted hyenas is hardly visible with ordinary observation techniques and hyenas hunt in pairs of both different and identical sex (Kruuk, 1972).

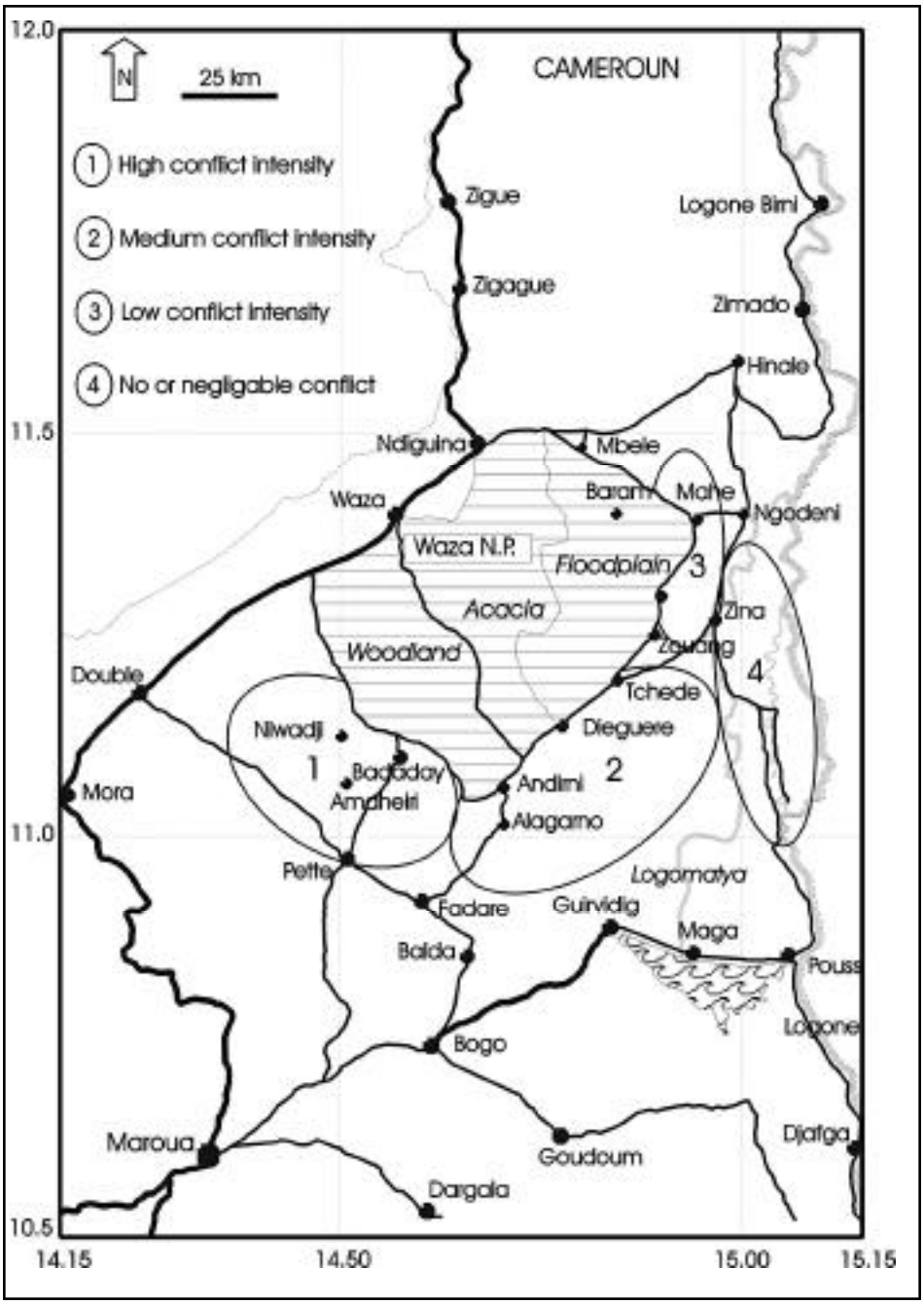
The people-predator conflict

Statistics on damage caused by predators to livestock could not be determined very precisely. PRA techniques generally specialise on qualitative assessments and trends rather than precise quantitative data (Chambers, 1997). Table 2 presents the size of the herds and the losses declared in 13 settlements around Waza NP. This table obviously contains controversial data that suffered from bias. People may overestimate damage to convince MINEF of the need to intervene. They may also leave out incidents that occurred inside the park, to avoid inquiries. In addition, livestock owners in the area always declare only part of their stock, to reduce taxes and to avoid risks associated with being perceived as rich (Scholte, 1998). These biases persisted despite our clearly defined position. Nevertheless, the settlements could be stratified into four zones based on proximity and similarity of responses with respect to the predation problem.

To get a more reliable assessment of the intensity of the people–predator conflict, results were triangulated. It appeared that observations on local knowledge of predators and on damage by predators had similar patterns. A compilation of table 1 and 2 is presented in figure 1, with circles marking out zones 1 to 4. In areas with detailed local ecological knowledge, losses from predation were high, indicating that the people-predator conflict intensity is high. All zones were thus classified by 'conflict intensity'. Table 2 gives the order of magnitude of damage, although the level of bias and variation does not allow us to give a precise annual average percentage for each zone. Nevertheless, we feel that this classification is reliable, since it is based on consistent quantitative and qualitative information generated with various tools in various settlements.

People in all settlements gave similar information about the locations and moments at which predation occurred. Lions attack all species of domestic animals on the pastures during the daytime. People know that lions also hunt at night; but cattle are then kept in enclosures inside the villages where lions hardly ever venture. Hyenas are exclusively nocturnal; they attack small stock in or near the settlements at night. They enter enclosures and even houses, but are easily chased away if the owner is awake. Jackals and other smaller predators were reported to be very opportunistic and only attack small stock when it was easy for them to do so – certainly not in the presence of man. All forms of predation were said to occur more often in the rainy season. Stalking is made easier, when camoflaged by the noise of the rain, or when walking in the tall grass. People generally did not fear for themselves, and extremely few human casualties were reported. Lions attack on the pastures, where shepherds can easily chase them off before an attack. They only become aggressive when disturbed during or after an attack. Three human casualties were reported in the entire area over a ten-year period, all under particular circumstances. Only one settlement, Mahe, reported a lion entering a concession once, without accidents. Hyenas had never been much feared, but since the introduction of the torchlight the problem is entirely solved: they are easily chased off with light.

Figure 1: Waza NP and the surroundings with zones of different conflict intensity, estimated by loss estimates and ecological knowledge n each zone



The ability of a lion to attack man and cattle, its status as a keystone species (in one local language literally 'father of the bush') and its legendary strength make it the most controversial animal with regard to stock raiding. Hyena raids are much more frequent, however, and yet this is only mentioned after lions have been discussed first. The reliability of the quantitative data is too low to know exactly whether the economic damage of lions attacking expensive cattle is much higher than hyenas killing much more but cheaper small stock. Table 2 indicates that the two are not far apart, however.

One of the shortcomings of the PRA methodology used was illustrated by the fact that no information on the use of poisoned bait was obtained from the people. An anthropology student got this information later, after a longer stay in one of the same settlements (Schoemaker, unpublished MSc. thesis, 1999). The use of poison, hunting or other illegal activities were apparently too sensitive to be discussed, as mentioned by Scholte *et.al.* (1999a).

Conclusions

The people–predator conflict is serious in the areas around Waza NP, especially on the southern border. During problem ranking and restitution, predation was confirmed to be a priority problem in these areas. Research is recommended to quantify losses and to study locally practised mitigation measures. This could lead to recommendations for action within the framework of the current revision of park management. Further east, people agreed during the restitution that the level of conflict is acceptable. Their priorities for action are beyond the scope of this paper.

Thematic PRA can generate a good impression of a situation. The advantages are collaboration with the local population, relatively low investments in staff time and material and quick results. Disadvantages are the various biases and contradictions, especially in quantitative data. We found that repetition of the same exercise in several settlements and triangulation of results from different methods were instrumental in clarifying the bottom line and overall tendencies as well as showing local variation. Thematic PRA is useful and feasible and is best undertaken within the context of general explorative PRA.

H. Bauer – Centre of Environmental Science, Leiden University, The Netherlands.
PO Box 9518, 2300 RA Leiden, The Netherlands
S. Kari – Waza Logone Project, PO Box 284 Maroua, Cameroon.

Acknowledgements

This study was part of the activities of the Centre of Environmental Science of Leiden University (CML) within the framework of the Waza Logone Project in Cameroon which is executed by the Ministry of Environment and Forests (MINEF), the World Conservation Union (IUCN), CML and The Netherlands Development Organisation (SNV). We are grateful for the support of these institutions and their staff, especially P. Scholte, Dr. H.H. de Longh and D. Ngantou. The comments of Prof. W.T. De Groot, Dr. S. Kersten, R. Noorduyn and the editors of this journal are gratefully acknowledged.

References

Bauer, H (1999) Co-management in Africa: the case of Waza National Park, Cameroon. In: EC Bernardo & DJ Snelder (eds.) Co-Managing the Environment. CVPED & PLAN, Philippines.

Chambers, R (1997) Whose reality counts? IT Publications, London, UK.

Kruuk H (1972) The spotted hyaena. The University of Chicago Press, Chicago, USA.

Ngog-Nje, J (1986) (Ethological note on the copulation of lions (Panthera leo L.) in Waza National Park, Cameroon.) Note ethologique sur la copulation des lions (Panthera leo L.) dans le Parc National de Waza, Cameroun. Mammalia **50**, 553-555.

Scholte, P, S Kari & M Moritz (1996) The involvement of nomadic and transhumant pastoralists in the rehabilitation and management of the Logone floodplain, North Cameroon. Drylands Issue Paper **66**, IIED, London, UK.

Scholte, P, S Adam, S Kari & JH Mbouche (1999a) Walking a tightrope: using PRA in a conflict situation around Waza National Park, Cameroon. PLA Notes **35**, 7-12.

Scholte, P, S De Kort & M Van Weerd (1999b) The birds of the Waza-Logone area, Far North Province, Cameroon. Malimbus **21**, 16-49.

Tchamba, MN & P Elkan (1995) Status and trends of some large mammals and ostriches in Waza National Park, Cameroon. African journal of Ecology, **33**, 366-376.