Social Perceptions of Nonhumans in Tombali

(Guinea-Bissau, West Africa):

a contribution to chimpanzee

(*Pan troglodytes verus*) conservation

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LIST OF SPECIES NAMED IN THE THESIS

Common name	Scientific name	Creole name
Primates		
Chimpanzee*	*Pan troglodytes verus*	Dári
Black and white colobus*	*Colobus polykomus*	Sancho fidalgo
Red colobus*	*Procolobus badius temminckii*	Fatango
Mona monkey*	*Cercopithecus (m.) campbelli*	Sancho mona
Baboon*	*Papio (h.) papio*	Kón
Patas monkey* (not present)	*Erythrocebus patas*	Sancho fula
Sooty mangabey*	*Cercocebus atys*	Sancho
Grivet monkey / Vervet*	*Cercopithecus (Chlorocebus) (a.) sabaeus*	Sancho tarrafe
Bush baby*	*Galago senegalensis*	Sancho
Putty-nosed monkey*	*Cercopithecus nictitans*	Sancho
Lesser spot-nosed monkey*	*Cercopithecus (c.) petaurista*	Sancho
Capuchin monkey (Amazonia)*	*Cebus capuchinus*	Sancho
Other wild mammals		
Roan antelope*	*Kobus ellipsiprymus unctuosus*	Sim-sim or boca-branca
Gazelle*	*Gazella gazella*	Gazela
Pangolin*	*Manis tetradactyla*	Tucurtacar
Hyaena*	*Crocuta crocuta*	Lobo
Elephant	*Loxodonta cyclotis*	Elefante
Red river hog (bush-pig)	*Potamochoerus porcus*	Porco-do-mato
Duiker (bush-goat)	*Cephalophus dorsalis*	Cabra-do-mato
Porcupine	*Hystrix cristata*	Porco-espinho
Lion	*Panthera leo*	Leão
Buffalo	*Syncerus caffer*	Búfalo
Leopard	*Panthera pardus*	Onça
Squirrel	*Xerus erythropus*	Saninho
Birds		
Purple glossy starling*	*Lamprotornis purpureus*	Cacho
Abyssinian ground-hornbill*	*Bucorvus abyssinicus*	Cacho
Fish		
Mudskipper*	*Periophthalmus argentilineatus*	Saltón
Reptiles		
Snake*	*Pyton sebae*	Irancego
Turtle*	*Kinixys belliana nogueyi*	Tartaruga
Insects		
Butterfly*	*Brephidium* species	Borboleta
African honey bee*	*Apis mellifera scutellata*	Baguera
Domestic animals		
Pig*	*Sus scrofa scrofa*	Porco
Chicken*	*Gallus gallus domesticus*	Galinha
Cow*	*Bos primigenius*	Baca
Goat*	*Capra aegagrus hircus*	Cabra
Dog	*Canis lupus familiaris*	Cachorro

*Species represented in the photos used during data collection (see Chapters 4 and 5 and appendix II).

DECLARATION

I declare that the work undertaken and reported within this thesis is my own and has not been submitted in consideration of any other degree or award.

Susana Gonçalves Costa

ABSTRACT

Rainforest biodiversity is particularly vulnerable to loss, since the distribution of forests is limited and the vertebrate species that live within these forests have a limited potential to re-colonize deforested areas, especially when their abundance declines to critical levels. Guinea-Bissau (West Africa) is experiencing significant loss of habitats and species diversity; as such, the establishment of an effective conservation programme is urgent in its remaining forested areas. Despite six legislated protected areas, Guinean forests and their wildlife are not safe in reality. This lack of on-the-ground protection is the case for Cantanhez National Park (Tombali region), where this research took place. The park was established in 2007 to protect remnant forests containing unique and endemic Guinean biodiversity, such as the endangered West African chimpanzees (*Pan troglodytes verus*).

Local inhabitant's attitudes towards protected areas and associated externally-driven conservation programmes are seldom examined in depth in relation to understanding the drivers (livelihood, socio-cultural, and local) of perceptions, which makes conservation problematic. Understanding attitudes to animals, habitats and livelihood risks were the focus of this project, specifically in order to assess perceptions of chimpanzees. Chimpanzees are currently suffering catastrophic declines due to human actions across Africa. Thus a focus on understanding, managing and enhancing people's perceptions and attitudes towards this species could be vital to its long-term survival.

The theoretical approach is based upon (i) examining the construct of sociozoologic scales in this specific socio-cultural context, (ii) elucidating issues in human-wildlife interaction (e.g. conflict such as crop-raiding and positive such as ecotourism potential), (iii) local economies (i.e. level of dependency on forest resources), and (iv) understanding people's expectations about the future of the National Park as a potential constraint or opportunity for their welfare and livelihoods. Quantitative and qualitative methods were combined to approach these questions.

The Guinean sociozoologic scale of Cantanhez clearly divides vertebrate species into (i) "tame", considered good (e.g. gazelles) and (ii) "hazardous", considered bad (e.g. hyaenas). Chimpanzees lay exactly in the midpoint. They are considered humans' close relatives; however, they "misbehave" as astute crop thieves sufficiently to be perceived as a competitor for resources. Since chimpanzees are also seen as very similar to humans, their meat consumption is taboo, which adds the potential for protection. Gender and religion both influence the way locals perceive of and relate to chimpanzees. Women and Muslims tend to be more negative towards this species and the protected area than are men and non-Muslims. Women never exhibited positive attitudes in relation to the protected area, while men appeared to be more engaged with "capitalized" principles, with some awareness about the importance chimpanzees might have in catalyzing the National Park and local economy.

This study highlights the need for a management plan to mitigate crop-raiding and the development of sustainable strategies that provide livelihood benefits for both men and women, addressing their distinct needs, outside the protected area.

RESUMO

A biodiversidade da floresta chuvosa é particularmente vulnerável a perdas, uma vez que a distribuição da mesma é limitada e as espécies de vertebrados que a habitam têm um potencial limitado para recolonizar áreas desflorestadas, principalmente se o seu número diminuir para níveis considerados críticos. A Guiné-Bissau (África Ocidental) tem vindo a experimentar perdas significantes no que toca ao habitat e à diversidade das espécies; deste modo, o estabelecimento de um programa de conservação efectivo é urgente nas áreas de floresta que ainda restam. Apesar das seis áreas protegidas, as florestas guineenses e a sua biodiversidade não estão verdadeiramente a salvo. A falta de protecção *in situ* está também presente no Parque Nacional de Cantanhez (região de Tombali), local onde esta investigação teve lugar. O Parque foi estabelecido em 2007 com vista a proteger manchas de floresta que contêm biodiversidade guineense endémica única, tal como o chimpanzé da África ocidental (*Pan troglodytes verus*).

As atitudes locais para com as áreas protegidas e para com os programas de conservação, que são externamente implementados, são raramente analisadas em profundidade no que toca ao entendimento das suas motivações (económicas, sócio-culturais e locais), o que faz com que a conservação seja problemática. Compreender as atitudes em relação aos animais, habitats e riscos económicos constituiram o foco deste projecto, especificamente com o objectivo de estudar as percepções sobre os chimpanzés. Os chimpanzés estão a sofrer perdas catastróficas devido às actividades humanas por toda a África. Deste modo, focar a nossa atenção no entendimento, gestão e melhoramento do modo como os chimpanzés são percepcionados e nas atitudes locais pode ser vital para a sobrevivência da espécie a longo-prazo.

Este trabalho está teoricamente baseado em: 1) a análise da estrutura da escala sociozoológica deste contexto sócio-cultural específico; 2) clarificar as questões da interacção humanos vs. não-humanos (por exemplo: conflicto ligado à destruição de colheitas e potencial do eco-turismo) 3) economia local (i.e. nível de dependência dos

recursos da floresta); 4) entender as expectivas da população em relação ao futuro do Parque Nacional, enquanto potencial limitação ou oportunidade para o seu bem-estar e sustento. Métodos quantitativos e qualitativos foram combinados para abordar estas questões.

A escala sociozoológica guineense divide claramente as espécies de vertebrados em 1) "dóceis", consideradas boas (ex: gazelas) e 2) "perigosas", consideradas más (ex: hienas). Os chimpanzés ficam exactamente entre estas duas. São considerados parentes próximos dos humanos; porém, comportam-se o suficiente como ladrões astutos para serem vistos como competidores por recursos. Como são vistos como muito parecidos com os humanos, o consumo da sua carne é visto como um tabú, o que lhes confere potencial para a conservação. Género e religião influenciam o modo como os locais percepcionam e se relacionam com os chimpanzés. Mulheres e Muçulmanos tendem a ser mais negativos em relação a esta espécie e à área protegida, enquanto os homens aparentam maior envolvimento com valores "capitalistas", revelando alguma consciência da importância que os chimpanzés poderão ter na catalização da economia do Parque Nacional.

Este estudo sublinha a necessidade de um plano de gestão para diminuir a destruição de colheitas e para desenvolver estratégias sustentáveis que tragam benefícios económicos para homens e mulheres, satisfazendo as suas necessidades distintas, fora da área protegida.

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CHAPTER 1 – COMMUNITY-BASED CONSERVATION AND ITS CHALLENGES

"You come here, you ask questions, we talk, we explain and you help us to get rid of our problems. We waste our time explaining our problems and we do not get any advantages from that, is not it? If you ask us, we will answer you because we think that it is ok to answer. That is how you come to know about our problems."

(Focus group 5, Caiquené)

Plate1.1. Me on the way to collect data.

As a rule, natural habitats in the southern hemisphere have been threatened due to human population growth, weak economic systems and a lack of governance (Miranda and la Palme, 1997; Ammann, 2001; Rose, 2002; Sicotte and Uwengeli, 2002; Hambler, 2004; Reynolds, 2005). Poverty and total dependence on ecosystem services drive people to practices that progressively destroy the remaining patches of natural habitats. Farming, fishing, hunting, mining and the exploitation of forest resources are among the human activities that have been massively damaging major natural relicts of biodiversity.

Patches of rainforest are among the most threatened natural habitats on the planet and, probably, the ones that need the most attention from conservationists (Kramer and van Schaik, 1997). Rainforest contains the highest percentage of the world's biodiversity, and holds, at least, half of the terrestrial species we know. These habitats and their fauna are particularly vulnerable to loss, since these organisms cannot survive anywhere else and are not able to survive in or re-colonize deforested areas. Some rainforest endemic species live in extremely restricted areas, which makes them particularly vulnerable to human activities (Tchauto, Yemefack, Boer, de Wilde, van de Masen and Cleef, 2006). In addition, most remaining patches of rainforest are located in developing countries; some of them, amongst the poorest countries in the world. In those countries, wildlife and flora are especially vulnerable to agricultural conversion (Nicolas, Barriére, Tapiero and Colyn, 2009) both to produce food supplies to feed locals and to provide goods that developed countries cannot produce (e.g. cashew nuts, coffee, cocoa, among others).

West African countries have lost virtually all their closed canopy rainforest. Their deforestation rates are among the highest in the world (Nicolas et al., 2009) and hunting and bushmeat trade are considered a serious threat to the rainforest and its biodiversity survival (Fa, Juste, Burn and Broad, 2002; de Merode, Homewood and Cowlishaw, 2004; de Merode and Cowlishaw, 2006). Bushmeat consumption has been increasing in the last few years due to growing human populations, more sophisticated hunting technology and the absence of alternative sources of proteins (Cuthbert, 2010). Officially, only 27% of the original forested area in Africa has legal protected status; this small, fragmented and degraded protected area cannot guarantee the region's biodiversity conservation (van Schaik, Terborgh and Dugelby, 1997).

Guinea-Bissau is no exception to this loss of habitats and species diversity; as such, the establishment of an effective conservation programme is urgent in its territory. Despite its six legally protected areas (IBAP, 2007), the Guinean forest and its wildlife is not safe. The government recognition of the need to establish parks is recent, and only one of these protected areas has a management plan (see Chapter 3). These so-called

"paper parks" (Hambler, 2004) are the rule in developing countries like Guinea-Bissau. The parks are, in theory, supported by the government, have gazetted boundaries, and have legal constraints placed on the activities that go on within their boundaries, although no efficient actions have been implemented to actually protect the area. This is the case for Cantanhez National Park (Tombali region), the protected area where this research took place.

From the perspective of the fauna and flora, parks would survive better without humans living inside their borders (Terborgh and Peres, 2002). However, this is not easy to achieve without ethical consequences and imposing livelihood costs on residents. Therefore, involving the humans who inhabit protected areas with conservation is a better, and more sustainable option (Kiss, 2004), and hence achieving this involvement is one of the biggest challenges facing conservationists and biodiversity managers.

Why have conservationists' attempts to involve villagers with biodiversity protection so often failed? The reasons are many: (i) lack of organization on the part of governmental and non-governmental organizations, (ii) poor understanding of local people's expectations about the protected area, (iii) absence of other economic solutions or livelihood replacements after restrictions of protected area use, and (iv) inadequate law enforcement or legal compliance, just to mention a few (Brockelman, Griffiths, Rao, Ruf and Salafsky, 2002; Oates, 2002; van Schaik and Rijksen, 2002; Hambler, 2004; Nyhus, Osofsky, Ferraro, Madden and Fischer, 2005; Walpole and Thouless, 2005). Additional problems of political instability, corruption, trade in illegal commodities, unregulated global markets for wild animal and plant products are further drivers of biodiversity loss. The so-called "community-based conservation" (CBC) is not a panacea (Gillingham and Lee, 1999; Adams and Infield, 2003; Reynolds, 2005; Kideghesho, Roskaft, Kaltenborn, 2007). Several countries across Africa, Asia and South America have experienced conservation programmes based on these principles, which all seem to have something in common: humans' perceptions, attitudes and expectations towards the parks were not assessed before protection, which makes ecotourism, compensation plans, relocation, zoning,

environmental education and sustainable development – among other conservation strategies – less likely to succeed (Terborgh and Peres, 2002).

The recognition that attitudes towards protected areas on the part of local inhabitants are only infrequently explored in a holistic socio-cultural context and that this lack makes conservation problematic led to this project in Cantanhez National Park, Guinea-Bissau. It is a "paper park" (Hambler, 2004); a theoretically protected area with no effective management plan in action. It was established in 2007 to protect remnant forests containing unique Guinean biodiversity (see Chapter 2).

The endangered West African chimpanzees (*Pan troglodytes verus*) living inside this reserve – along with 10 other species of primates – are in great danger of elimination, due to conflict with progressively expanding human settlements (see below). A project established by "Acção para o Desenvolvimento", an NGO operating in the region for almost 20 years, was established with the aim of protecting endangered chimpanzees and their habitats as a priority; however, villagers that depend on bush's resources to survive cannot be overlooked in the conservation equation. Having a "paper park" as a study site should be seen as an opportunity rather than a problem, since we can: (i) learn from older protected areas' experiences and therefore try to avoid other projects' weaknesses; and (ii) we can also establish an action plan using the Tombali people's perceptions of the park and its wildlife as a foundation. The goal is to keep human and nonhuman needs as balanced as possible, in order to enable people and wildlife – especially chimpanzees – to coexist as pacifically as possible and, consequently, to achieve our conservation goals (Adams and Thomas, 2001; Adams and Infield, 2003; Lee and Priston, 2005).

1.1 Why is psychology important for conservation? Environmental psychology and conservation psychology as emerging disciplines

Human attitudes will determine whether any wildlife will survive into the 22nd century. Without an understanding of attitudes there is no future for wildlife (Gillingham and Lee, 1999; Kideghesho et al., 2007; Strum, 2010; Lee, 2010). A lack of an understanding of the

cultural and psychological characteristics underlying people's behaviour towards wildlife and natural contexts might lead to the failure of conservation efforts.

The uniqueness of a culture has its foundation in a vast range of parameters such as religion, economics, politics and environment, among others (Serpell, 1996; Costa, 2004). Considering that our perceptions about nonhumans are part of our culture, the way we perceive these "others" is influenced by the same factors (Arluke and Sanders, 1996). *Furthermore, cultures differ from each other, which means that each culture has its own* way to perceive nonhumans.

The connection between culture and social perceptions – and subsequently, attitudes and behaviour – makes psychology especially important regarding its potential scientific contribution to conservation (Bonnes and Secchiaroli, 1995; Williams and Paterson, 1996; Bell and Greene 2001; Bones and Bonaiuto, 2002; Saunders, 2003; Clayton and Brook, 2005). Just as sociologists and anthropologists have been contributing to a better knowledge of conservation through the human point of view (e.g. Macnahten, and Urry, 1995; Orlove and Brush, 1996; Hannigham, 2006; Warren, Buba and Ross, 2007) psychology can also play an important role in elucidating the inner features of human perceptions about wildlife and natural habitats. Conservation cannot work effectively unless the social sciences and natural sciences work side-by-side (Sauders, 2003), otherwise these two components - human and nonhuman - will not come together.

Environmental "problems" are most often the result of human behaviour and consequent activities (Bonnes and Secchiaroli, 1995; Williams and Paterson, 1996; Bell and Greene 2001; Bones and Bonaiuto, 2002; Saunders, 2003; Clayton and Brook, 2005). Since human behaviour is the main focus of psychology, there is no doubt about the importance that this science must have regarding conservation and sustainable development. Though, unfortunately, even for psychologists, the environment protection is not considered a relevant issue (Clayton and Brook, 2005). The anthropocentric context in which the social and human sciences developed did not facilitate social researchers seeing humans as part of the environment (Costa, 2004), and also as living beings that

are influenced by the environmental variables operating in the context where they live (Saunders, 2003).

There are two different fields in psychology regarding the way humans relate with the environment and the way people engage in pro-environmental behaviour: (i) environmental psychology and (ii) conservation psychology. Bell and Greene (2005) proposed that "*Environmental psychology is the study of the molar relationships between behaviour and experience and the built and natural environments.*" (op.cit.: 6). Williams and Patterson (1996) give us a broader definition: "*Environmental psychology represents both a specialty within social psychology and a broader* environmental *movement within social science and the design and planning professions. (...) It views the individual both as embedded in the environment and as actively defining and giving shape to it. Another reason to consider the potential contribution of environmental psychology to ecosystem management is that it is particularly integrative and eclectic area within social science.*" (op. cit.: 507). As such, in these authors' perspectives, environmental psychology holds three different paradigms: (i) The adaptive paradigm, examining how and what organisms know about their environment, the way organisms cope with environmental stressors and the way environments act in therapeutic ways; (ii) The opportunity structure/goal-directed paradigm, that sees individuals as rational planners instead of organisms that need to satisfy biological impulses; (iii) The socio-cultural paradigm is the less-explored field, since it does not see the individuals as behaving autonomously, but rather as social agents interacting with conspecifics and with their environments.

On the other hand, conservation psychology is "*oriented toward understanding why people help or hurt the natural environment and promoting environmentally sustainable practices*" (Clayton and Brook, 2005: 87). Saunders (2003) also proposed that "*conservation psychology is the scientific study of the reciprocal relationships between humans and the rest of nature, with a particular focus on how to encourage conservation of the natural world*" (op. cit.: 138). As such, recycling, human-nonhuman relationships, environment and identity, environmental education and socialization, environmental

attitudes and environmental conflict are among the topics within conservation psychology research interests. This sub-discipline of psychology proposes that people are affected by physical contexts, and that the interpretations they make about these contexts depend on their past experiences and on the knowledge acquired throughout the individuals' lives. Nature is not only a physical reality, but also a social construct whose meaning is learned. Memories and motives deeply affect the way people react to the present ecological problems (Clayton and Brook, 2005).

In conclusion, the main differences between environmental psychology and conservation psychology are: (i) conservation psychology studies our relationships with the natural environment and environmental psychology studies both natural and built contexts; (ii) conservation psychology is concerned with sustainability, resources and ecosystems protection and human and other species welfare, while environmental psychology explores the impact physical environment has in human behaviour; (iii) finally, while environmental psychology describes behaviour as it is exhibited, conservation psychology seeks to intervene in the way people behave in order to make it more ecocentric (Kortenkamp and Moore, 2001; Saunders, 2003). Both fields are important for this research project since it aims to describe how people living in Cantanhez National Park perceive and relate with the protected area's wildlife – especially chimpanzees - and the expectations they have towards their future inside and associated with the park. This part of the research considers the way that this natural context influences villagers' perceptions and behaviour, from the perspective of environmental psychology. Then, in order to make this conservation project more feasible and effective, I consider how best to address issues of cooperation and compliance with the protected area and its threatened species as a way to make local inhabitants willing to engage in more ecocentric practices. Environmental psychology and conservation psychology are integrated in this research as fundamental fields assisting conservation efforts directed to understanding and changing local people's relationship with their environment and its natural elements, particularly with those needing protection.

1.1.1 Social perceptions, opinions, attitudes and behaviour

Psychology in general and conservation psychology in particular are rooted in the central theoretical concepts of social perceptions, opinions, attitudes and behaviour (Kaiser, Wolfing and Fuhrer, 1999; Tanner, 1999; Sauders, 2003) and these form the basis of this research.

Social perceptions are composed of two different factors: (i) the individual and his/her cognitive abilities and (ii) the cultural context where he/she lives. This last factor comprises values, norms, beliefs (e.g. religion) and attitudes that were already operating in the society where the subject was raised (Deth and Scarbrought, 1998). To be accepted, one has to learn the features of his/her culture (Giddens, 2000). Therefore, social training is needed in order to transform the "savage" in a "civilized" creature (Lévi-Strauss, 1966). Socialization allows us to perceive the objects around us that - once captured - are proposed to be organized with respect to our culture's patterns (Allport, 1979; McGarty, 1999; Giddens, 2000; Giddens, Duneie and Appelbaum, 2003; Yzerbyt and Leyens, 2004; Baron, Byrne and Branscombe, 2007; Smith and Mackie, 2007). An individual absorbs what surrounds him/her, organizes his/her perceptions - regarding his/her cultural context - in order to be accepted by the other members of the society (Giddens, 2000; Giddens et al., 2003). This is how we learn our place in the world and - as a result - how we are positioned in relation to other humans, nonhumans and the environment (Arluke and Sanders, 1996; Serpell, 1996). Thus, social perceptions are important to a full understanding of the basis of conservation programmes (Adams and Thomas, 2001; Adams and Infield, 2003; Lee and Priston, 2005).

The way social perceptions, prejudices and value judgements become visible is reflected by attitudes and opinions (Aiken, 2002; Albarracin, Johnson and Zanna, 2005; Yzerbyt and Leyens, 2004; Baron et al., 2007; Smith and Mackie, 2007). In this research, both attitudes and opinions are considered important. In general, opinions are easier to assess (Price, 1992). On the other hand, attitudes are more intangible and abstract, although they are perceived as something real and tangible for those who hold them. We

are only aware of the solidness and prevalence of an attitude when we try to change it. Given our cultural complexity, to isolate one single attitude is virtually impossible. For instance, anthropocentrism is associated with a wide range of other attitudes that depend on each other. As such, it is difficult to draw a line that defines exactly the boundaries of the attitude A, B or C (Oppenheim, 1986; Aiken, 2002; Albarracin, et al., 2005).

Conceptualizing attitudes is not simple. In general, the term "attitude" is related to the way we evaluate people, objects and issues (Lima, 1993; Fazio and Petty, 2008). They are a product of social interaction, comparisons, identifications and social differentiation. As such, they are learnt and – sometimes – shared by members of the same group (Lima, 1993). Attitudes apparently help individuals to make quick, easy and more efficient decisions about whether or not to avoid specific objects, individuals or contexts. When thinking about the definition of attitudes, Rosenberg and Hovland (1960) proposed that these should be seen as having three dimensions ("tripartite model"): affective, cognitive and behavioural. As such, an attitude consists of the way we feel about what we think and what we tend to do in relation to a certain attitude object (op. cit). However, no matter which definition we adopt for ourselves, the behavioural dimension – i.e. the way attitudes influence behaviour and vice-versa - plays an important role in the way we think about this concept (Fazio and Petty, 2008).

How we predict behaviour based on attitudes is not easy to assess (La Piere, 1934; Fazio and Petty, 2008). In fact, according to La Piere (op. cit), it is quite easy to demonstrate that a correlation between subjects' speech and their behaviour is not always found. How attitudes and behaviour relate with each other is mediated by the situation, the attitude, the individual and his/her behaviour. For instance, a person's personality needs to be considered. People with greater cognitive needs – those who tend to elaborate and rationalize their thoughts and beliefs – exhibit more consistency between attitudes and behaviour. In addition, when exploring attitudes as a mechanism to predict behaviour, the researcher needs to be specific (Lima, 1993). For example, if to the aim is to predict whether a subject will go to the church on Sunday, the researcher should ask about their

attitude toward that specific action and not about religion in general (Fazio and Petty, 2008).

Attitudes and opinions cannot be seen as isolated entities, even though attitudes may be more emotional than opinions (Oppenheim, 1986; Aiken, 2002; Albarracin, et al., 2005). Opinions are easily expressed verbally and are frequently perceived as conscious judgements (Price, 1992). Nevertheless, opinions are also easier to manipulate, since they tend to be less well-defined than attitudes (Cialdini, 2001). As a result, Price (1992) considers that opinions can mutate every time a subject changes his/her social and/or physical context. An individual might express a certain opinion due to social pressure. Moreover, some people may not have a solid conception about a specific topic and may express a "false" opinion. According to Price's experience (op. cit.), people exhibit a strong willingness to express opinions even when they do not have any sort of relation with the topic in discussion. Nevertheless, social perceptions, prejudice, attitudes and values influence opinions, since these are the source of information used to shape ideas.

In conclusion, from a psychological point of view, social perceptions and opinions are fundamental, since they can provide important insights into the reasons beneath people's attitudes towards the Cantanhez National Park (Aiken, 2002; Yzerbyt and Leyens, 2004; Albarracin, et al., 2005; Baron et al., 2007; Smith and Mackie, 2007). I will rely on speech to access to individual perceptions, opinions and attitudes in relation to the protected area, since these factors influence people's behaviour (Kaiser et al., 1999; Tanner, 1999). My main aim is to make this conservation project more effective both (i) by respecting people's perspectives on the park and also (ii) by trying to reduce the context for unsustainable behaviours.

1.2 Sociozoologic scales: the linkage between social perceptions and conservation

In Western societies[1], peoples' perceptions often organize the animal kingdom symbolically into "good" and "bad" animals (Arluke and Sanders, 1996). While phylogeny classifies animals according to biological features and affinities, the sociozoologic scale organizes species as a function of their perceived or actual roles in the local society. There is a clear hierarchy of animals, based in moral judgements, that depends on how useful the animal is, how closely it collaborates with humans, how evil the animal can be and how demonic it is perceived to be (Sandoe and Christiansen, 2009). Such a sociozoologic scale is based on traditions and prejudices that are often associated with the way we see and deal with other humans, namely people belonging to minority groups or "outsiders" (Arluke and Sanders, 1996).

"Good" animals, for instance, have a high moral status due to their subordinate roles. They accept their status and reinforce the concept that humans are the pinnacle of the animal kingdom. Companion animals, livestock, lab and anthropomorphised animals are examples of nonhumans perceived as "decent citizens" (Leach, 1964; Morris, 1967; Arluke and Sanders, 1996). Companion animals seem to like their status in human societies; they appear to be genetically predisposed to be part of the human world. Cats and dogs that are kept as companions are common in Western societies. They are seen by their owners as objects of affection and, paradoxically, as living beings that are dominated by us. It can be suggested that the way we treat companion animals is similar to the way we deal with our children (Arluke and Sanders, 1996). Besides companion animals – the best animals one can find in the sociozoologic scale – animals classed as "tools" are also part of the "good" faction. These animals are seen in a positive way because they are useful to us both providing us with scientific data and with food supplies. For example, laboratory mice or livestock exist for human benefit (op. cit).

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[1] The expression "western societies" in this context refers to the developed countries' societies, mostly located in the north hemisphere.

On the other hand, "bad" animals are viewed as uncontrolled creatures potentially capable of subverting the sociozoologic scale. *"They may be freaks that confuse their place, vermin that stray from their place, or demons that reject their place. They are oddities that cause repulsion, unwelcome visitors that provoke fear, or dangerous attackers that rouse horror. In turn, society may ignore, marginalize, segregate or destroy them."* (Arluke and Sanders, 1996:175). There are three different categories of "bad" animals, "freaks" are the less evil and include all the creatures that do not have a clear status in social order. Since their place is ambiguous, their moral status puts them on the margins of society. There is no urgency to destroy them, though they are not welcome in our social sphere. Examples of what a "freak" can be are people that apparently mix human and animal features due to malformations that reminded people of animals, such as: the "Giraffe Woman" (who had long limbs); Jo-Jo (the dog faced boy had hair all over his body and face) and Camel Girl (whose malformed knees forced her to walk like a quadruped), all of them working as circus attractions. "Vermin" have a lower status than "freaks". They usually cross human boundaries to threaten individuals and their environment. They are thought to be "dirty". Rats are frequently perceived this way, unless they are contributing to our welfare improvements in a lab. Finally, "demons" are the worst animals of all and are, according to some humans' points of view, able to contest the social order imposed by us and to reverse the fundamental master-servant relationship present in the traditional order. "*These animals do not fear humans, humans fear them. These animals hunt humans, humans do not hunt them. These animals have power over humans; humans do not have power over them*" (Arluke and Sanders 1996:181). Wildlife such as snakes, sharks and wolves are seen as "demons" due to their untamed and/or dangerous behaviour.

Although such constructs are typically shared by the majority of individuals, the scales are sufficiently flexible to allow "good" animals, for example "dangerous" dogs, to turn "bad" (e.g. Twining, Arluke and Patronek 2000). For example, pit bulls are seen as "demons" that kill and eat their victims (Arluke and Sanders, 1996). Since the 80s that this

pedigree dog's attacks have been hyperbolically described by the media, perpetuating the negative attitudes people have toward the breed. In fact, there are no data corroborating the idea that pit bulls attack people more often than any other pedigree. In addition, these dogs are frequently associated with minority groups and, possibly, people's attitudes toward pit bulls are associated with discrimination directed to these individuals rather than to the dogs themselves (op. cit).

Using Arluke and Sanders' model (1996) as a basis, I establish a "preference ranking" in order to determine which wildlife species people from Tombali region like and/or dislike the most and assess the factors which underlie these preferences. The main goal is to assess if chimpanzees – the primate this conservation project aims to protect – can be a good flagship species. The choice of a charismatic flagship species cannot be randomly done, since it is important to achieve conservation goals and gain local people's support and collaboration. When a conservation project decides to select a specific animal to be a flagship species, it does so to get public awareness and funding. As such, a project usually chooses an animal that is, according with the conservationists' point of view, charismatic (Andelman and Fagan, 2000; Caro, Engilis, Fitzherbertand Gardner, 2004; Hambler, 2004; Kaltenborn, Bjerke, Nyahongo and Williams, 2006). However, an animal that is considered attractive according with Western attitudes, beliefs and constructs might not be perceived as "good" by locals, and such a choice can cause a community-based-conservation project not to succeed (Mace, Possingham and Leader-Williams, 2006).

1.3 Gender and power: understanding consequences of differences in perceptions for conservation

"*Women tend to be keener than men to form cooperatives and self-mobilise as a group to share responsibilities, provide support, and perhaps to initiate change. Women have seen the advantage of 'group power'. They will often attend meetings* en masse *and sit together in a group where they feel less vulnerable and supported by the presence of their*

contemporaries. Single women, particularly those divorced or widowed, tend to be more mobile, confident and able to participate in activities." (Flinton, 2003: 10). Even though women may be active in such group activities, women do not seem disposed to participate in conservation efforts and environment protection (Flinton, 2003; Lee, 2004; Kalibo and Medley, 2007; Mukadagi and Nabalegwa, 2007; Bandiaky, 2008; Reed and Christie, 2009). The lack of half of a society's engagement with conservation goals can be highly problematic for project success.

If one wishes to get women's attention and collaboration, he/she initially needs to understand the scope of women's' indifference towards conservation. Women and men are thought to differ in the way they perceive and interact with natural contexts (Flinton, 2003; Kanji, 2003; Mukadagi and Nabalegwa, 2007; Stringer, Twyman and Thomas, 2007; Bandiaky, 2008). This distinction is particularly true in rural Africa, where social roles for men and women are very separate and clear. Division of labour, for instance, is totally gender structured (Flinton, 2003; Kalibo and Medley, 2007; Mukadagi and Nabalegwa, 2007). In Tombali, as elsewhere in West Africa,women are expected to do housekeeping, to raise their children and to feed their families. Their agricultural and gathering activities are mainly of a subsistence nature. Usually they do not go inside the forest; as an alternative, they collect the products they need nearby the houses. They do not engage in hunting activities, extraction of large timber products, or cultivate or trade in cash crops. These are male activities. They only trade fuelwood and other low-valued goods inside their local communities, while men traditionally trade bushmeat and timber in larger markets. Since their routines are almost the same throughout the year, women have little time available to get involved in other activities, including participation in conservation initiatives. As men are usually involved with more seasonal activities, they may have more time available for community activities (Flinton, 2003).

Furthermore, land tenure is under male control (Flinton, 2003; Moser, 2007). Women are not expected to have their own land possessions. As such, land preservation – farms are usually located inside the forest – is not perceived of as a relevant matter for

women. As a consequence, they are kept away from decision-making processes and from community participation. In addition, income and its management are also under male control. For instance, in some African countries women do not have access to micro-credit, which seems to be the case in Guinea-Bissau (Moser, 2007). Even when women manage to obtain some money due to trading activities, this income management is done by their male relatives or spouse. In this society, since females barely have any control over their lives, they are more vulnerable to extreme poverty. Educational opportunities and access to health care is first offered to men, even where maternal and infant mortally and the absence of prenatal medical support are a rule (see Chapter 3).

In conclusion, women often feel detached from conservation, not due to a lack of capacity to get involved in these topics, but because they are not empowered to do so (Mehta and Kellert, 1998; Lee, 2004; Chambers, 2007; Moser 2007). In rural Africa, women are not expected to hold opinions or to engage in decision-making processes regarding sustainable resource management. The Millennium Development Goals in Africa (United Nations, 2008) propose that women's empowerment programmes are necessary in order to achieve higher human development, poverty eradication and sustainable development. Unfortunately, NGOs operating in the Tombali region appear to ignore United Nations guidelines, disregarding women's potential to efficiently collaborate achieving these goals (Stringer and Thomas, 2007).

1.4 Human-wildlife interaction: conflict and crop-raiding as a threat

Human population growth and consequent land conversion for agricultural proposes have been contributing to the increment of the conflict between humans and wildlife (Ross, Srivastava and Pirta, 1993; Hill, 1998; Lee, 2010). Farm damaging is a serious threat to humans and nonhumans (Saj, Sicotte and Paterson, 2001; Lee, 2010; Strum, 2010): raiders constitute an economic problem to farmers that depend on agriculture to survive (Saj et al., 2001; Hill, 2002; Weladji and Tchamba, 2003; Gadd, 2005) and human anger

towards wildlife that they perceive of as threats endangers species survival (Naughton-Treves, 1997; Gilligham and Lee, 2003; Gadd, 2005; Lee, 2010; Strum, 2010).

From the perspective of this thesis, it is the attitudes that result from experiencing raiding or other interactions with wildlife that are of interest. People experiencing crop-raiding tend to be less collaborative with conservation efforts and are less tolerant to the proximity of wildlife (de Boer and Baquete, 1998; Weladji, Moe and Vedeld, 2003; Weladji and Tchamba, 2003; Gadd, 2005; Lepp and Holland, 2006; Lee 2010). Some species are better raiders than others, although elephants (Hill, 1998; Gadd, 2005), bush-pigs (Kagoro-Rugunda, 2004), red colobus (Siex and Strutisaker, 1999), vervet monkeys (Naughton-Treves, 1997; Gilligham and Lee, 2003; Kagoro-Rugunda, 2004), baboons (Naughton-Treves, 1997; Hill, 2000; Kagoro-Rugunda, 2004) and chimpanzees (Naughton-Treves, 1997; Hockings, 2007) are among the most frequently mentioned raiding species. They are usually described by locals as intelligent, dangerous, highly destructive (Naughton-Treves, 1997; Hill, 2000; Weladji and Tchamba, 2003) and unpredictable, since people usually feel unable to prevent their attacks, particularly those made by large mammals (de Boer and Baquete, 1998; Hill, 1998). Of all the raiding species, primates are considered the worst (Naughton-Treves, 1997; Hill, 2000; Saj et al., 2001; Hill, 2002; Gilligham and Lee, 2003; Kagoro-Rugunda, 2004; Strum, 2010), since it is difficult to stop them from "visiting" the farms (Hill, 2000; Saj et al., 2001; Strum, 2010). They are physically able to jump fences – even the electric ones (Saj et al., 2001) -, are behaviourally flexible and cooperative (Hill, 2000) and are able to evaluate the risks and to wait for a good opportunity to raid without being noticed (Strum, 2010). Of all the African primates noted as raiders, baboons are the most negatively viewed (Naughton-Treves, 1997; Hill, 2000; Strum, 2010). They are described as thieves that viciously destroy the farms, sometimes just for pleasure (Naughton-Treves, 1997).

There are some important factors that influence the number of times a farm is attacked by raiders. Proximity to the forest usually leads to more crop-raiding (Saj et al., 2001). In addition, certain crops are particularly vulnerable due to their high palatability

(Naughton-Treves, 1997; Saj et al., 2001). Apparently, local farmers are not often effective at preventing crop-raiding. The most used methods are patrolling and chasing animals (Hill, 2000; Saj et al., 2001). Sometimes, patrolling is carried out by children or women, though there is evidence that primates do not fear them as much as they fear adult males (Hill, 2000). Besides, chasing is not also a good strategy, since these animals have enough patience and persistence to hide and wait for another chance to raid without taking risks (Strum, 2010). Furthermore, the high nutritional value of the food primates manage to steal from the farms makes them able to wait for longer for another meal (Hill, 2000; Strum, 2010). Farm relocation (Saj et al., 2001), the establishment of buffer zones between the forest borders and the farms (Naughton-Treves, 1997), the implementation of less palatable plantations (Saj et al., 2001) and the creation of a compensation scheme (Ferraro and Kramer, 2002; Weladji et al., 2003; Nyhus et al., 2005; Thirgood et al., 2005) are among the most popular solutions to mitigate conflict and particularly crop-raiding effects.

1.5 Chimpanzee conservation status in Guinea-Bissau

This research is part of a larger project which has as its main goal the protection of patches of forest and their chimpanzees populations (*Pan troglodytes verus*), using a community-based-conservation approach (Adams and Thomas, 2001; Adams and Infield, 2003; Lee and Priston, 2005).

In general, primates are threatened all over the world. Chimpanzees are no exception (Gippoliti and Dell'Omo, 1996; Butynski, 2001; Rose, 2002; Sicotte and Uwengeli, 2002; Gippoliti and Dell'Omo, 2003; Gippoliti, Embalo and Sousa, 2003; Oates, 2005; Brugiere, Badjinca, Silva and Serra, 2009). As with many other charismatic species, habitat loss, human population growth and pet trade are among the most serious threats to chimpanzees' survival. This is especially true in West Africa, where a weak political and economic stability, makes conservation an irrelevant issue for governments.

We do not yet know much about the size of the chimpanzee population living inside the Guinean territory (Gippoliti and Dell'Omo, 1996; Gippoliti and Dell'Omo, 2003; Gippoliti et al., 2003; Brugiere et al., 2009). In reality, estimations regarding chimpanzee populations across Africa are very unreliable (Oates, 2005). For instance, chimpanzees in Guinea-Bissau were declared extinct in 1988 (Gippoliti and Dell'Omo, 1996; Gippoliti and Dell'Omo, 2003; Gippoliti et al., 2003), and only when Gippoliti and Dell'Omo (1996) conducted a survey along the River Corubal and Cantanhez Forest, did conservationists come to know that chimpanzees in these regions were common, although particularly vulnerable due to habitat fragmentation. Data from nest counts and surveys suggest that the number of chimpanzees in Guinea-Bissau range from 600 to 1000 (Gippoliti et al., 2003). At the present time, one can find this species in Boé region (SE, between Corubal River and Guinea border) and in the more humid SW region (Tombali and Quinara). The species is reported in southern Lagoas de Cufada National Park (70,000ha) and in the proposed Dulombi National Park in the north-east, but in both areas they are hardly ever seen. Overall, chimpanzees are apparently more common in Cantanhez National Park (Gippoliti, et al., 2003) [see maps in Chapter 2].

In order to attract public awareness and international funding, further surveys of chimpanzee populations and their cultures are needed. In addition, ecotourism and other strategies to promote a community-based conservation project need to be implemented in this region (Gippoliti et al., 2003).

1.5.1 The conservation project: aims

As mentioned above, the major threat to chimpanzee survival is habitat destruction (Gippoliti and Dell'Omo, 1996; Rose, 2002; Sicotte and Uwengeli, 2002; Gippoliti and Dell'Omo, 2003; Gippoliti, Embalo and Sousa, 2003; Oates, 2005; Brugiere, Badjinca, Silva and Serra, 2009). Meeting people's daily needs for non-timber forest products and agriculture are the main reasons for forest damage, as at least in Tombali, there is relatively little commercial timber extraction. In addition to habitat loss and alteration,

chimpanzees are hunted in some areas as bushmeat (Fa et al., 2002; de Merode et al., 2004; de Merode and Cowlishaw, 2006), or killed as crop-pests (Messmer, 2000; Gillingham and Lee, 2003; Kagoro-Rugunda, 2004; Osborn and Hill, 2005; Reynolds, 2005; Hockings, 2007). This endangered primate is suffering catastrophic losses due to human actions, and thus we need to focus on understanding, and changing for the better, people's perceptions and attitudes towards the species. This is the topic I will be concerned with in this thesis.

This work is mainly theoretically based upon (i) examining the construct of sociozoologic scales (Arluke and Sanders, 1996); (ii) issues in human vs. nonhuman interaction (e.g. crop-raiding); (iii) economics (i.e. level of dependency from forest resources); and (iv) understanding people's expectations about the future of the National Park as a potential constraint on their welfare and livelihoods. The need for considerable information of different types led me to collect two distinctive sets of data: quantitative and qualitative (see Chapter 2), and to attempt to integrate the two.

This research has four aims:

(i) To establish a "preference rank" to be able to understand which nonhuman primates and other animals that people from Guinea-Bissau like/dislike most and the origin of these preferences. An adaptation of the sociozoologic scale developed by Arluke and Sanders (1996) was used to determine nonhumans' status and to create models of preferences;

(ii) To understand what underlies the relative rankings of species; for example, if the species ranked lower are the same ones that are competing with humans for resources;

(iii) to understand the economic basis of the "tabancas" (villages). It is exceptionally important to assess how dependent the villagers are on the ecosystem services in this area (Rose, 2002; Sicotte and Uwengeli, 2002);

(iv) Finally, to access people's expectations about their future and how they believe it can be affected by the new Natural Park and the implementation of an eco-

tourism programme. If we want to succeed with our conservation plan, we need to know what people are expecting to happen in the future.

1.6 Thesis structure

Chapter 2 provides general information on the methods used during data collection. Each results chapter (Chapters 3-7) has a section on methodology specific to the analysis in that chapter.

Chapter 3 describes the political and the economic context of Guinea-Bissau in general and, particularly, of Cantanhez National Park. Some statistical data from United Nations on the Guinean population are presented, as well as risk maps based on the testimonies of the protected area heads of households (males). In the second part, Chapters 4 and 5 consider the Guinean sociozoologic scale. In order to build the model of perceptions, two analyses were made: (i) descriptive analysis (Chapter 4), in order to appreciate whether socio-demographic characteristics such as gender or religion contribute to respondents' attitudes; (ii) principal component analysis (Chapter 5), as a way to explore which wildlife attributes contribute to positive or negative attitudes toward nonhuman species. In the third part, Chapters 6 and 7, the social perceptions of women and men are discussed on a qualitative basis. Models based on networks of subjects' perceptions on the National Park are constructed using associations, contradictions and other evidence revealed in people's speech.

Finally, Chapter 8 synthesizes the main findings of the research and discusses recommendations for the future of the National Park and the chimpanzees living inside its borders.

CHAPTER 2 – METHODS

Plate 2.1. Photos of animals used during the first stage of data collection.

Guinea-Bissau is a small country in Western Africa bordered by Senegal to the North, and Republic of Guinea to the South and East, with the Atlantic Ocean to its West. It achieved its independence from Portugal in 1974 after the "War of Independence" that brought tremendous damage to the country's economics and infrastructure (Proença, Moniz, Vaz and Camará, 1999; Forrest 2003; Nóbrega 2003). The civil war that took place in 1998 and 1999 and a military coup in September 2003 again disrupted economic activity, leaving a great part of the economic and social infrastructure ruined, which intensified poverty. Following the parliamentary elections in March 2004 and presidential elections in July 2005, the country has been trying to recover from the long period of instability despite a still fragile political situation. Guinea-Bissau has more than two-thirds of its population living below the poverty line. The economy depends mainly on agriculture (cashew nuts, rice, cassava, peanuts, etc.), fishing and palm oil production (Proença et al, 1999; Report

of the Promotional Mission to the Republic of Guinea-Bissau, 2005; United Nations Development Programme, 2006). Guinea-Bissau has started to show some economic advances in the last two years, after a pact of stability signed by the main political parties of the country. However, the lack of a solid judicial system and legislation brought Guinea-Bissau to the attention of the Colombian cocaine traders with major consequences for governance and economics (see Chapter 3).

Guinea-Bissau and its neighbouring countries of Republic of Guinea and Senegal are associated with the "Casamance" area of endemism and separated from the eight other African regions of endemism (Oates, 1988). This region has been separated from the eastern Congo and Eastern Arc forests for probably the last 1MY (Hamilton, 1988). These north-western forest blocks have high levels of endemism in their vertebrate fauna (passerines: 5.8% of species; Hamilton 1988) which is replicated in their primate diversity (Oates, 1988). Thus this region contains the subspecies of chimpanzee (*Pan troglodytes verus*), which has recently been proposed to have diverged from the central and eastern subspecies about 250 thousand years ago (Stone, Battistuzzi, Kubatko, Perry, Trudeau, Lin and Kumar 2010). Other primate species include at least two nocturnal galagos, historically Diana monkeys (*Cercopithecus diana*) along with other guenons (*C. sabaeus*, *C. petaurista, C. nictitans, C. campbelli*), mangabeys (*Cercocebus atys*), the rare guinea baboon (*Papio (h.) papio*), and colobus monkeys (*Colobus polykomos*, *Procolobus badius*, and possibly *P. verus*) (see List of Species; Kingdon, 1997).

2.1 Study area

Field work took place in Tombali – considered one of the poorest regions of the country (Forrest, 2003; United Nations Development Programme, 2006)-, a patchy forested area in the South of Guinea-Bissau (lat: $11^{0}16'42.78''$N; long: $14^{0}54'42.30''$W). In 2007, part of this region was declared to be protected, since it is considered one of the most important

eco-regions of the planet (IBAP, 2007). Even though, no management, law enforcement or compensation plan was implemented in the National Park so far (see Chapter 3).

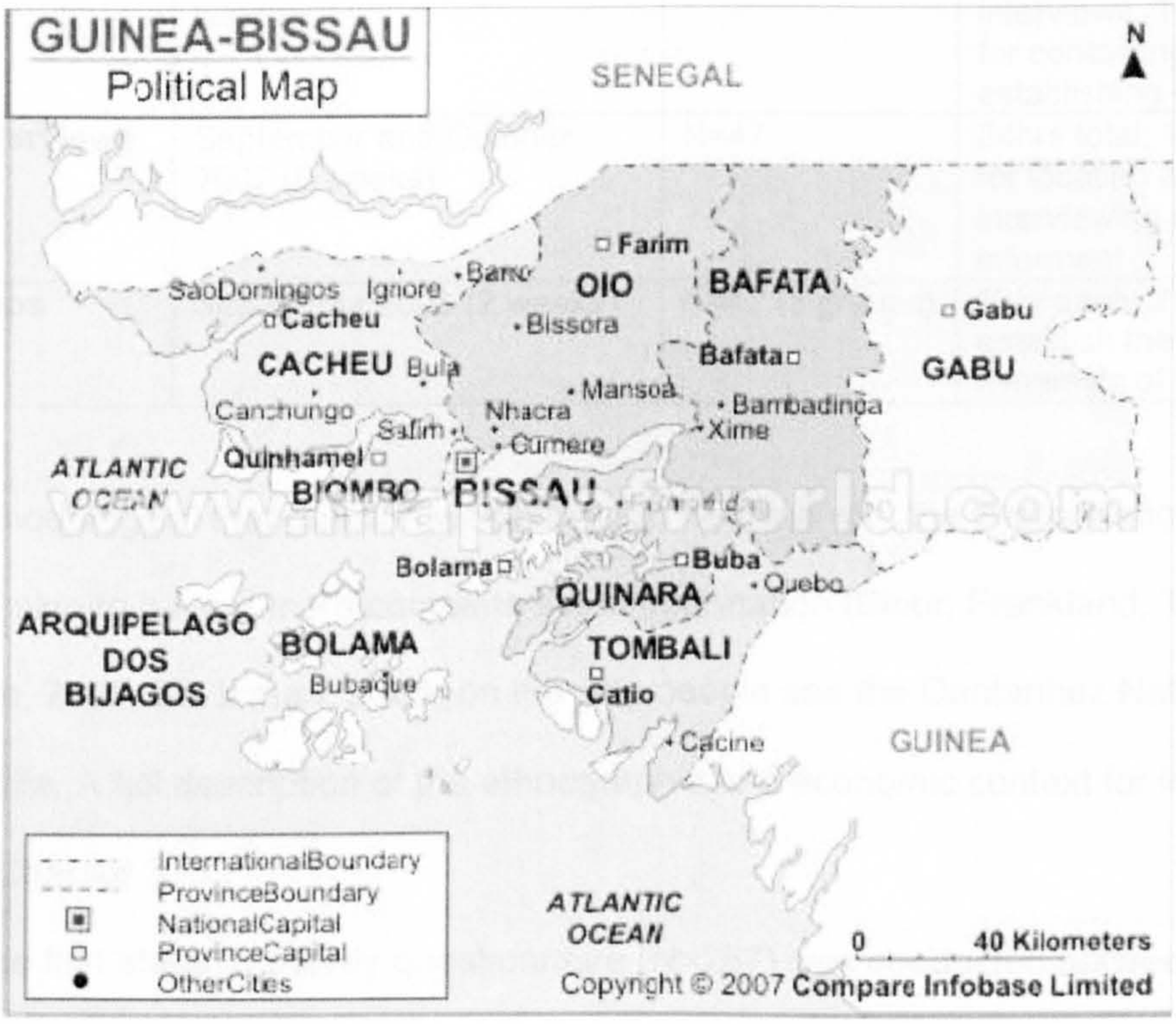

Figure 2.1: Map of Guinea-Bissau. The region of Tombali, in the South, is where Cantanhez National Park is located.

2.2 Data collection and questionnaire design

The field work was divided in three distinctive stages and three different methods were used (table 2.1). Field work occurred during periods when villages were accessible, when people had the leisure time for being interviewed, and when individuals could be located in an area of dispersed populations with no road infrastructure.

Table 2.1: Summary of data collection (details of contact issues below)

Method	**Period of time**	**Sample size (N)**	**Hours of data collection**
Questionnaire survey	February and March 2007 (5 weeks)	N=257	64hrs total for interviews, 1 day each for contacting and establishing informants
In-depth interviews	September and October 2007 (6 weeks)	N=47	24hrs total, 1 day each for locating and interviewing each informant
Focus groups	September 2008 (2 weeks)	N=47 (5 groups)	3hrs each, 2 days to establish the time and dynamics of the group

Methodological triangulation was crucial to help me with the interpretation of results and also to have a more complete set of information (Bloor, Frankland, Thomas and Robson, 2000; Silverman, 2005) on the way people see the Cantanhez National Park and its wildlife. A full description of the ethnographic and economic context for inhabitants is given in Chapter 3.

In the first stage, a survey questionnaire (N=257) was conducted between February and March 2007. The sample included all of the adult inhabitants of this region who could be contacted. Due to a lack of census information, the sample had to be non-probabilistic, while keeping age and gender as balanced as possible (Fowler, 2002). The questionnaire was composed mainly of closed questions (Oppenheim, 1986; Peterson, 2000; Babbie, 2004) relating to economic activities, religious beliefs, sociozoologic scales (see Chapters 4 and 5), hunting traditions and meat consumption. Information about ethnic group, gender, age, educational degree and family background were also collected (see Chapter 3).

In the second stage of field work - that took place between September and October 2007 - in-depth interviews (N=47) were made. I interviewed exclusively adult men in order to assess the perspectives of hunters and what could be considered as the "empowered" within the community. The interview form was mainly composed by open-ended questions as a way to fulfil the gaps left by the quantitative data collected in the previous period (Bloor et al, 2000; Silverman, 2005). Questions about the National Park,

its wild animals and households' livelihood were made. No previous directions were given to the subjects, in order to keep the interviewing process away from the researcher expectations contamination (Silverman, 2005). This stage was also important to corroborate some of the data I had collected during the closed questionnaires administered to male participants.

Since women were found to be difficult to interview - they were always too busy in livelihood activities to collaborate in data collection - I conducted 5 focus groups (N=47) during September 2008. Local women's groups were the initial point of contact. Women-only groups were vital since men in these societies often control women's activities and women (*from preliminary analyses of the data collected during the initial survey*) appear to be less engaged - more negative and fearful - with the conservation projects in their area (Lee, 2004; Bandiak, 2008; Buyinza and Nabalegwa 2007). The items used during in-depth interviews with men, were also used as points of discussion in our meetings with women, since perceptions on ecosystems and especially wildlife species can vary with gender (Kaltenborn, Bjerke, Nyahango and Williams, 2006). I needed to ensure that comparisons between genders, even though I used different methods, would be possible.

When using qualitative methods, sample size depends on the amount of new information the researcher can obtain in each interview/conversation. As soon as the interviewer perceives that he/she is not adding new information to his/her set of data, he/she might have reached the so-called "saturation" - i.e. regardless of how much more data one collects, the kind of information he/she will attain will be virtually the same – and should stop collecting data (Douglas and Craig, 2007). In this study, the saturation stage was more difficult to assess with male informants (N=47) because the interviews were conducted individually and there was no capacity to cross-check with other informants. On the other hand, the five female focus groups (N=47) reached saturation within the discussion period, suggesting that these were sufficient in length.

More details on the questions and items explored during each stage of data collecting will be given in the respective chapters. The questionnaires and formats of the in-depth interviews are all presented in the Appendices.

2.3 Analysis

2.3.1 Quantitative analysis

In the first stage of the analysis, socio-economic data were explored using SPSS V16, primarily via crosstabs and descriptives. The main goal of these initial analyses was to capture a broader picture of the scenario where field work took place (see Chapter 3). Exploring dependencies and similarities between variables was a mechanism to clarify associations so as to initiate more sophisticated statistical analysis and to then tease apart causal associations as well as eliminating co-variance.

Principle component analysis was used to build models of how people "organize" wildlife conceptually and how this organisation can influence their attitudes toward the species inhabiting the Cantanhez Natural Park (see Chapter 5). Principal components analyses (PCA) were conducted on the individuals' rankings of species of conservation concern, specifically chimpanzees and baboons, all other nonhuman primates, and for gazelles and hyaenas, because informal conversations suggested that these latter two nonhumans potentially represent the 'good' and the 'evil' of the Guinea-Bissau's sociozoologic scale.

PCAs were based on individual rankings of animals. Participants were asked to use the photographs of animals (see List of Species, p. 13; photos: appendix II) that they knew or recognized so as to assign 10 paired and one independent "qualities" (good-bad, pretty-ugly, intelligent-unintelligent, edible-inedible, often seen-less seen, and similar to humans) to these animals. They were asked to provide the names of their top three animals for each quality (ranked 3 = highest; 1 = lowest; 0 = not present in an individual's ranking). I assumed that the first named was the most salient, extrapolating from the concept of "key word" (Vansina, 1990; Sumner, 1988) which assumes that a "word" or in

this case a named animal, reveals the structure or hierarchy of thoughts and embodies cultural context.

Specific attributes of different species (e.g. good, bad, ugly, etc.) were then compared with independent categorical variables of gender and religion (see Chapter 4 for details).

Non-normally distributed or categorical data (age, religion) were grouped into categories for analysis. Where categories were contingent, we eliminated those that co-varied (for example ethnicity and religion mapped onto each other at almost 100%). The statistics presented in the thesis are non-parametric to cope with the high levels of skew in the data, and since most of the data are nominal rather than linear.

More detailed information specific to individual qualitative analysis will be given in the respective chapters.

2.3.2 Qualitative analysis

After the quantitative analysis, data generated by the in-depth interviews and focus groups were analysed using a relational database programme called Atlas.ti (see Chapters 6 and 7). The main goal of this stage was to obtain a qualitative perspective on the factors influencing the quantitative data (Babbie, 2004), namely the ones influencing the way people relate with the bush, its wildlife and the expectations individuals have regarding their future inside the Natural Park. Each of the analytical techniques used is presented in detail in the respective chapters.

Conversations were entered into ATLAS.ti (version 6.2), and relations were constructed between statements using a protocol of associations between ideas. In the first stage, the recordings/transcriptions were split into small portions; each portion was related to different items addressed during the interviews (themes). Themes were major activities or daily life problems while sub-issues were based on the most often repeated ideas, objects or constructs – later transformed in codes - in relation to a theme (e.g. forest, farming, famine, palm oil, rice, reserve, crop-raiding, chimpanzees and so on).

Codes were linked with the phrases and, when necessary, memos and comments were linked with both phrases and themes in order to subsequently refine the networks. Developing links between phrases and codes represented the textual analysis. The textual level focused only on people's speech (i.e. most repeated words, issues and ideas). Later, in the conceptual level of analysis, codes were linked with each other depending on the relations between words and ideas that emerged during the interview (e.g. association, contradiction, being part of another idea, having the same meaning and so on). These links among codes were used to build the models (networks) of ideas that provided a perspective on how people perceived the topics that we discussed (Atlas.ti, 2004) and potentially, to provide insight into how they mentally constructed their environmental context.

As this network analysis is qualitative, no percentages and other statistical results will be provided. The use of percentages would not make any sense, since this are small samples (Krueger and Casey, 2000) – see Chapters 6 and 7.

2.4 Research limitations

Each research method has its own limitations. Since methodological triangulation was used (Bloor et al,, 2000; Silverman, 2005), I will discuss the issues and limitations associated with each method separately, even though focus groups and in-depth interviews both produced qualitative data.

The questionnaire's first limitation was the lack of existence of any reliable population or household (census) lists. In Guinea-Bissau, censuses do not take place at a regular basis and even if they did, one needs to take into account the fact that Guinean people move from one place to another constantly. There are cases when entire "tabancas" (villages) moved to another location in order to be settled closer to a road (Nóbrega, 2003). All these movements mean that village maps and population lists loose

reliability quite fast. This forces investigators to use non-probabilistic samples, that makes data difficult to extrapolate to the whole population (Fowler, 2002).

The need to use an interpreter was also an issue that I had to deal with during the entire data collection process. In Guinea-Bissau, only a few people speak Portuguese fluently and correctly. Nowadays, Creole is widely spoken in the territory, though there are people living in rural areas that only speak their local ethnic dialect (Forrest, 2003). This introduced some issues that I had to keep in mind. Firstly, the interpreter was part of the context where the research is taking place, which means that he/she lives within the same culture. This might mean that he/she may feel uncomfortable with some of the respondents' testimonies (Jacobsen and Landau, 2003) and may feel tempted to manipulate the answers by doing a "lighter" translation. Secondly, and regarding the fact that Portuguese is very complex, interpreters might not have the full knowledge of the language in order to do proper translations. Finally, when the subject's speech is too extensive, the interpreter might tend to simplify it when translation occurs (Hsieh, 2007). During the survey data collection, these issues were not so serious as to impact on the quality of the data. The questionnaire was mainly constituted of close-ended questions which resulted in short answers; although for open-ended questions, translation was revealed to be more complex, but I will refer to this later on. During survey questionnaires, some strategies to solve the translation issue were devised in an attempt to eliminate these limitations. Back translations were made in order to make sure that the questions were going to capture exactly the meaning that they were intended by the researcher to have (Douglas and Craig, 2007) and a pre-test was also done (Babbie, 2004). The interpreter was informed about the questions, their meanings/aims and the importance of doing an accurate translation in advance. He was totally aware of the fact that the use of "shortcuts" to make questions and answers shorter was not allowed (Hsied, 2007). Finally, all the interviews were recorded which worked as a discouragement to any tendency to do false translations.

At a point during the survey data collection process, photos of Guinean fauna were shown to subjects (see appendix II). People were asked to rank the photos according with specific attributes (see Chapter 5). This apparently easy task was revealed to be very difficult for some elderly respondents due to ophthalmological limitations. In these cases (n=3), we had to verbally explain the content of the photos in order to let subjects to pinpoint the species they wished to choose. This resulted in longer interviews, since we had to repeat the process several times to make sure that the respondent was going to reliably answer. Blind people were not included in the sample. In addition, a few young adults found it hard to recognize all the animals, since some of the species were apparently extinct in Cantanhez National Park at the present time. This was specifically the case for hyaenas that were sometimes referred as "leopards" by the youngest interviewees.

Since I mainly worked with nominal variables and since their distribution was not normal – which did not come as a surprise as I used a non-probabilistic sample – non-parametric statistics were the most appropriate way to explore some of the data (Cramer, 1994; Field, 2000; Bryman and Cramer, 2003). I used Chi square and other distribution tests (Mann-Whitney, Wilcoxon) for such explorations. However, the use of PCA requires that data meet some assumptions of normality, so I also used parametric tests. The nature of the tests used is spelled out in each analysis. All probabilities are two-tailed and p was set at 0.05.

The in-depth interviews were very fruitful regarding information richness, though a few issues had to be kept in mind. Firstly, I was conducting in-depth interviews in a cultural context that was totally different from mine. As such, barriers regarding language and the "real" or deep meaning of certain words and expressions had to be assessed (Briggs, 2003). Open-ended questions were tested and translated several times to assure that my aims were met (Douglas and Craig, 2007). Then, to make men to feel totally comfortable answering my questions, I did not give subjects any clues about the way they were supposed to reply. As such, questions like: "Tell me about the animals in the bush."

or "Tell me about the reserve." were frequent. According to Briggs (2003), this use of open questions might lead people to misinterpret the questions and could produce a vast range of different answers, making data analysis almost impossible to achieve. After men answered freely, I then discussed with them the items I wanted to hear about. It was particularly important to make male respondents feel comfortable and secure during the process, as I wanted to introduce some delicate questions related with hunting and bushmeat consumption habits, which are illegal activities and therefore cannot be explored directly.

The most problematic element of data collection was women's focus-groups. Talking to women in this context is sometimes complicated. In Guinea-Bissau, like many other parts of rural Africa, women are responsible for all the work concerning housekeeping, raising children, looking after crops and fishing (Flinton, 2003; Kalibo and Medley, 2007; Mukadagi and Nabalegwa, 2007). In fact, I experienced major problems contacting women from the beginning of field work, since women were always too busy to chat. In addition, in the ethnic and social context where I was studying, one should not expect women to collaborate with researchers without men's permission. The use of focus groups was the only possible choice, allowing me to reach a good number of women at a single time, without having to interrupt their work for a long period of time and with no need to disturb the village's routine.[2]

Contacting possible participants for focus groups is not a simple process (Krueger and Casey, 2000; Bloor et al, 2001). Getting in touch with women to settle a date to meet with them was not easy. Initially, I planned to talk to the head of the women's committees – each village has its own – in order to set a date and determine a time to meet with the female villagers. However, women quickly started to fail to attend the meetings, which delayed data collection. September is the month of Ramadan and also the time of the

[2] It was absolutely necessary to interview women otherwise I could not have a full understanding of the context where field work was taking place (see Chapter 1; Mehta and Kellert, 1998; Lee, 2004; Mukadagi and Nabalegwa, 2007; Stringer et al., 2007; Bandiaky, 2008; Martino, 2008; Reed and Christie, 2009).

year when women start planting rice. During the day, women were farming and in the afternoon they were cooking to feed their families after sunset. In order to resolve these conflicts of time, I decided to visit the villages, waiting for women to arrive home from farming and then, after a small chat with the head of the women's committee, start interviewing them on a totally informal basis.

The size of the focus group can also be an issue. Groups of over 10 participants can become a nightmare when it comes to transcribing the audio record (Krueger and Casey, 2000; Bloor et al, 2001). Larger groups might also lead some more introverted subjects to become less participatory. Nevertheless, since I needed to collect a good amount of information in a very limited time of about 30 minutes, I decided to take the risk of working with large groups.

Creating rapport with women was also problematic. They were quite apprehensive in the beginning, but as soon as they noticed that the meetings were only for women, they felt progressively more confident in talking about their life experiences. A Guinean female assistant, fluent in both Portuguese and Creole, was contracted as a way to make participants more secure and to translate their testimonies.

Translation during in-depth interviews and focus groups was more meticulous than during survey questionnaires. Due to their qualitative nature, I needed to make sure that no information was lost. As such, translation was done while conversations were taking place – which gave me the possibility, in the case of the in-depth interviews, to download the audio directly in software. Focus groups transcriptions were more complex, since women tended to speak at the same time. As such, during the meetings, the field assistant made a sufficiently accurate translation of what was being told, to give me clues about what to ask next. Subsequently, she was present during the whole transcription process to assist me with the details that she could not transcribe *in situ*.

Differences in the way translation occurred during in-depth interviews and in focus groups might have produced discrepancies in the way translators provided me with detailed information of what was said by the interviewees. The possible loss of information

during in-depth interviews – since the translation was made directly *in situ* – potentially interfered with the quantity and quality of the information to assess men's perceptions and to compare with that obtained during focus groups. In addition, since I used different methods to collect qualitative data, comparisons between the two sets of data should also be made with caution. However, the same topics were introduced and discussed during men's interviews and women's meetings, and comparisons are therefore still possible. In addition, these "comparisons" are designed to highlight issues in livelihoods or attitudes that are either the same or which differ between the genders rather than to act as strict, controlled comparisons.

Finally, working in a different cultural context, can be very challenging especially if one is not well prepared to be able to cope with daily constraints. For instance, being a white woman in the field, added to the fact that I'm Portuguese, could also be considered a limitation. Though I did not notice any kind of resentment, there is some prejudice – both positive and negative – concerning the former colonial occupying country (Portugal). The use of local Guinean interpreters was one solution to be able to get closer to the people in the villages, a decision that seemed to work well. Despite all these methodological constraints, it was important to attempt to explore the perceptions and attitudes of the local people, so as to understand the limits and problems of conservation activities in this high biodiversity region.

2.5 Ethical considerations

At all stages, the chiefs – traditional leaders - of the villages were informed about my aims and permission to talk to individuals in the population was requested from the village chiefs. After getting the permission to work in the villages, all the participants were briefed about the research goals and asked directly if they agreed to collaborate by answering some questions. Only people who decided to participate were included in the samples.

Although subjects did not give their written consent before they started answering the questions, this is because data collection took place in a very remote, deprived area of

Guinea-Bissau. In the majority of the cases, respondents could not read or write. Consequently, individuals agreed to participate in advance, but only verbally.

I always explained to subjects that they could stop answering the questions anytime they wanted. In addition, individuals were informed that they were free to omit questions that they did not want to answer. People collaborated on a totally voluntary basis. No money – or any other reward - was given to respondents. Despite that, to guarantee women's collaboration in focus groups during times when they would be preparing food or eating, I planned to serve a simple meal (Krueger and Casey, 2000; Bloor et al, 2001). Unfortunately, since September 2009 was the month of Ramadan and people professing Islamism are not supposed to have any food or water during the day, I had to abandon the idea.

To facilitate transcription, in-depth interviews and focus groups meetings were recorded as discussed above, but only after subjects declared they agreed to the recording. Furthermore, during field work I guaranteed anonymity to all respondents. All the data were analysed anonymously, and participants will all be provided with feedback on the general results of the project upon completion. No information that might identify any individual subject will be provided in future publications.

Ethical clearance for this study was also provided by the University of Stirling, Psychology Ethics Committee.

CHAPTER 3 - POLITICS, DEVELOPMENT AND LOCAL ECONOMIC CONTEXT

Plate 3.1. Woman from Caiquené (Cantanhez National Park) making baskets.

3.1 Establishing the community context

In this chapter, I provide a portrait of the nature of the communities living in proximity to the National Park. In order to understand the attitudes and perceptions of the people, and how these influence or underlie their relations with the protected area and its wildlife, we first need to examine their socio-economic context, both within the larger political environment and within the local household or individual level.

Here I establish the general ethnographic and economic "nature" of the culture with which I worked, and relate these traits to how individuals in these communities perceive risks. Risks were defined as problems people face in their daily lives that might have (i) uncertain consequences, (ii) which might expose villagers to adverse circumstances and (iii) that potentially provoke significant losses (Smith, Barrett and Box, 2000). Risk mapping is crucial, especially for policy-makers, since it can provide

information about which issues should be seen as priorities (Smith et al, 2000 and Quinn, Huby, Kiwasila and Lovett, 2003).

3.2 The political and development context

Guinea Bissau's lack of development and generally high levels of poverty are pronounced (Proença et al, 2000; Forrest 2003; Nóbrega 2003). Here I present some basic statistics from the UN and other organizations' profiles of the country in order to establish the local context for the household portraits and risk exploration that follow.

3.2.1 Population size and distribution across the country

According to the "Population and Vital Statistics Report", published by the United Nations (2009), Guinea-Bissau has a total population of 1,389,497 . This is an estimated value, since last census was made two decades ago (1991), when the total population was 983,367 individuals. The same report also states that 51.6% of the inhabitants, at that time, were women.

In April 2005, the "Report of the Promotional Mission to the Republic of Guinea-Bissau", produced by the African Union, estimated that 21.6% of the total population was living in the capital city (Bissau) and that 75% lived in rural areas, far from medical support, transport or education and relying on fishing and farming activities to survive (see section 3.2.4).

Young adults were predominant; 55% of the population were below the age of 20 (African Union, 2005). According to the "Rapport National sur le Développement Humain en Guinée-Bissau 2006" (United Nations Development Programme [UNDP], 2006), Guineans' life expectancy was low. When a child was born, his/her life expectancy was 45 years of age. Nevertheless, the chances of dying before the age of 40 were high, especially if one was a woman. The place where the person was born had also an influence on one's life expectancy. Tombali – the region where data collection took place

– was considered one of the poorest in the country, which dictated lower chances of survival after 40.

3.2.2 Level of literacy and educational system

The United Nations Development Programme (2006) noted that Guinea-Bissau's Constitution (1996) considered primary education as free and compulsory. No age, to start attending school, was referred to in the document. Despite these ambitions, the "Relatório de 2008 sobre Direitos Humanos na Guiné-Bissau" (2009) states that the Government does not invest in children's education and welfare. Guinean schools depend mainly on international and NGOs help (UNDP, 2006). Teachers are not being paid for their work and, as a result, they are abandoning their jobs. Depending on the level of poverty and the region where they are born, some children are also expected to help their relatives in farming activities, which contributes to a higher level of illiteracy in the country ("Relatório de 2008 sobre Direitos Humanos na Guiné-Bissau", 2009).

From all the schools that subsist (public, private and madrasahs), only 56.6% can offer the complete period of compulsory education – which, in the case of Guinea-Bissau, should be 6 years (UNDP, 2006). In addition, schools in general do not have proper sanitary conditions, no water well and no residences for pupils that have to travel long distances to attend school.

Illiteracy is high in the whole Guinean territory. The United Nations Development Programme (2006) states that 63.4% of the Guineans have never attended school. 76.2% of those are women. Gender differences are extreme: in primary school, only 83 girls are enrolled for every 100 boys; in secondary education, 44 girls are enrolled for every 100 boys. Depending on the region, the gap between men and women in literacy can be larger. Tombali, the region where I collected my data, is one of those cases (table 3.1).

Table 3.1: Level of illiteracy in Tombali region (south of Guinea-Bissau) in relation to gender.*

Gender	Population over 15	Illiterate population	Level of illiteracy
Total	**45,234**	**30,732**	**67.9%**
Men	20,211	8,812	43.3%
Women	25,023	21,920	87.6%

*in "Rapport National sur le Développement Humain en Guinée-Bissau 2006", United Nations Development Programme (adapted).

3.2.3 Women and infant mortality

All Guinean citizens are equal and should not be discriminated, in any case, regardless of their gender (Guinea-Bissau Constitution, 1996). Equality between men and women, however, is far from being real (UNDP, 2006). As mentioned, women have fewer chances to attend school than men; have a greater probability to live in extreme poverty; do not participate in decision-making processes within their communities; cannot inherit farms or other properties; and usually die earlier than men.

The constitutional law and Guinean legislation appears to protect women, although the absence of a judicial system and an authority to guarantee that the law is effective, contributes to crystallize some discriminatory practices. In rural areas, such as the one I lived in, female genital mutilation is a rule. Domestic violence and rape inside marriage is also frequent. Depending on the ethnic group and the family status, some girls are likely to be forced to get married, sometimes before puberty ("Relatório de 2008 sobre Direitos Humanos na Guiné-Bissau", 2009; "Rapport National sur le Développement Humain en Guinée-Bissau 2006", 2006). The authorities seemed to know that abuse of women and discrimination against them takes place, though the fear of loosing votes prevents politicians from taking action ("Relatório de 2008 sobre Direitos Humanos na Guiné-Bissau", 2009).

Table 3.2: Rate of infant and infant-juvenile mortality per thousand*

Year	**1999**	**2005**[3]
Rate of infant mortality[4]	124	122
Rate of infant-juvenile mortality[5]	203	205.2

*in "Rapport National sur le Développement Humain en Guinée-Bissau 2006", United Nations Development Programme (adapted).

Due to poverty and inadequate medical support, infant mortally is generally high ("Rapport National sur le Développement Humain en Guinée-Bissau 2006", 2006). These figures (table 3.2) can be compared with infant mortality rates of 2.9 per 1000 in Portugal in 2008 (World Bank, 2009). Malnutrition, malaria, diarrhoea and breathing infections are among the most common infant diseases. In addition, infant preventive medicine, such as vaccinations and parasites prevention (worming), is rare and depends on NGOs. Of all the deaths that occur before the age of 5, malaria is responsible for 35%. Besides the lack of recent statistics, table 3.2 shows that Guinea-Bissau is not improving in its children's health, and the statistics suggest the need for another 84 years to reduce infant mortality by two-thirds ("Report Shows Widespread Problems in Guinea-Bissau", 2007).

The inadequate number of doctors in certain regions of the Guinean territory does not contribute to people's health improvement especially regarding maternal and child health. For instance, in Tombali, there were 23,277 individuals per doctor in 2004 – only four doctors were working in the region. No medical centres or other health facilities were available in the most remote areas. As such, statistics indicate that only 5.8% of the deliveries are medically assisted, even though each woman is expected to have 6.8 babies (UNDP, 2006). Contraception is almost nonexistent. According to the UNDP (2006), only 1% of the Guineans living in rural areas know about and have access to condoms. Premature pregnancies (as previously mentioned, some girls are forced to get married before puberty), nonexistent medical assistance at birth and a short time between pregnancies are responsible for a high percentage of deaths during and after deliveries.

[3] Estimated value.
[4] Death probability before the age of 12 months.
[5] Death probability before the age of 5.

Haemorrhages, infections and eclampsia are among the risks that Guinean women take while having babies (UNDP, 2006). It will take 120 years to lower maternal mortally by three-fourths ("Report Shows Widespread Problems in Guinea-Bissau", 2007).

3.2.4 Economic turnover and commodities – reliance on ecosystem services

Guinea-Bissau is one of the poorest countries in the world (Proença et al, 2000; UNDP, 2006). It relies mainly on farming and fishing as major economic activities. Its gross domestic product (GDP) per capita has been retreating in the last few years. According with the UNDP (2006) the GDP per capita was 205 USD in 1997 and only 135 USD in 2003. Assessments suggest that it will take up to 112 years to double the GDP and to eradicate extreme poverty in the territory. The weakness of the economic system and the inequalities in income distribution make Guinea-Bissau one of the countries most dependent on international donors in the world (Report of the Promotional Mission to the Republic of Guinea-Bissau, 2005). As a result, at least half of the households have to deal with malnutrition as a daily challenge.

Currency (Franc CFA[6]) is barely held by people living in rural areas (United Nations Development Programme, 2006). During cashew harvesting people exchange cashews for rice – the most important ingredient in Guineans' diet. In fact, money is scarce, particularly in the traditional markets or in the little shops ("boutiques") that one can find outside the capital city.[7] People depend mainly on agriculture for livelihoods (table 3.3). Farming gives them food and a small amount of money – villagers usually trade some of their farm supplies (Forrest, 2003) – to be able to afford health care and pay for their children's education. In 2002, only 47% of the Guinean population had a waged job of any kind.

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[6] CFA means "Communaute Financiere Africaine". Though Guinea-Bissau was a Portuguese colony until 1974, they adopted the currency (Franc) used in the surrounding countries, held by the French in the past.

[7] In Cantanhez National Park was sometimes hard to buy food supplies in the "boutiques", because people did not have enough change to give us, since they do not get many chances to hold paper money instead of coins.

Table 3.3: Economic activities in Guinea-Bissau (data from 2003)

Economic activity	% of the GDP
Agriculture	55.6
Services	27.9
Industry	16.5

*in "Rapport National sur le Développement Humain en Guinée-Bissau 2006", United Nations Development Programme (adapted).

One third of the Guinean territory is used for agricultural purposes. Rice is the most important crop, while sweet potatoes and cassava are used as dietary substitutes when rice is scarce. These crops also act as sources of income, since they are traded in the markets inside the villages. Rice provides up to 40%-45% of the people's daily energy needs. In 2002, it was estimated that each Guinean ate up to 119kg of rice on an annual basis. Guinea-Bissau produces about 60% of the rice that it consumes; the rest comes from international donations or is imported. The most important fruits are: cashew, banana, papaya, pineapple, guava and cola nuts (UNDP, 2006). Guinea-Bissau ranks on the 6th of the countries producing cashew (Report of the Promotional Mission to the Republic of Guinea-Bissau, 2005). However, the cashew plantations are owned by foreign people that, apart from the farms and a few employees, do not make major investments in the country's economic development.

Fishing is the second most important economic and livelihood activity, although it is carried out mainly on a traditional basis (UNDP, 2006). Fish consumption is important since it acts as an alternative to animal proteins in the Guinean diet. Apart from chickens and goats and depending on the ethnic group, only a few villagers raise livestock such as cows and pigs. However, even villagers who have cattle only slaughter these animals on specific occasions (e.g. weddings, burials, births and other important social situations). China and European Union are responsible for the small percentage of industrial fishing occurring off the Guinean coast. Rewards and compensation plans, between foreign fishermen and the government, are usually settled beforehand. Its economic vulnerability

has impelled the Guinean governmental authorities to accept compensation and quota deals that usually comprise the over-exploitation of marine resources.

The recent cocaine trafficking, according to the United Nations (2007) should be seen as a significant economic threat, since traffickers operating in the territory are using the country as a platform to transport the drugs to Western Europe. Apparently, Columbian traffickers are not interested in money laundering inside the Guinean borders, although they use their money to pay to Guinean employees to load and package the drugs and, more recently, to work as body couriers. They also use money to bribe the authorities as a means to escape from the weak national judicial system (see section 3.1.5). Apparently, there are also some reasons to believe that Columbian traffickers have already constructed some laboratories in the most remote areas of Guinea-Bissau, in order to escape from the South American authorities' control. It is believed that the value of the cocaine trafficked through the country, may be greater than the entire national income (United Nations Office on Drugs and Crime, 2007).

3.2.5 Problems of corruption and lack of governance

Lack of economic opportunities and resources are hindering development while the lack of governance is preventing political stability and social progress (Proença et al, 2000; Forrest 2003; Nóbrega, 2003; UNDP, 2006; Relatório de 2008 sobre Direitos Humanos na Guiné-Bissau, 2008). The Guinean political context, after the War of Independence (1974), has been characterized by instability and recurrent threats to the constitutional order. As such, the government has been failing in the establishment of long term development plans that would allow achievement of the Millennium Development Goals, proposed by the United Nations for 2015 (UNDP, 2006).

The established Constitution is frequently disrespected and justice varies depending on the situation and on the people involved (Nóbrega, 2003). Belonging to a certain political party or to the "right" ethnic group may contribute to preferential treatment. Mainly, the system works on the basis of corruption and impunity (UNDP, 2006), mostly

due to a lack of experience in administrative and governmental management. In addition, poverty and low paid state employees, make people especially vulnerable to bribes and other forms of corruption.

Drug trafficking is an example of the weakness of the government's authority. Guinea-Bissau is especially attractive to people involved in illegal activities, such as cocaine trafficking. Risks of being caught and imprisoned are low, and trials are rare. Even when they happen, judges try to avoid prison sentences as punishments, because there are no jails. Besides, when it comes to prosecuting a drug trafficker, judges are afraid of potential retaliation. Military, state employees, policemen and politicians seem to be involved in trafficking and to collaborate with the Columbians in order to help them to escape from justice (UNDP, 2006 and Relatório de 2008 sobre Direitos Humanos na Guiné-Bissau, 2008). African body couriers are also easy to find. Extreme poverty makes them eager to swallow a large number of packages at a lower cost for traffickers (United Nations Office on Drugs and Crime, 2007).

In such an easily corrupted system, law is seen as something distant and discretionary, which also converts the concept of protected areas into something that again does not need to be respected. The state and the government exist only in the capital city (Forrest, 2003). In remote areas – such as the ones that are protected – official laws and the authority are totally ineffective (Forrest, 2003; Pinto, 2009).

3.2.6 Protected areas

Guinea-Bissau has six protected areas (table 3.4); three of them are located in the Bolama-Bijagós Biosphere Reserve (Bijagós archipelago). Orango National Park is situated in the south of the Bijagós islands. It covers 158,000 ha and it is composed by 5 islands: Orango Grande, Canogo, Meneque, Orangozinho and Imbane (Instituto da Biodiversidade e das Áreas Protegidas [IBAP], 2007). Part of its area includes a marine fraction. The João Vieira-Poilão Marine National Park is also in the Bijagós islands and covers 49,500 ha. It consists of 4 small islands (João Vieira, Cavalos, Meio and Poilão)

and 95% of its area is marine. Finally, the Islands of Formosa Nago and Chediã Communitarian Protected Marine Area (Urok islands) cover an area of 94,200 ha. This reserve is the only one – of the six that were established – that has a management plan implemented by Tiniguena, an NGO working in the region. In the continental area, Cacheu Mangroves Natural Park is the oldest reserve (1997). It is situated in the North and has an area of 80,000 ha. Half of its area is composed by mangroves. This region is considered the most important patch of mangrove in West Africa. Then, the Lagoas de Cufada Natural Park lies in the South – Quinara administrative region – and comprises 89,000 ha with several lakes. Cantanhez National Park was the last reserve to be established in Guinea-Bissau in 2007. It is located in Tombali - nearby the border with Republic of Guinea – and it was considered one of the most important 200 eco-regions of the world due to its biodiversity richness and global rarity of its habitat type (see below).

As previously mentioned, apart from the Islands of Formosa Nago and Chediã Communitarian Protected Marine Area (Urok islands), no other protected area has a management plan. The reserve establishment was approved by the Guinean parliament, though very little has been done in order to effectively protect these habitats. According to the Instituto da Biodiversidade e das Áreas Protegidas (IBAP, 2007), the protected areas have 36,304 inhabitants, distributed in 250 villages[8], which represents 2.6% of the total Guinean population. Apparently, these are areas where the population density is low – one should keep in mind that statistical data in Guinea-Bissau are not totally reliable, especially regarding these remote regions – although the dependency on ecosystem services is high. In general, villagers rely on farming activities to feed their families and slash-and-burn to allow agricultural practices which has been contributing to a progressive deforestation. In the last few years, the cashew plantations have been growing gradually, putting in to a higher risk the survival of some charismatic species – namely chimpanzees

[8] The João Vieira-Poilão Marine National Park does not have official residents.

- living in the territory.[9] The absence of a management plan, does not allow people to develop other economic activities or to be compensated by their losses associated with wildlife conflict (e.g. crop-raiding). As a consequence, hunting and poaching activities have been becoming important to these people's domestic economy. The Lagoas de Cufada Natural Park is an example of how the existence of a road and two cities inside the Park can influence the number of animals captured every day. The road that crosses the Natural Park allows hunters to easily access the centre of the reserve, in order to get bushmeat to satisfy urban consumers.

The João Vieira-Poilão Marine National Park seems to be an exception regarding habitat protection. The protected islands do not have official residents and are considered sacred by the Bijagó ethnic group. This patch of the Bijagós islands is sporadically visited only to perform secret ceremonies, which have been contributing to the habitat's preservation. Unfortunately, recent migration from Senegal has initiated some human settlements. These new foreign inhabitants have been responsible for the increasing number of domestic animals and farms in the islands.

The lack of governance discussed earlier in this chapter (see section 3.2.5) has a negative impact on conservation. People living inside the protected areas are mostly aware that they inhabit regions where villagers are not allowed to slash-and-burn, hunt or built new houses or even new villages. However, as they remain almost totally dependent on the ecosystem services, they see themselves as ignoring rules imposed by "white" people. In addition, the absence of a management plan – as well as a compensation plan and a set of new economic solutions or alternative livelihoods – is not contributing to the survival of protected patches. Park's guards are not paid, which makes them especially vulnerable to corruption. Besides, they are mostly locals that, most of the times, also depend on unsustainable activities to feed their families.

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[9] For further information concerning the Guinean fauna, see the list of species provided in the beginning of this thesis.

Table 3.4 Protected areas in Guinea-Bissau, according to Instituto da Biodiversidade e das Áreas Protegidas (IBAP).

Protected area	Establishment	Official recognition	Area (ha)	Population	Villages	Management plan
Orango National Park	1997	2000	158,000	2,268	33	No
João Vieira-Poilão Marine National Park	[1]	2000	49,500	[2]	[2]	No
Islands of Formosa Nago and Chediã Communitarian Protected Marine Area (Urok islands)	[1]	2005	94,200	2,572	33	Yes
Cacheu Mangroves Natural Park	1997	2000	80,000	7,930	41	No
Lagoas de Cufada National Park	[1]	2000	89,000	3,534	33	No
Cantanhez National Park	[1]	2007	105,700	20,000	110	No

[1] No information; [2] Officially uninhabited islands

As discussed in Chapter 1, the protected areas exist only theoretically, they are mere "paper parks" (Hambler, 2004), and are not yet effectively protected. The protected areas were imposed by people that are too distant from the rural areas and especially from the local ethnic groups' beliefs and traditions. The government tends to ignore the way people perceive and relate with the ecosystems. In Cantanhez National Park, for instance, the establishment of the protected area paid no attention to the fact that Nalú people traditionally have their own way to preserve the forest, by a sort of rudimentary zoning strategy (see section 3.2; Terborgh and Peres, 2002). Besides, the management committees and the guards are external to the Nalú model of sustainable exploitation of the resources. Everything was imposed by the NGOs which will no doubt create future conflicts and does not contribute to the National Park's success (Temudo, 2009).

3.3 The ethnographic context

The unit of exploration and analysis in this chapter was the household based on the information provided both in in-depth interviews and from initial questionnaire surveys (see Chapter 2). Households in developing countries typically represent the units of production and consumption (Atwood, 1990; Alison, 1991; Bryceson, 1999; Barrett, Reardon and Webb, 2001), and where the major activities associated with exploitation of protected areas would occur. In addition the age, size and composition of a household will to some extent reflect and structure attitudes and beliefs.

From an ethnographic point of view, there are 13 different languages in Guinea Bissau, mostly associated with specific ethnic groups[10]. While Portuguese is the official language, Creole is the most important language and the one that is spoken by the majority of the people (Report of the Promotional Mission to the Republic of Guinea-Bissau, 2005). In the case of remote areas, such as the one where I studied, illiterate and elderly people are only fluent in their native dialects (e.g. Balanta, Nalú, Manjaco, among others), which often made data collecting especially difficult to accomplish (see also Chapter 2).

According to the Report of the Promotional Mission to the Republic of Guinea-Bissau (2005), about 40% of Guineans are Muslims with a few being Christians. But most Guineans embrace animistic religions. The largest ethnic groups living in the territory are Fula and Balanta (25% each). In Cantanhez National Park, the Nalú people – representing 10% of the population living in Tombali - are traditionally considered the "owners of the ground" (Rocha, 1997; Frazão-Moreira, 2001; Nóbrega 2003; Temudo, 2009). Nevertheless, Balanta people are the most representative ethnic group (62%). That is why Balanta and Nalú people are the most represented in the survey sample (figure 3.1; see Chapter 4). First, I wished to assess the way Balanta people perceive and relate with the reserve and its wildlife, but I felt that Nalú beliefs – since they "own" the area

[10] Here I use the term ethnic group to mean communities of people speaking the same language, with common marriage practices and generally similar livelihoods, and who conform to the same traditional beliefs, myths and ideological recognition of identity / membership versus "outsiders".

where the data collection took place – could have input into the way the forest and its fauna survival are perceived (Temudo, 2009).

Nalú people arrived in Tombali by the beginning of the 20th century (Rocha, 1997; Nóbrega 2003). At that time they were animists, though they were soon pacifically islamised by Sosso ethnic group. Nevertheless, they kept some of their basic beliefs and rituals as part of their religious way of living. The spirits that owned the forest and its elements (i.e. animals, water, plants and so on), called "Irãs", are still seen as important and play an important role in the way people deal with the natural resources (Temudo, 2009).

Once in the South, Nalú people started to grow fruit farms (e.g. oranges, mangos and bananas) for their own consumption. Cashew plantations rose only in the 1960s. Traditionally, each Nalú household had the right to possess a farm that should be wide enough to feed all its members (Temudo, 2009). According with this ethnic group, the territory was divided in to three groups:

(i) Places where people were allowed to live and grow their crops;

(ii) "*Malgosse*[11] bushes", that had an area up to 1 ha and a round shape, where religious ceremonies took place. People were not allowed to take anything from those places;

(iii) Intermediate areas, which surrounded the second ones and where people had limited access to resources (i.e. animals, honey, timber, fruit, roots, among others). Trees could only be cut with previous permission from the "owner" of that specific land.

[11] "Malgosse" means "bad" in Creole and when mentioned in relation to the forest, it means that something evil will happen to anyone who dares to profane it (Temudo, 2009).

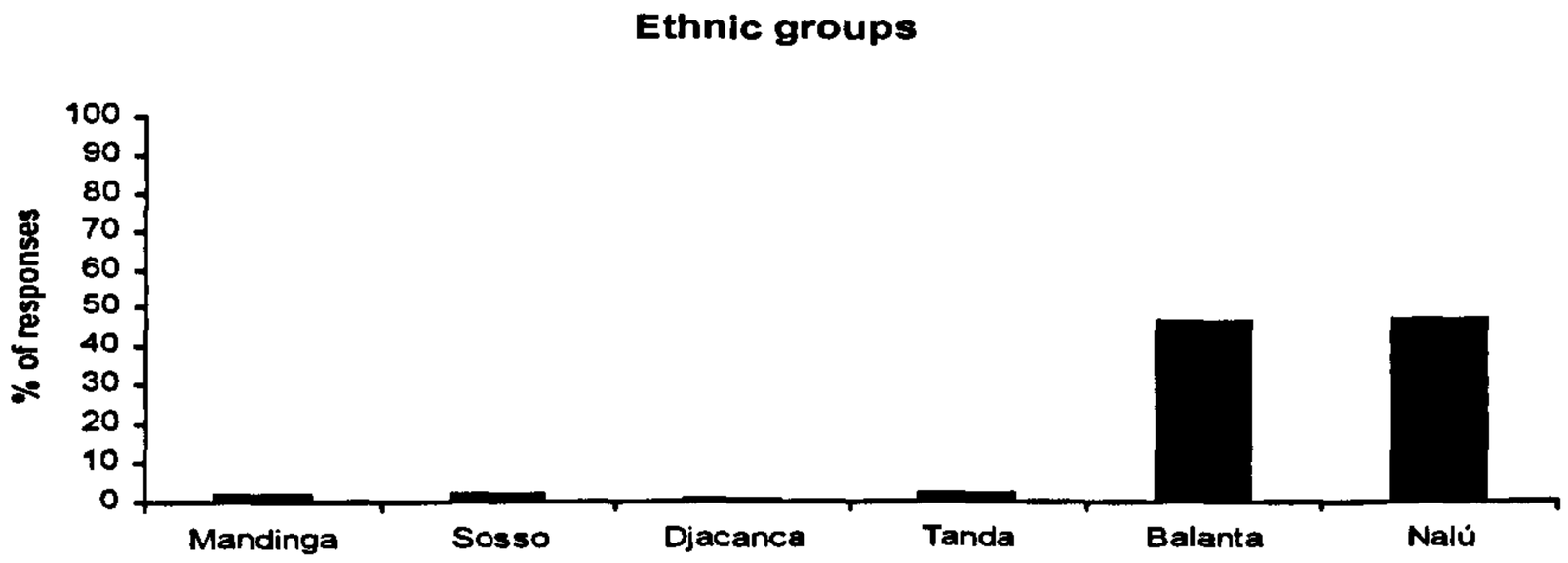

Figure 3.1: Ethnic groups living in Cantanhez National Park and included in the survey data collection.

During the War of Independence (1963-1974), ethnic groups supporting the national army – lead by PAIGC[12] - had to hide inside the Cantanhez forest (Temudo, 2009). As such, some of the restrictions related with the sacred areas mentioned above had to be eradicated. Ceremonies to make this possible were done, in order to keep "Irãs" satisfied and away from the villagers that had taken refuge in the forest. In addition, the progress of the Nalú's Islamic conversion make them less attached to the "Irãs" beliefs, which constituted an important change in the way this people had been managing their ecosystem services. According with Temudo (2009), the Nalú people Islamism brought individualistic values that also initiated a search for greater individualistic welfare. The forest had no longer a sacred dimension and started to be seen as a resource reservoir. After the War of Independence, the forests were nationalised, which made it impossible for Nalú people to keep control over their own territory in Tombali. However, in 1998, a civil war – that lasted 11 months – brought to light again the idea that the forest could be a shelter to the villagers. Since then, villagers have been respecting once more the sacred areas restrictions (Temudo, 2009).

Balanta people are mainly animists[13] and arrived in Cantanhez in 1920s (Rocha, 1997; Nóbrega, 2003). They came from the North, searching for places where rice plantations – their major activity (Handem, 1986; Imabli, 1992; Gent and Ukkerman, 2000)

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[12] The PAIGC (Partido para a Independência da Guiné e Cabo Verde), whose leader was Amílcar Cabral, opposed the Portuguese army during the war.
[13] Recently, some of them became Christians, though they did not totally give up their animistic beliefs and practices.

- could be established (Temudo, 2009). This ethnic group was important to the growth of the human settlements in the South (Temudo, 2009). For Balanta people there is no concept of private property (Handem, 1986). The land is for farmers as long as they farm. Once growing rice engages all the villagers, the plantations belong to the whole village.

Usually Balanta do not have a political hierarchy (Handem, 1986). Decision-makers are older men, since elderly people are more experienced and men are said to be responsible for the group's survival. Though men are usually in charge of choosing their daughters' husbands, Balanta women tend to be economically and sexually free, although polygamy is exclusively masculine. A wealthy man, according with Balanta standards, has to have rice, livestock and a significant number of wives (Handem, 1986).

Livestock is mainly raised by Balanta people (Temudo, 2009). Nalú people usually do not have domestic animals, apart from chickens and goats that they never feed, and Nalú mainly rely on Balanta people to obtain meat from time to time. The latter do not slaughter their domestic animals unless they are celebrating something important (i.e. wedding, burial or birth). Every time they do slaughter an animal, they will sell a part to Nalú people. Since Balanta people are also rice farmers, they exchange rice for other farm supplies or palm oil with Nalú villagers. These two ethnic groups have been interacting on a peaceful basis, though some Balanta rituals occasionally lead to small conflicts, especially regarding rites of passage ("fanado"). Traditionally, Balanta boys are expected to steal livestock from the surrounding villages as a way to become an adult, which thus usually entails stealing Nalú domestic animals, since both ethnic groups live in close proximity with each other (Imbali, 1992). Even though they are Christians and Muslims respectively, Balanta and Nalú people share some animistic beliefs, namely the ones related with the "Irãs" (Temudo, 2009).

3.4 Descriptive analysis of the villages: socio-economic context

Data regarding the villagers' socio-economic context were collected during the surveys (N=257; see Chapter 2). Questions about major economic activities and sources of income were made. People were also asked about their household size and level of education. Men (n=133) and women (n=124) were both included in the sample.

As previously mentioned, in Guinea-Bissau people mainly rely on agriculture to feed their families (see section 3.1.4). In Cantanhez National Park (Tombali), the local economy is also based on farming. During the survey data collection, subjects repeatedly mentioned agriculture as their main source of income (figure 3.2), as their major source of food (figure 3.3) and their main activity (figure 3.4).

Trading farm supplies is common in this region. Villagers usually sell fruit (e.g. bananas, mangos, papayas, cashew, among others) to traders from Bissau, to get some money in order to afford basic expenses. School fees, medicines, transportation and clothes are among the most important expenses people usually have to deal with (see Chapters 6 and 7).

For 79.4% (N=257) of respondents, farming also constituted their major source of nutrients. The basis of the Guinean cuisine is rice and palm oil, though people might also have cassava, corn, sweet potatoes and peanuts when rice gets scarce, which usually happens during rainy season (see Chapters 6 and 7). When rice is scarce, villagers seek markets and small shops ("boutiques") inside the villages, in order to find this cereal. Sometimes, there is a direct exchange of palm oil for rice rather than cash transactions (see section 3.3). Fishing (0.4%) and hunting (0.8%) represented only a small percentage of the responses, though hunting activities are considered illegal inside the National Park and, probably, that is why people refrained from pointing out this activity as a source of protein.

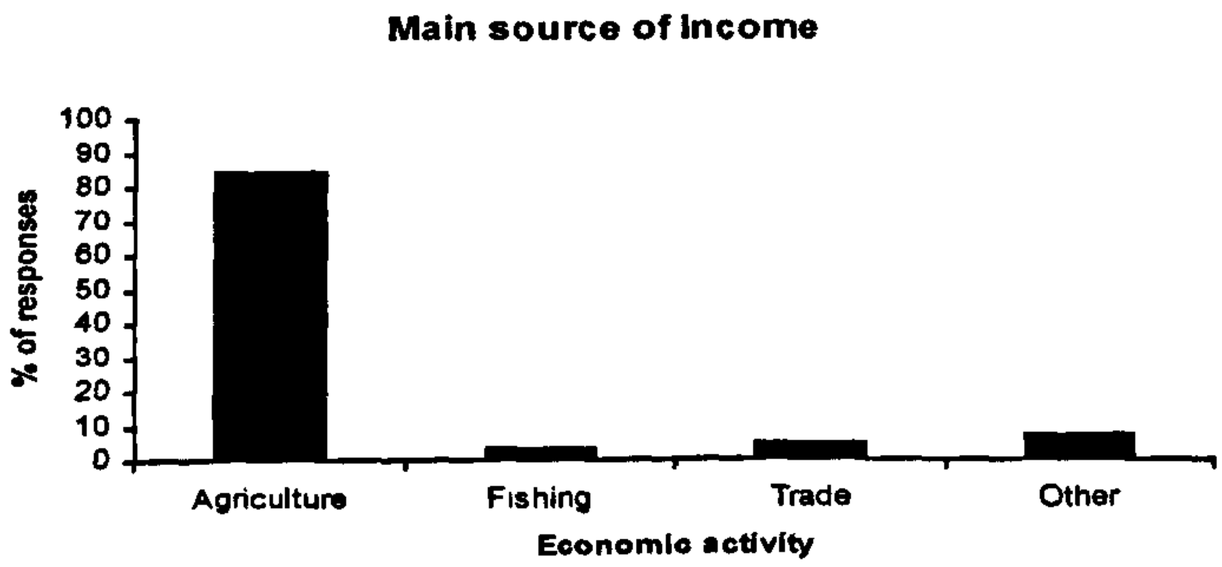


Figure 3.2: Main source of income in Cantanhez National Park according to people's testimonies during survey data collection (N = 257).

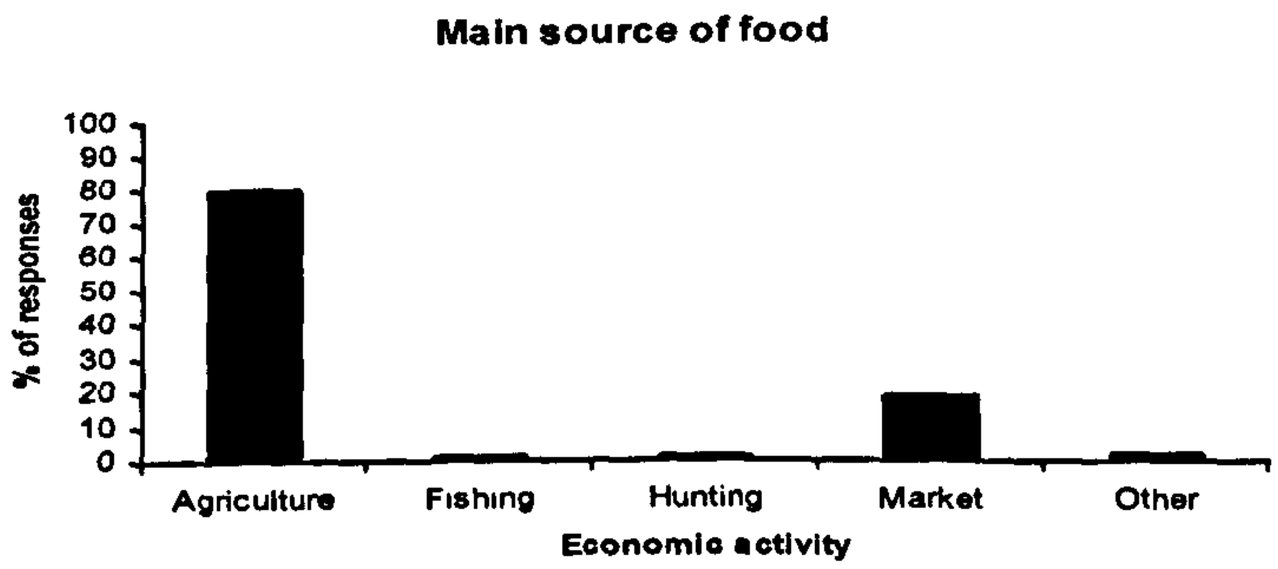


Figure 3.3: Main source of food in Cantanhez National Park according to people's testimonies during survey data collection (N = 257).

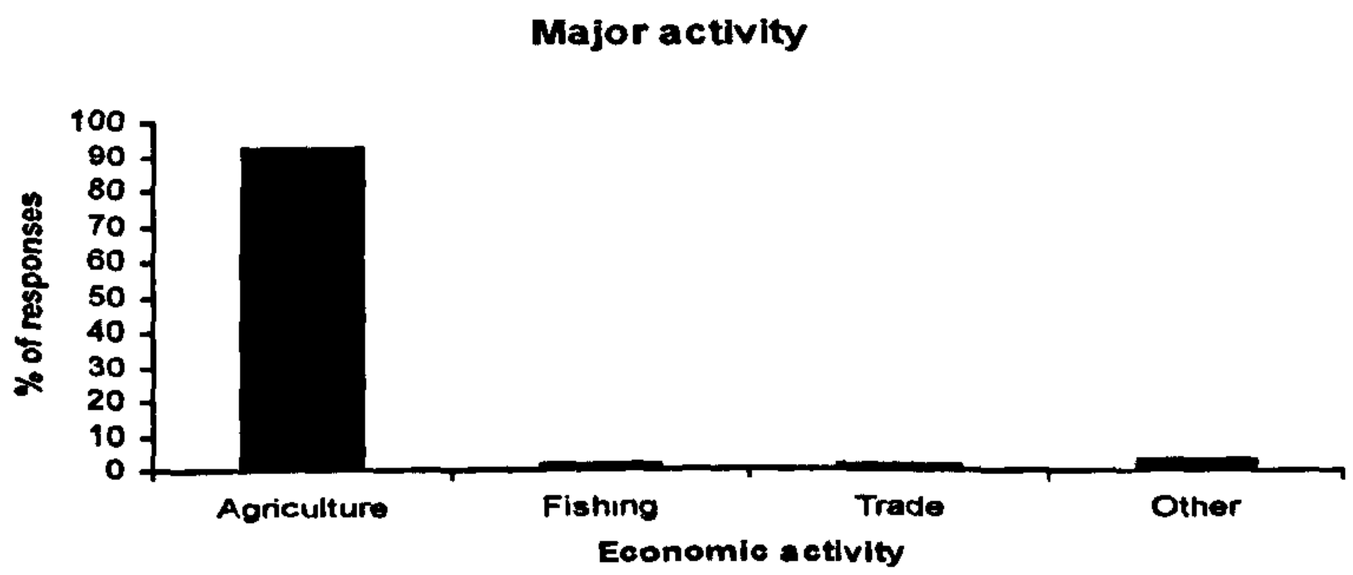
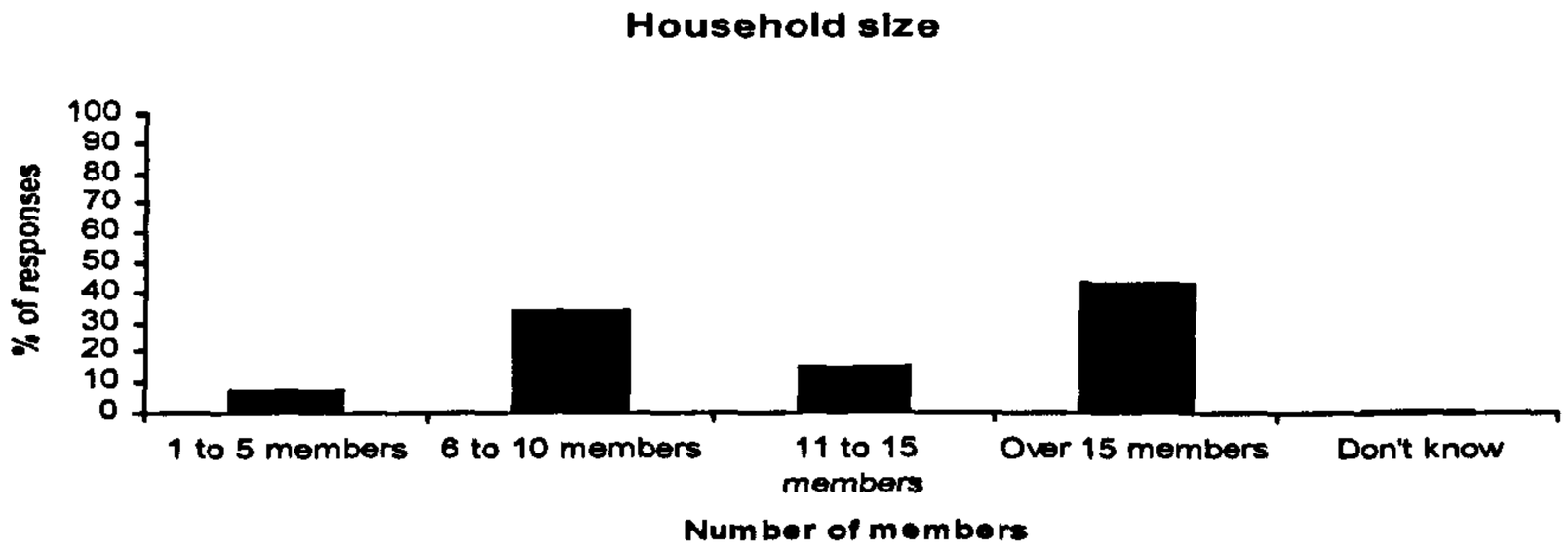


Figure 3.4: Major economic activities in Cantanhez National Park according to people's testimonies during survey data collection (N = 257).

Since agriculture is the main source of income and the main source of food, 93% of the subjects referred to agriculture as their major activity. In fact, inside Cantanhez National Park almost everything is about slashing-and-burning, planting and harvesting. As such, crop-raiding animals are seen as a major threat to people's survival (see Chapters 6 and 7).



3.5: Household size in Cantanhez National Park according to people's testimonies during survey data collection (N = 257).

The large average household sizes might suggest that human population has been growing in the region (figure 3.5) and therefore inside the protected area itself - contrasting with IBAP's (2007) assertion that population growth cannot be seen as an issue for this protected area. In addition, these 2007 data are not up-to-date and the National Park's close proximity to the border with Republic of Guinea – influencing migration from one side to the other - might contribute to difficulties in establishing an estimate of the total number of inhabitants in the area. During data collecting, 43.2% of the respondents stated that they have households with over 15 members. Polygamy and extended inter-generational families are the rule in Guinea-Bissau, especially in poorer regions. It is common to find siblings, spouses and offspring living together in the same house, since they share the same resources and work together on the same farm. Nevertheless, the overall high frequency of large households – potentially representing population growth inside the National Park - are associated with a necessity for larger farms in order to feed everyone suitably, which potentially leads to more deforestation and unsustainable exploitation of the ecosystem services when this pattern is repeated on a large scale.

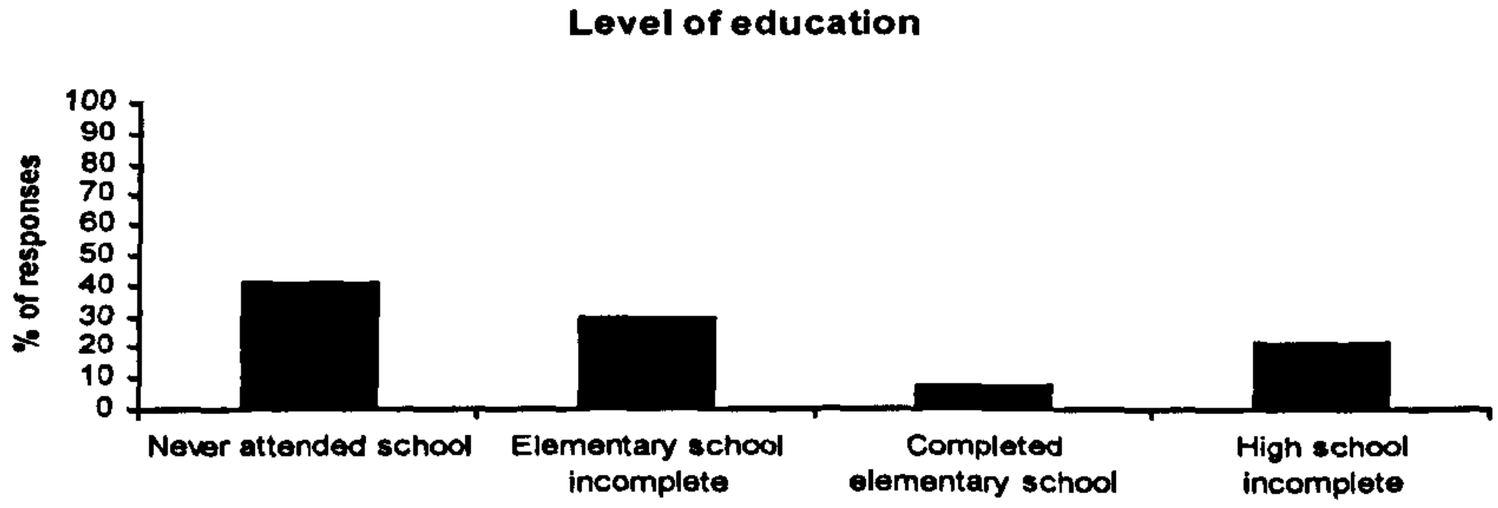


Figure 3.6: Level of education in Cantanhez National Park according to people's testimonies during survey data collection (N = 257).

The considerable percentage (21.4%) of respondents stating that they attended high school (figure 3.6) is due to the high proportion of the sample that is of school years and the young adults in the sample (figure 3.7). Indeed, age and level of education variables are statistically associated (χ^2=87.01 S; ρ<0.001). Young adults, according to our data, tend to attend school for longer than did older people in the past. One should also keep in mind that, although schools in the National Park are mainly fee-paying, they exist inside or near the majority of the villages I visited (N=16).

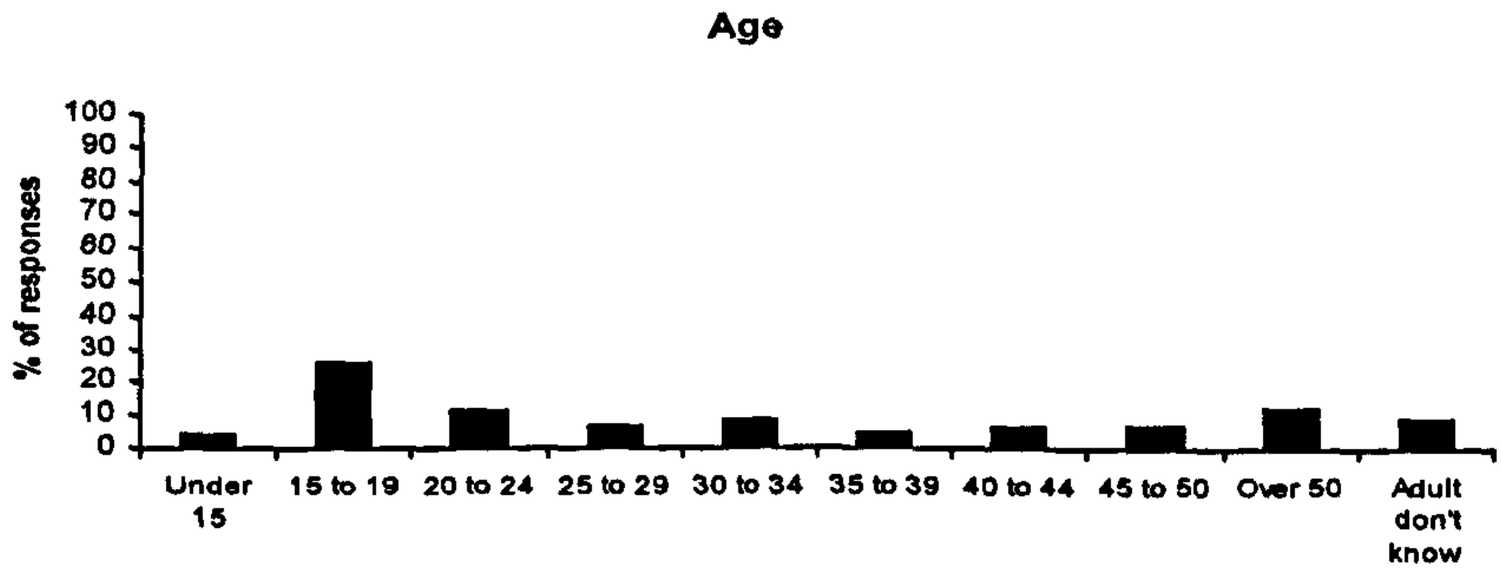


Figure 3.7: Subject's age in Cantanhez National Park according to their testimonies (N = 257).

Even though younger villagers seemed to be eager to attend school, there were gender discrepancies that corroborate the United Nations reports mentioned above (see section 3.2.2). In fact, data shows that women in Cantanhez National park have fewer chances to attend school than do men. Of all the people that never attended school (n=106), 67% are women. As thus would be expected, respondents that attended high

school (n=55) were mainly men (82%). As previously shown for age, gender was also statistically associated with level of education (χ^2=43.25 S; ρ<0.001).

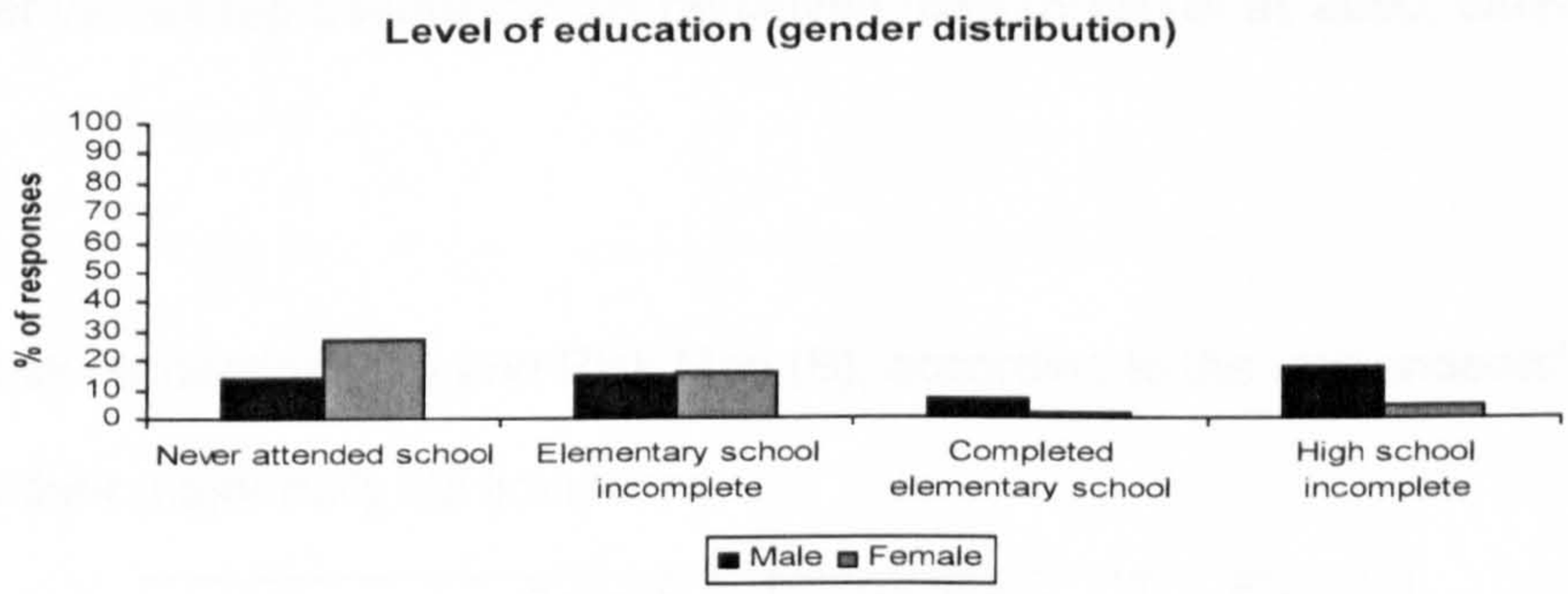


Figure 3.8: Subject's level of education, distributed by gender (N = 257).

3.4.1 Risk mapping

As outlined above, it was important to assess how the participants in this study viewed their prospects for survival and livelihood success. What did they see as their main constraints to their future wellbeing? The term "risk mapping" as used here applies to the qualitative structure of the threats and constraints that emerged from in-depth interviews. A Risk Map prioritizes each risk and maps these risks into four quadrants of significance of threat and likelihood of occurrence.

During in-depth interviews (N=47), household heads (men) were asked to mention which constraints were considered to be the most serious in relation to their welfare. No directions were given, in order to guarantee spontaneity and autonomy in subjects' replies. Risks were ranked on the assumption that the first answer was the most important. This introduced limitations to the analysis; still, it provided significant information on the way household heads perceived constraints. To establish the risk map, it was necessary to first calculate the severity index [S_j=1 + (r-1)/(n-1)][14] for each respondent. Then, the mean distribution was calculated for all respondents who pointed out the problem. This created a score ranging from 1 (most severe) to 2 (least severe).

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[14] In the severity index, "r" represents the rank based on the order of response given by the subject and "n" the total number of limitations mentioned by the same respondent (see Smith et al, 2000; Quinn et al, 2003).

Next, the incidence index (I_j) was estimated by measuring the proportion of men mentioning a problem. This created a score from 0 (not mentioned) to 1 (mentioned by all respondents). Risk index (R_j) was calculated by dividing incidence by severity. For the risk index, higher values represented larger perceived risks (Smith et al, 2000; Quinn et al, 2003).

Table 3.5 Risk perceptions (A) and Risk Map (B), according to the respondents' (N=257) answers on their major daily life limitations.

	Severity index	Incidence index	Risk index
Famine	1.14	0.8	0.7
Health	1.46	0.28	0.2
Money	1.65	0.28	0.13
Water	1.42	0.13	0.09
Other*	1.6	0.11	0.07
Housing	1.38	0.09	0.06

* Transportation, roads, schools, etc.

Risk Map

Probability of incidence	Severity		
	High	Mid-High	Moderate
High	**Lack of money**		**Famine**
Mid-High		Heath problems	
Moderate	Transport problems, lack of access to schools		
Low		Salinisation	Problems with housing

Famine is the constraint that subjects mentioned most often. The value of the incidence index for famine suggests that almost everybody noted famine as a serious limitation. Malnutrition is seen as a threat for various reasons: (i) people believe that the reserve brought more limitations to farming activities; (ii) the hunting prohibition is believed to have led to an increased number of raiding species, resulting in a decrease in the quantity of farm supplies; (iii) the salinisation in the swamps where villagers plant their rice

is making harvests less profitable and less capable to feed everyone; (iv) human population growth is also perceived as responsible for food supply scarcity (see Chapters 6 and 7).

Health and money were referred by the same number of subjects. In this rudimentary economic system, people barely have any access to money (see Chapters 6 and 7). However, apart from food – which is mostly provided by households' farming activities (see section 3.2) – everything else requires the use of money to pay fees. For instance, when someone gets ill, his/her family has to collect enough money in order to afford a doctor's appointment, medicines and transportation (i.e. fuel, driver and car/motorcycle), which is why people in Cantanhez tend to rely on traditional medicines to solve health issues, even when they are serious.

Water and housing limitations were less often mentioned, though respondents complained about the nonexistence of water wells inside the villages. The establishment of the protected area also brought problems associated with new house construction, since people are not allowed to build new structures without previous consent.

3.5 Discussion

The Cantanhez National Park was officially established in 2007 (IBAP, 2007). Inside the Park, there are 20,000 inhabitants distributed in 110 villages. During data collection, I visited and interviewed people from 16 different settlements (see Chapter 2).

The two most represented ethnic groups in the region are Balanta and Nalú people (Nóbrega, 2003; Temudo, 2009). The former are mainly animists, with only a few being Christians. Traditionally, Balanta people grow rice in swamps ("bolanhas") and rise livestock to guarantee a source of protein when needed. Nevertheless, most of the meat they have comes from hunting. As animists, they do not have restrictions associated with dietary habits, which makes them very eclectic regarding food and especially meat. Nalú people are mainly fruit farmers. They usually take advantage on the fruit trees that already

exist inside the forest, though they also plant trees (e.g. cashew, oranges, mangos, papayas among others) nearby the villages. According with Nalú's traditional beliefs, there are certain places inside the forest that are sacred and cannot be exploited by any men. Some intermediate areas might be exploited, but only at a certain extent and with previous permission. Nalú people are the "owners" of the National Park area. Unfortunately, the authorities and the government did not take this fact into consideration and ignored Nalú traditions and beliefs when the National Park was established (Temudo, 2009).

As a rule, respondents were totally dependent on farming to feed their households and to earn money. As such, they spend most of their time in farming activities. However, according with the rules of the National Park, the people living inside its borders are not allowed to hunt, slash-and-burn, farm inside the forest or build new houses. The exploitation of bush resources, such as timber, fuel wood and charcoal, are forbidden. I suggest that the nonexistence of a management or a compensation plan makes the concept of a protected area useless. The reserve did not bring any progress towards meeting people's livelihood needs and poverty is far from being eradicated.

Households were generally large (over 15 members). Extended families are frequent in Africa, and Guinea-Bissau is no exception. Relatives live together because they share the same resources and the same activities (Barrett et al., 2001). Nevertheless, big families need more food and bigger farms in order to feed everyone, which might mean more deforestation. Also, each woman on average has 6.8 babies. Infant mortality is generally high, even though the high number of newborns still contributes to a progressive human population growth. No health care is provided by NGOs or by the government, in order to guarantee healthy pregnancies or healthy children. Appointments with doctors, medicines and transportations need to be paid for by the patients or by their families. Since financial constraints are a rule, many pregnant women die before they manage to get to a hospital (UNDP, 2006).

Since children are expected to help adults in agriculture, they mainly do not attend school (UNDP, 2006). Illiteracy is high among children and especially among females

living in Cantanhez. Gender imbalances are common in Guinea-Bissau. Even though Constitution states that both genders should be seen as equal, Guinean women are not expected to take decisions, they cannot inherit property, they are genitally mutilated and forced to marry prematurely and they have few chances for education (Flinton, 2003; UNDP, 2006; Chambers, 2007; Moser 2007). As such, they are more vulnerable to extreme poverty than men (see Chapter 6).

The high proposition of young adults in the sample confirms that life expectancy is low (UNDP, 2006). This has implications regarding traditional practices and beliefs and, consequently, conservation. Young people are less attached to religious principles and more individualistic. As a result, they tend to be more susceptible to engage in practices that might put at risk the survival of the National Park to satisfy their needs (i.e. hunting, cocaine trafficking, extensive plantations, among others). Globalization and constant visits of European researchers potentially might amplify their ambition for technological devices and trademark wear.

3.6 Conclusions

- Nalú and Balanta animistic traditions appear to have been protecting the forest from unsustainable exploitation (Temudo, 2009). Unfortunately, the government ignored the beliefs and habits of the ethnic groups living in the National Park, which might lead to conflicts between villagers and the NGOs and authorities in charge. The protected area was established without including the "owners of the ground" – i.e. Nalú people – in the decision-making process.
- The National Park has not yet brought any progress in the sense of economic development or opportunities, and has potentially contributed to exacerbating poverty (Redford, Levy, Sanderson, Sherbinin, 2008). It is important to establish a management and compensation plan and also to develop a set of new economic solutions in order to improve human population's life conditions (van Schaik and

Rijken, 2002). It would be also crucial that these plans took into consideration the local ethnic groups' cultural backgrounds.

- Medical care, namely maternal, neonatal and children's health might be a solution to population growth. Guaranteeing children's survival could lead to a decrease in the number of conceptions. Fewer children and adults would reduce the pressure on natural resources and, consequently, lead to less deforestation (Terborgh and Peres, 2002). Malnutrition would have more chances to be eradicated.
- High illiteracy levels make people more vulnerable to extreme poverty. Women and children seem to be especially defenceless. Empowerment programmes, including microcredit, could be a solution to improving economic development (Flinton, 2003).
- Young adults, representing the majority of the population, are less attached to traditional practices and beliefs (Temudo, 2009). As such, they tend to be more materialistic and individualist in relation to their future expectations. Understanding their needs and expectation is vital to ensuring support for habitat protection.

CHAPTER 4 – THE GOOD, THE BAD AND THE UGLY: DESCRIPTIVE ANALYSIS OF PEOPLE'S PERCEPTIONS OF ANIMALS

Plate 4.1. Livestock in Cadique Ialá (Cantanhez National Park).

4.1 Introduction

Conservation projects attract greater local and international support when an appropriate flagship species is chosen as a project symbol (Andelman and Fagan, 2000; Caro, Engilis, Fitzherbert and Gardner, 2004; Hambler, 2004; Kaltenborn et al., 2006). Since this research was part of a project designed specifically to address the conservation problems of highly threatened chimpanzees in relict forest fragments, I explore below how the local population perceives chimpanzees in a comparative context with other wild and domestic species.

I initially established a "preference ranking" in order to determine which wildlife species people from Tombali region like and/or dislike the most (see Chapter 2). I adapted

the *sociozoologic scale structure developed* by Arluke and Sanders (1996) to assess which wildlife species were considered "good" or "bad", "edible" or "non-edible", "pretty" or "ugly", "intelligent" or "unintelligent", "often seen", "less seen" and "similar to people". First I present a descriptive analysis in order to explore which socio-demographic features might lie beneath the subjects' attitudes towards wildlife within this scale.

4.1.1 Hypotheses

In order to explore my project's main aims[15], the following hypotheses were tested in this chapter:

(i) Livestock will have a higher status in the sociozoologic scale, especially with regards to women's perceptions;

(ii) Women are less positive about chimpanzees than are men, since women are less empowered to hold opinions and to profit from a conservation programme;

(iii) Religion is expected to influence the degree of anthropocentrism, such that Muslims appear to be more anthropocentric that non-Muslims;

(iv) Men report an impression of large numbers of encounters with wildlife, since they are in charge of protecting farms from crop-raiding;

(v) Non-Muslims perceive frequent encounters with wildlife due to their hunting activities. Muslims are not allowed to hunt according to Islamic values.

4.2 Methods and analysis

In order to establish the sociozoologic scale for the people from Tombali, I showed pictures (N=27) of the Guinean fauna to the subjects (see appendix II). The species were divided into livestock, primates and other wild animals (birds, fish, insects and mammals). Furthermore, in order to assess the accuracy and veracity of respondents, I added a picture of a capuchin monkey (*Cebus capuchinus*) – a primate species found only in South America. Then, I asked participants to identify the top three animals that they

[15] See section 1.5.1 for further information.

considered to hold the qualities of "good", "bad", "pretty", "ugly", "edible", "inedible", "intelligent", "unintelligent", "often seen", "less seen" and "similar to humans". They were asked to identify these three species in order of importance to them (see Chapter 2). All the photos were coloured and about the same size in order to avoid the influence of subjective variables in subjects' choices. In addition, photos were identified with Roman numbers. My aim was to enable the subsequent coding of photos sequentially for analysis, without attributing familiar numerical values to photos, and thus avoiding the assumption that a certain photo number 1 would be better than another one numbered 20. Photo order of presentation was randomised and mixed between each presentation. The capuchin was noted as a species never seen, but was identified as a primate. The hyaena, which was locally extinct, was confused with leopards by the younger respondents. In general, the knowledge base of respondents was considered to be very good, as all the species used could be initially identified by their local names (see Table 1.1).

Descriptive data are useful in assessing how data are distributed across the sample of genders, religion and other socio-economic traits (see Chapter 3). While the PCA in Chapter 5 will present a composite picture of quantitative associations between attitudes, it is unable to access the socio-demographic features beneath people's attitudes. As such, I examined the multiple response questions for the frequently ranked species. Cross-tabulation with gender and religious beliefs was carried out, despite the fact that it was impossible to test for potential dependencies between variables[16].

Graphs are divided in two different sets of species: (i) primates and (ii) "non-primates", since my major research aim was to assess how nonhuman primates – especially chimpanzees - are perceived by people living in the south of Guinea-Bissau[17]. I

[16] Except for the results related to "which animal would (not) you choose to be if you could not be a human?" question (s). See section 5.3 for further information.
[17] See section 1.4.1 for further information, and the list of species named during the thesis (page 14) for taxonomic designations

collected data on other species, in order to compare primates with other animals' status within the villagers' sociozoologic scale.

4.3 Qualitative assessment of ratings of nonhumans

Generally, chimpanzees (27.2%)[18], gazelles (40.5%), and domestic animals (98.1%) – apart from pigs – were reported as being good animals. On the other hand, baboons (29.2%), snakes (53.3%), pangolins (19.8%), hyaenas (52.2%) and pigs (15.6%) were more often mentioned as bad. In addition to the positive status of chimpanzees, they were also considered as bad animals (30.7%). Data suggested that perceptions regarding this species alternate between positive and negative attitudes. I therefore explored gender and religious beliefs as potential explanatory elements of this duality.

There were several marked differences between men and women in whether they classify chimpanzees as being "good" or "bad" (Fig. 4.1A & 4.1B). Men overall (18.7%) were more likely than women to consider chimpanzees as good, while chimpanzees were most likely to be considered as bad animals by women. In fact, of all the subjects that mentioned chimpanzees as bad animals (n=79), 62% were women. Apart from primates, women rated other domestic animals such as chickens (28.4%) and cows (29.2%) as good more than they did wildlife (Fig. 4.1C & 4.1D). Men were more likely, by comparison to women, to rank snakes (31.9%) and hyaenas (31.1%) as bad animals. There were obvious differences both between genders and types of animal in their ratings as bad.

Religion appeared to underlie some major differences in the way subjects classified the species. Muslims rated primates as being good animals (36.2%) slightly more often than non-Muslims did (Fig. 4.1E). Chimpanzees were mentioned as good more often by these subjects (16.7%). Pigs were referred to as being good (15.2%), but only by non-Muslims (Fig. 4.1F). Gazelles were the most positively rated species for both Muslims and non-Muslims. However, the former rated them as the most positive animal more consistently (26.8%). As noted for chimpanzees, primate species generally alternated

[18] Percentages and totals presented in this chapter are based on total respondent sample size (N=257).

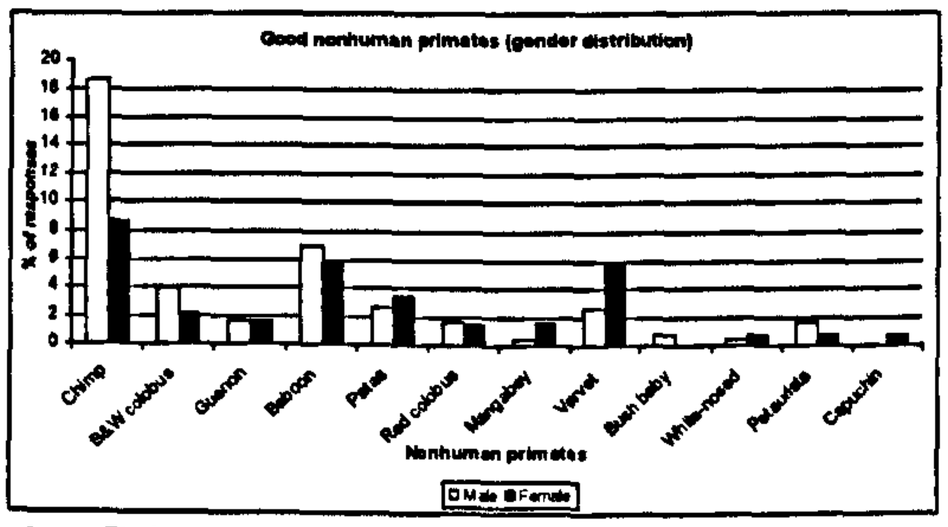
between good and bad perceptions. Overall, primates were rated as bad animals (Fig. 4.1G). Muslims had showed the worst impression of baboons (17.9%) and vervet monkeys (12.5%); significant crop-pests throughout Africa. Chimpanzees, by contrast, were rated in a more balanced way by Muslims. Snakes and hyaenas were the non-primate species most repeatedly rated as bad, although hyaenas were referred to more by non-Muslims (31.9%). Pigs were rated as bad more often by Muslims (14%).

Regarding the aesthetic dimension of perceptions of nonhumans (Fig 4.2), primates were rated equivalently by men and women. There were only two exceptions; patas (17.51%) and vervet (8.2%) monkeys were perceived as prettier than the rest of the primates, especially by men who rated patas monkeys as especially good-looking [10.11% (Fig. 4.2A)]. On the other hand, chimpanzees (68.9%) and bushbabies (49%) were described as the ugliest nonhuman primates (Fig. 4.2B), mainly by men. Women tended to see domestic animals from an aesthetic point of view more positively than did men. Chickens, cows and goats were mentioned as being pretty 268 times out of 771 possible choices; 52.5% of these positive mentions were by women. Gazelles were also mentioned as good-looking animals by both genders.

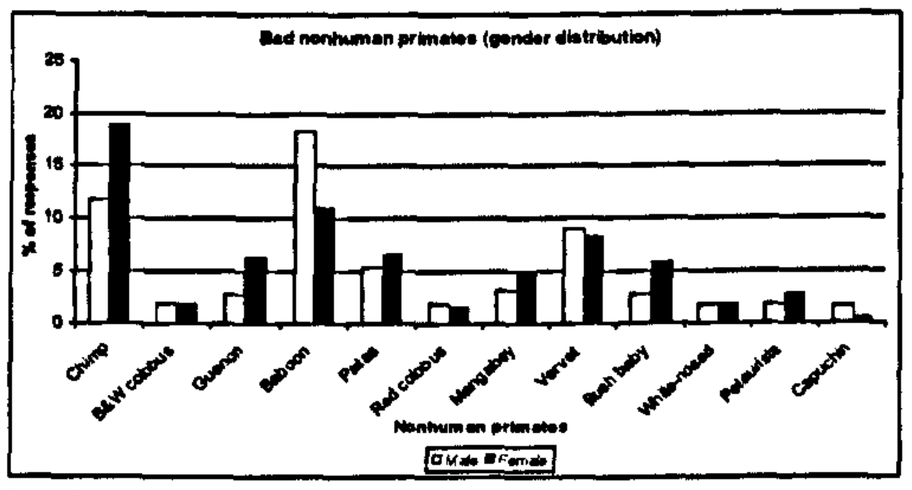
Differences between Muslims and non-Muslims were striking (Fig. 4.2 E-H), especially concerning non-primates species, since primates seemed to be perceived in a similar way by both groups. Patas monkeys, as noted above, were mentioned as prettier than the rest of the primates, especially by non-Muslims (10.9%). In contrast, chimpanzees were pointed out as the ugliest primate by 68.8% of the respondents – 41.2% of which were Muslims. Differences between religious beliefs are more conspicuous in Fig 4.2 G & H. As stated above, gazelles (59.2%) and domestic animals were referred to as pretty. However, Muslims appeared to prefer some specific domestic animals such as chickens (22.2%) and goats (22.2%). These results were not the consequence of the women's preference for domestic species, as noted above, since the sample of women was equally divided between the religions ($\chi^2 = 0.59$, d.f. = 1, N.S.). Cows were more often mentioned as pretty by non-Muslims (13.6%). In addition, they also

rated pigs as pretty (8.6%). By contrast and as expected, pigs were mentioned as ugly by Muslims (9.7%), since these animals are considered impure in Islamic principles.

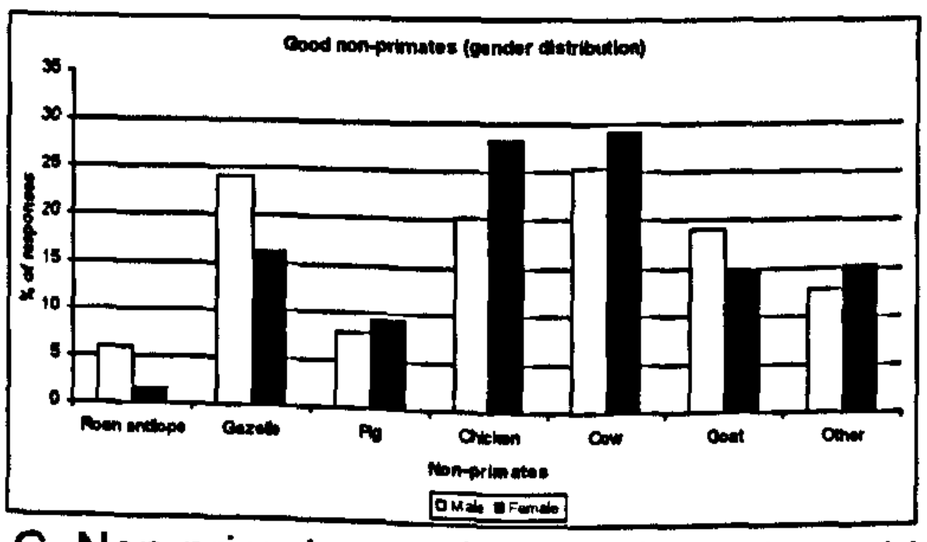
Figure 4.1: Good and bad ratings of primates and non-primates as a percentage of total responses (N = 257). Note that scales vary due to differences in the number and percentage of respondents for each subjective rating.



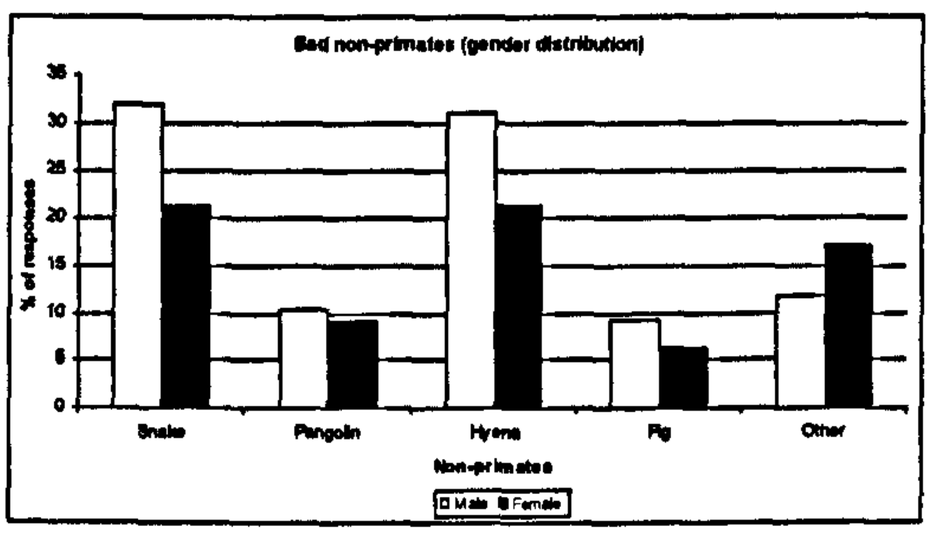
A: Primates considered to be good by gender.



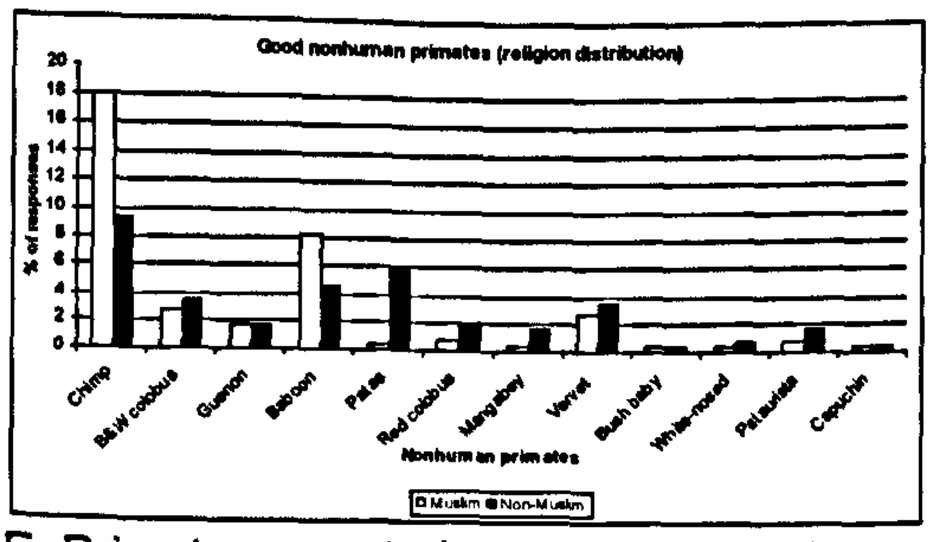
B: Primates considered to be bad by gender.



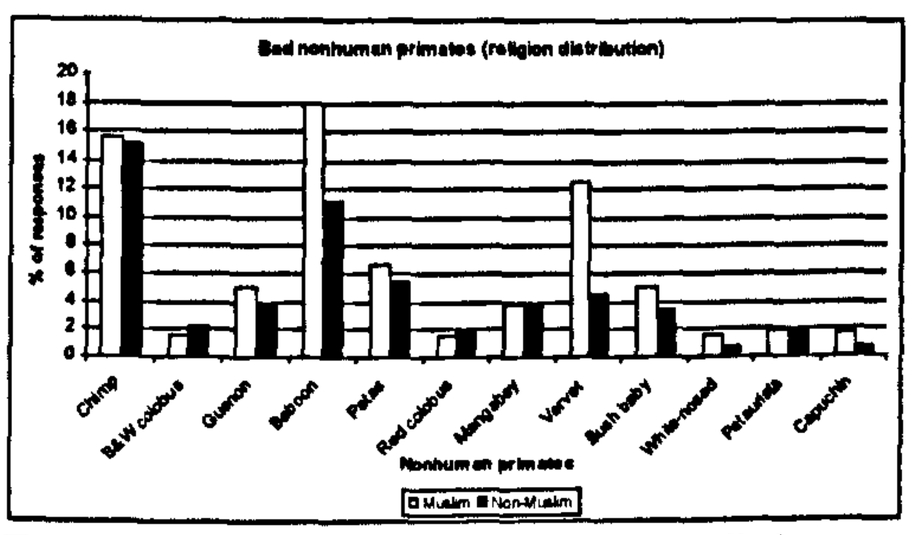
C. Non-primate species considered good by gender.



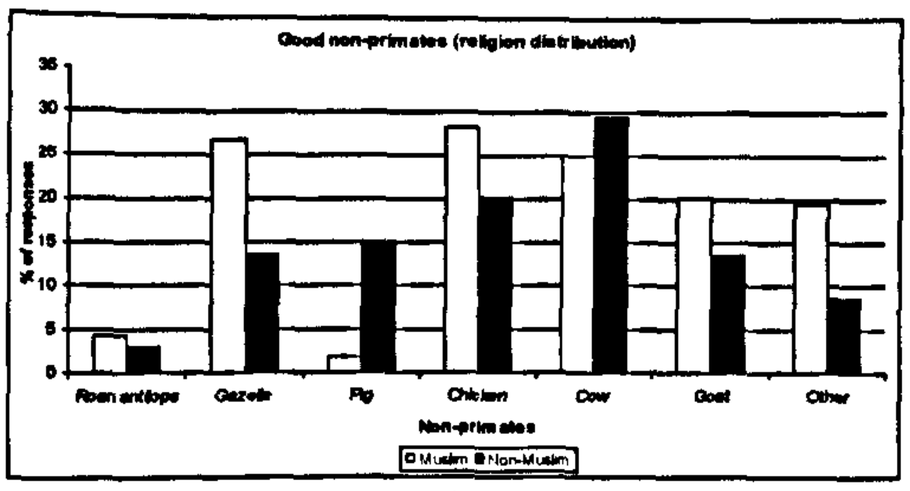
D. Non-primate species considered bad by gender



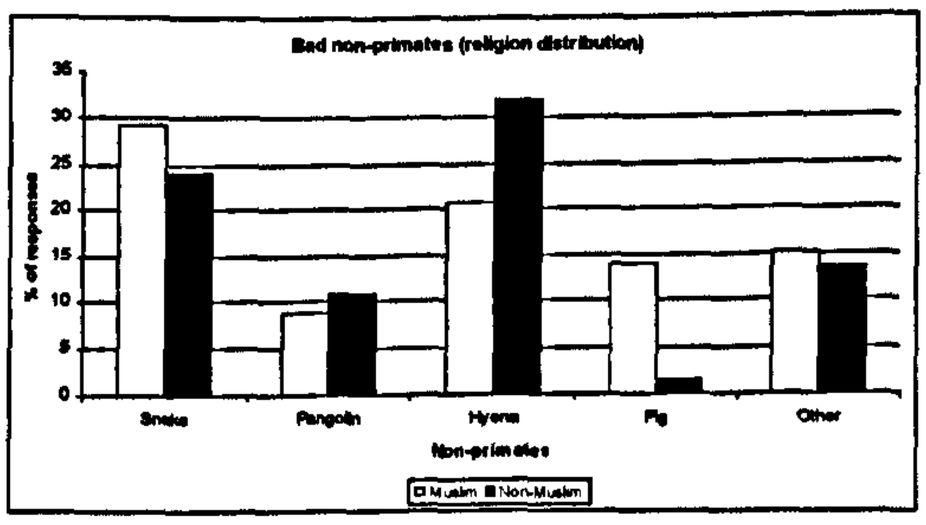
E. Primates reported as good by religion.



F. Primates reported as bad by religion.



G. Non-primate species reported as good by religion.



H. Non-primate species reported as bad by religion

As mentioned before[19], chimpanzees may be perceived as ugly due to their remarkable similarities with humans. They can be seen as a caricature of our species which means that, from an aesthetic point of view, they are perceived in a negative way. In addition, some Guinean people hold the belief that chimpanzees were once human, but that they were punished by God by being forced to take on the nature, looks and attributes of chimpanzees. Furthermore, bushbabies – although primates as well – are perceived as very different from people. They have huge eyes and ears, a small body and they are nocturnal. While they do not engage in obvious conflict with humans such as crop-raiding, their behaviour and appearance are markedly dissimilar from our own, which might be why they are seen in a negative way. Finally, the fact that people considered patas monkeys to be pretty is suggestive. This species does not occur in the south of Guinea-Bissau, but is present in the north. Since they do not compete with people for resources in this area, patas monkeys may be perceived more positively than the other primates living in the surrounding areas and competing with people over crops.

In support of this suggestion, we also used a photograph of a Neotropical primate, the capuchin (see Chapter 2) as a control for the recognition of primates generally. One respondent specifically picked out this monkey as "good" and "attractive", commenting:

"These are pretty monkeys because they don't interfere with my crops"

(Respondent Number 38, October 10th 2007).

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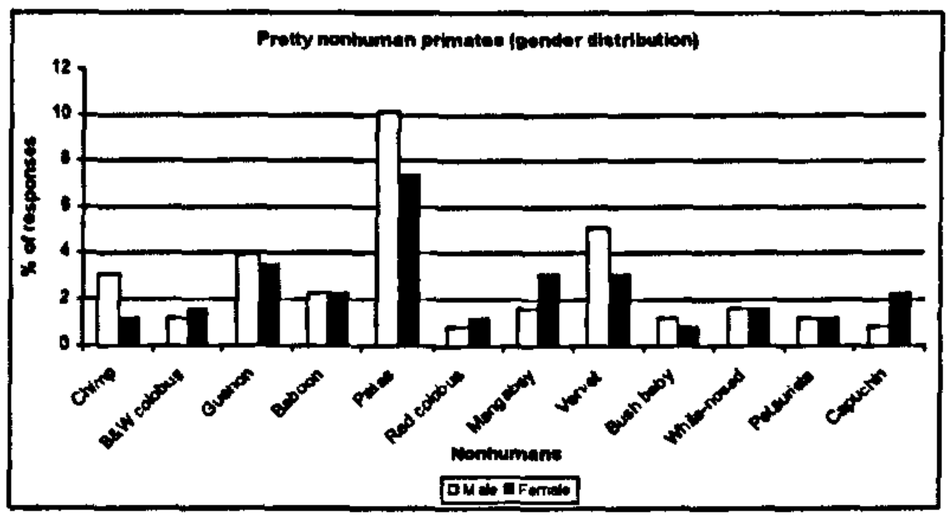
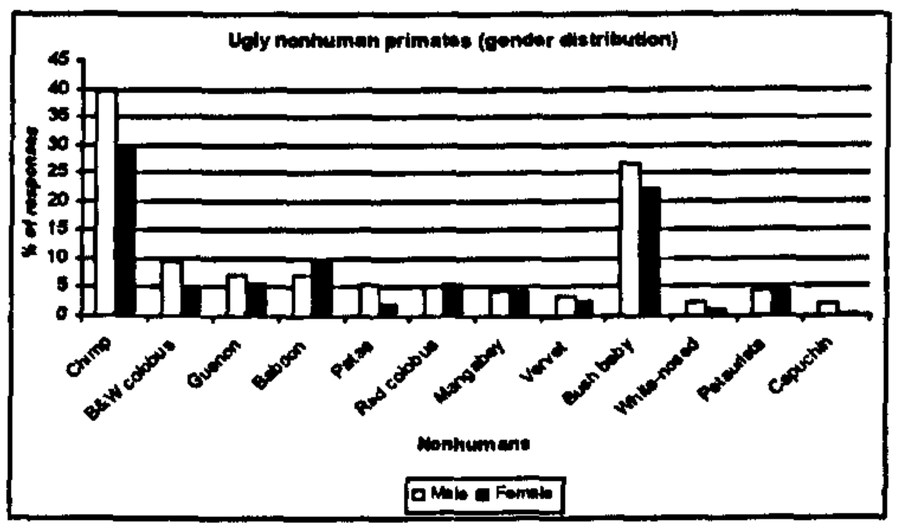
[19] See section 4.3.2 for further information.

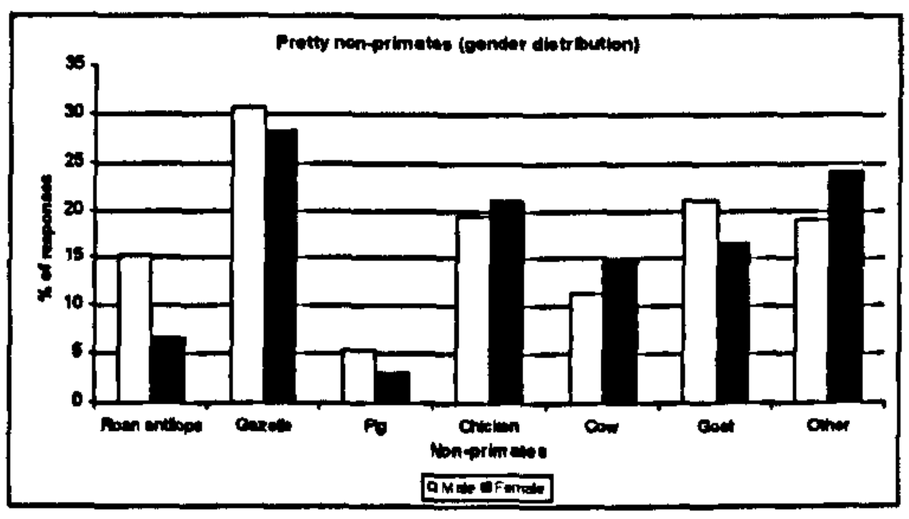
Figure 4.2 Pretty and ugly ratings of primates and non-primates as a percentage of total responses (N = 257). Note that scales vary due to differences in the number and percentage of respondents for each subjective rating.



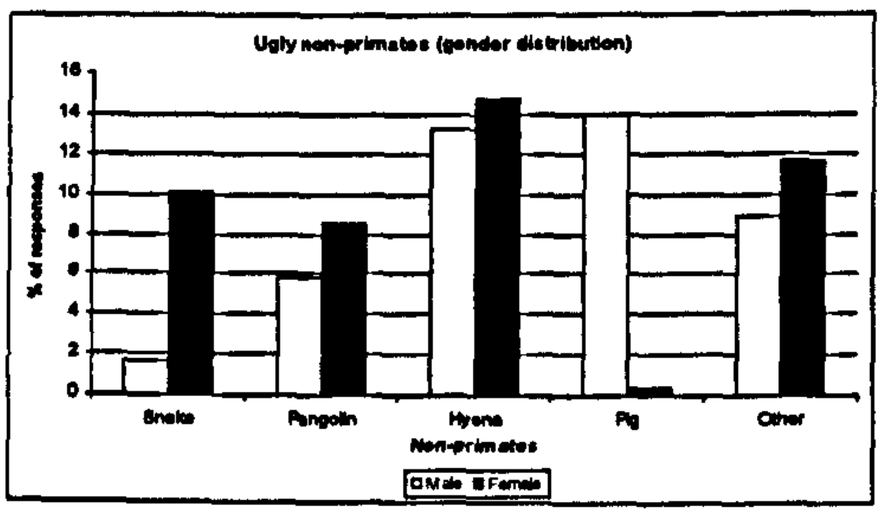
A. Primates considered pretty by gender.



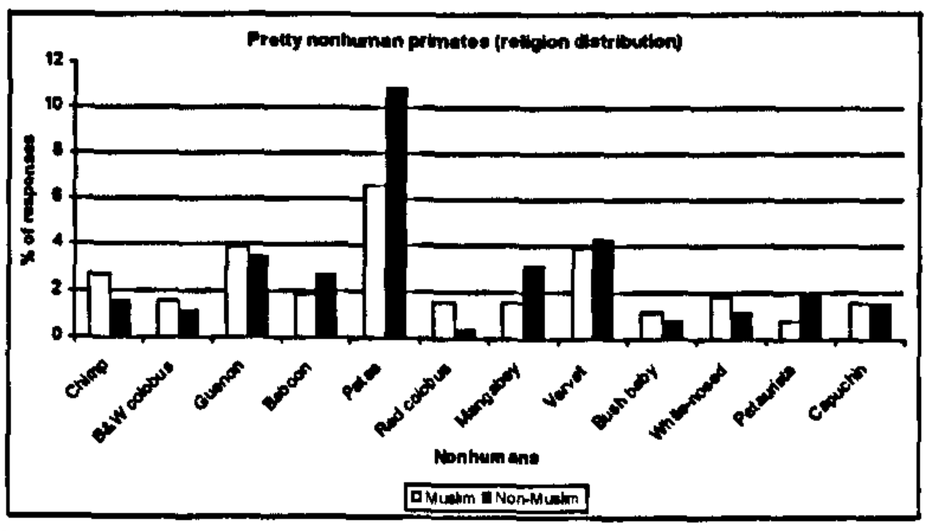
B. Primates considered ugly by gender.



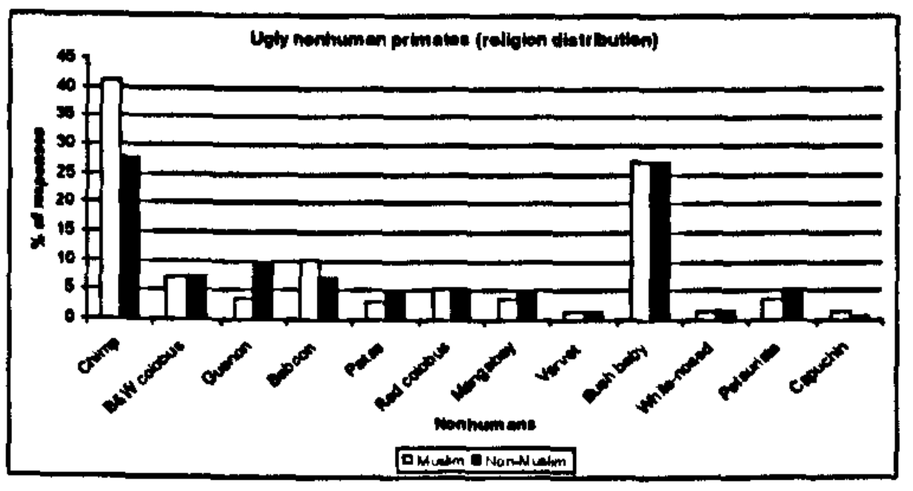
C. Non-primate species reported as pretty by gender.



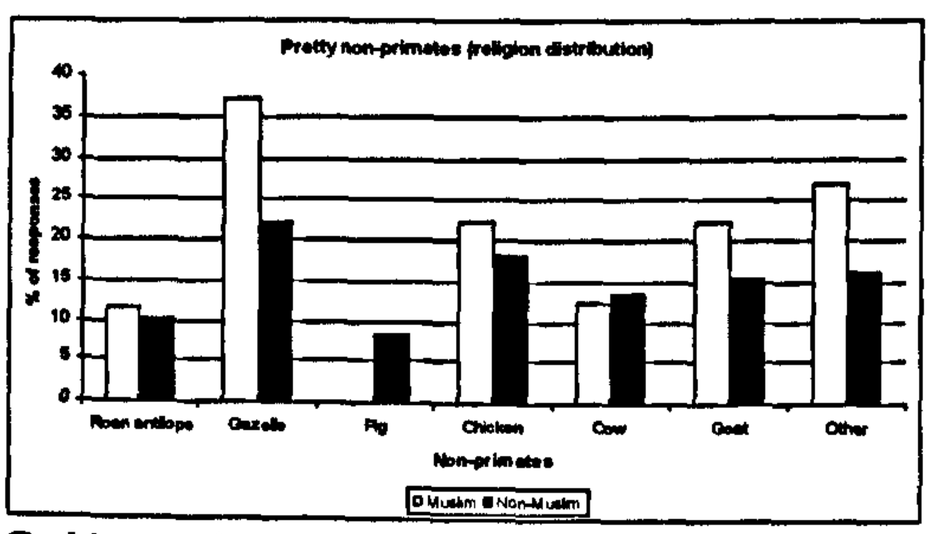
D. Non-primate species reported as ugly by gender.



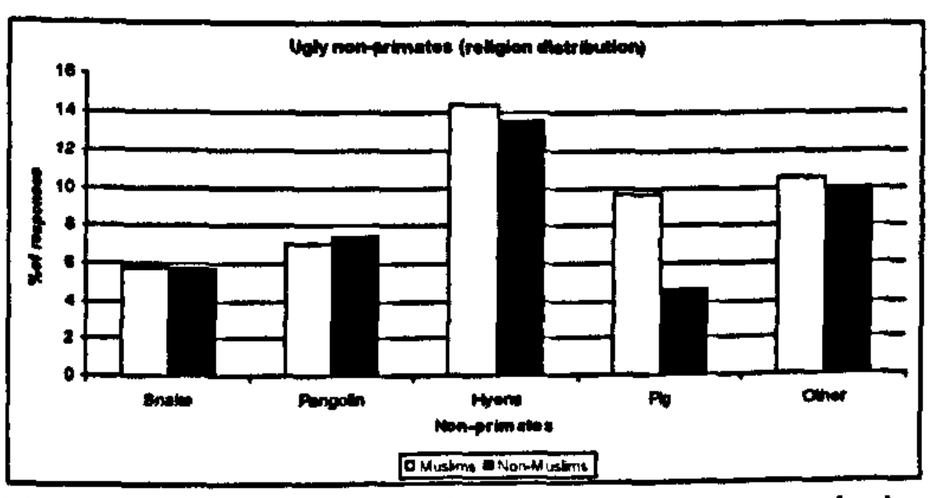
E. Primates considered pretty by religion.



F. Primates considered ugly by religion.

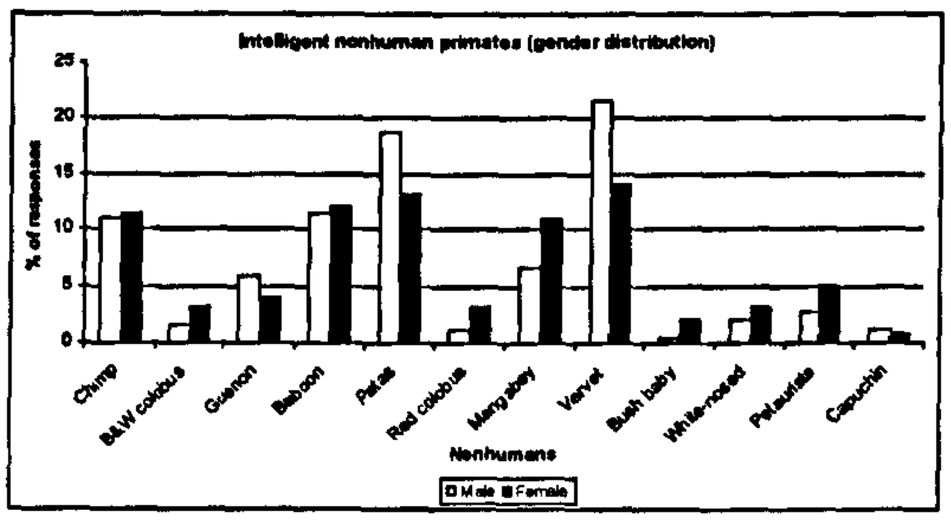


G. Non-primate species reported as pretty by religion.

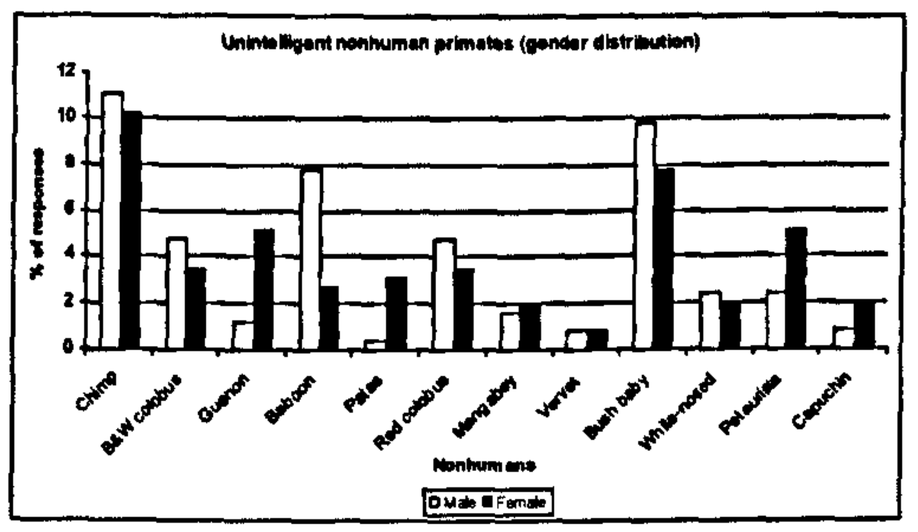


H. Non-primate species reported as ugly by religion.

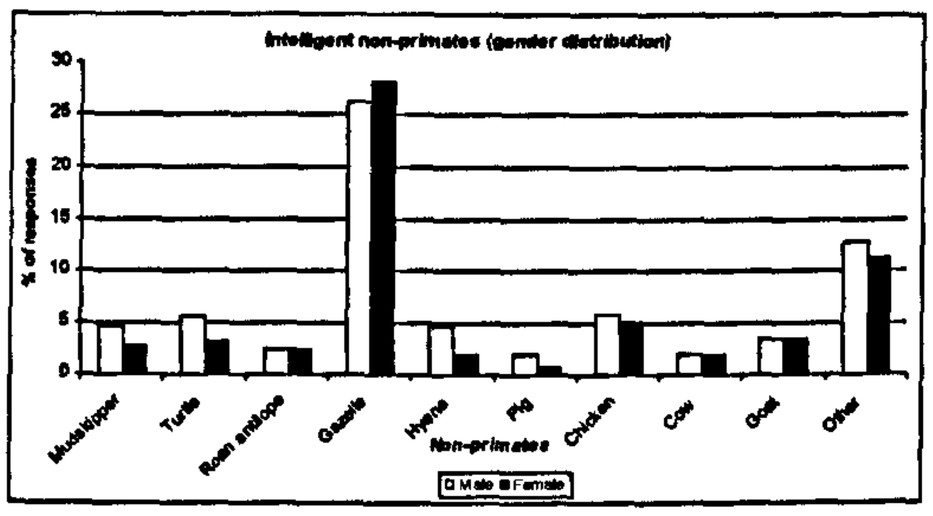
Figure 4.3. Ratings of primate and non-primate species for intelligence (N = 257). Note that scales all vary due to differences in the number and percentage of respondents for each subjective rating.



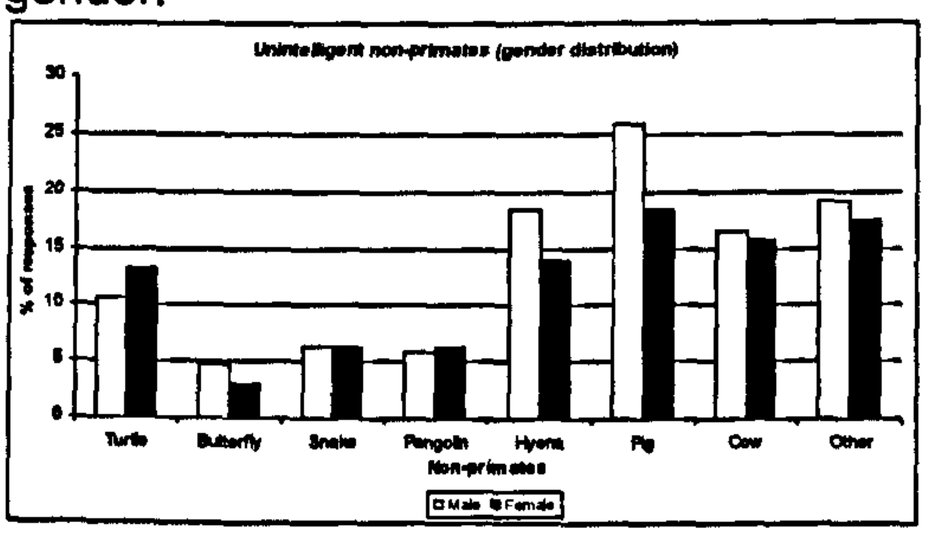
A. Primates considered intelligent by gender.



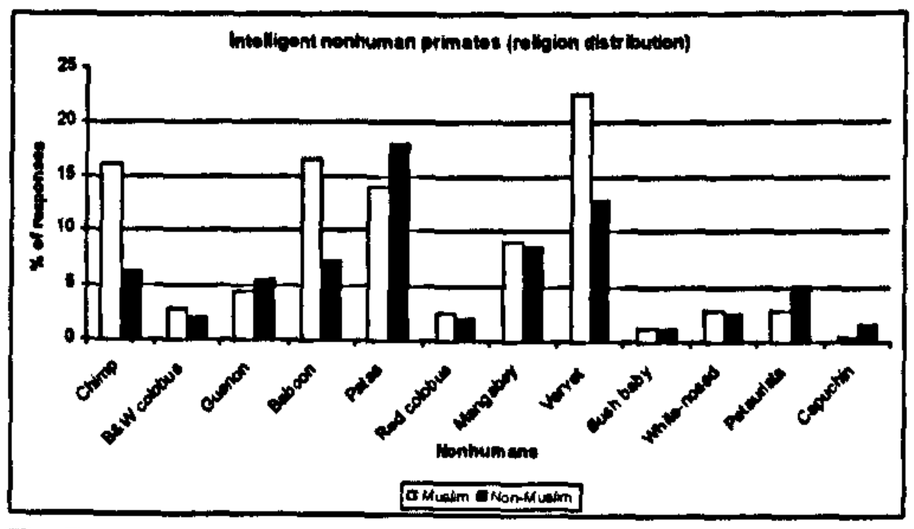
B. Primates considered unintelligent by gender.



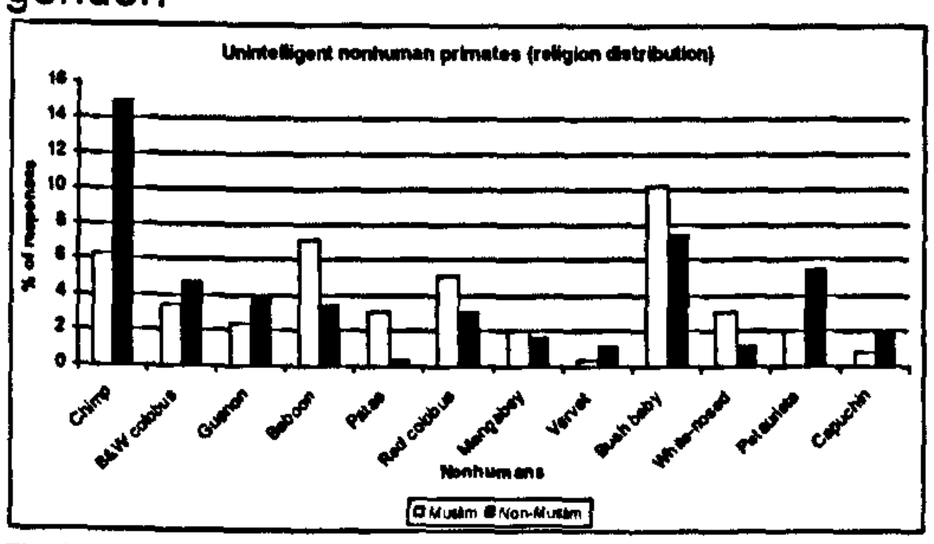
C. Intelligent non-primate species by gender.



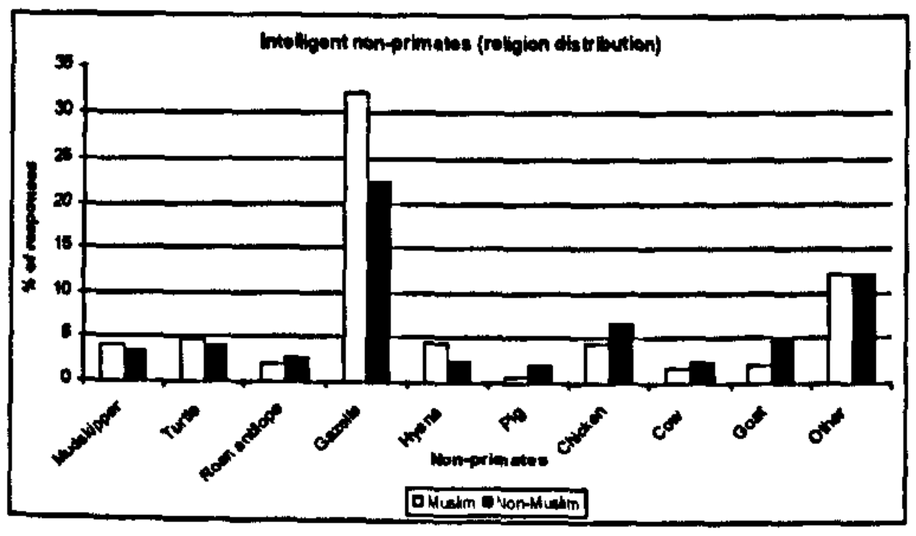
D. Unintelligent non-primate species by gender.



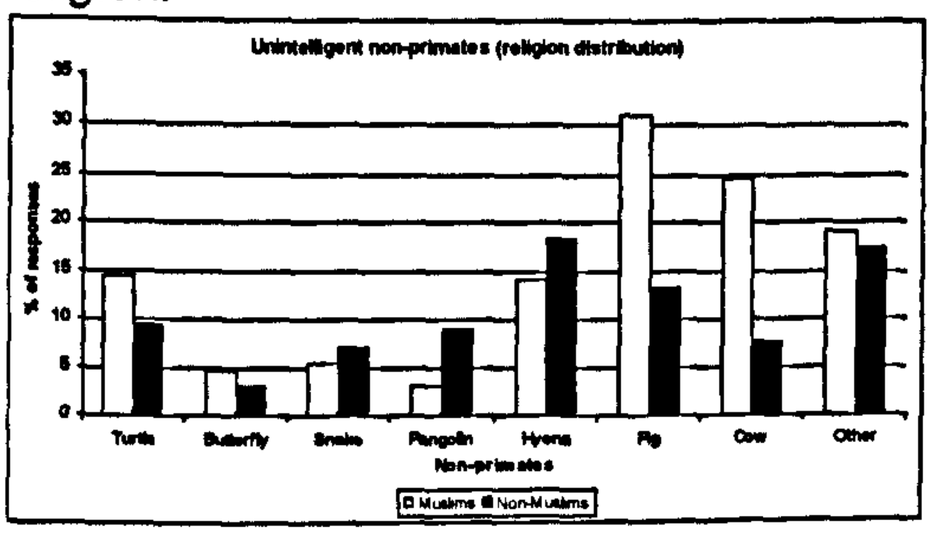
E. Primates considered intelligent by religion.



F. Primates considered unintelligent by religion.



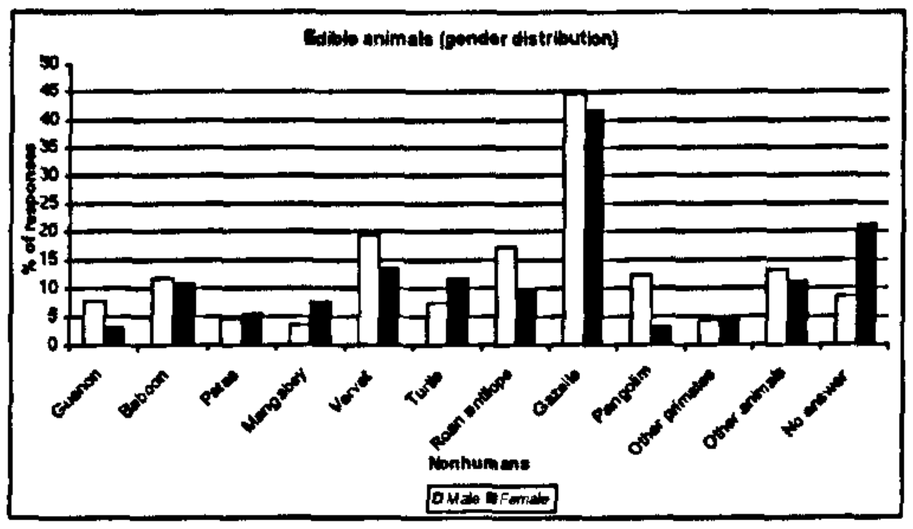
G. Non-primate species reported as intelligent by religion.



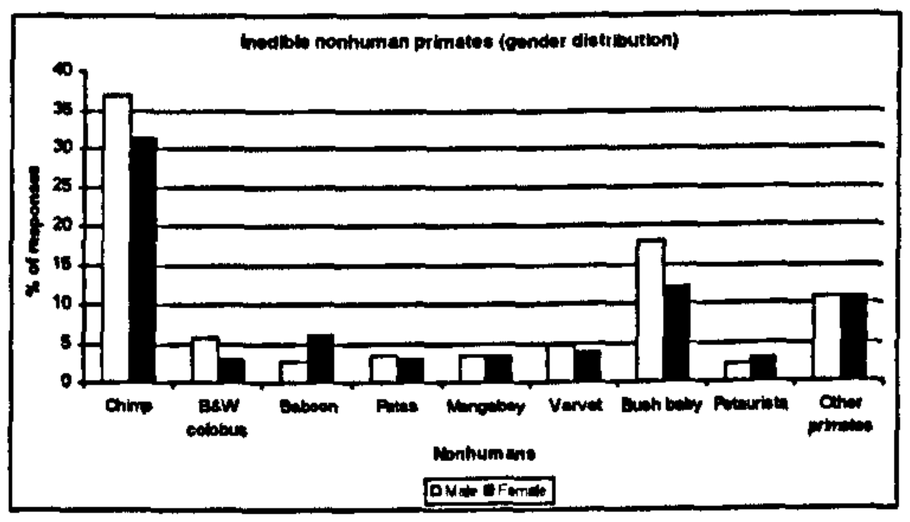
H. Non-primate species reported as unintelligent by religion.

In general, people appeared to perceive primates as intelligent (Fig. 4.3A). Chimpanzees (22.4%), baboons (23.6%), vervet (35.7%) and patas monkeys (32.1%) were the species most frequently rated as intelligent. While men's and women's choices appeared to be balanced in relation to chimpanzees and baboons, vervet (21.6%) and patas monkeys (18.8%) seemed to be the focus of more attention with regards to men's positive attitudes. Women appeared to rate species other than primates as intelligent (Fig. 4.3C), particularly gazelles (28.2%). On the other hand, chimpanzees and baboons, that appear to evoke both positive and negative perceptions, were pointed out more often by men as unintelligent (Fig. 4.3B). Of all the non-primate species included in this research (Fig. 4.3C & D), domestic animals such as pigs (44.3%) and cows (32.2%) were rated as unintelligent too, especially by men. The intelligence of hyaenas, as with their appearance, was negatively perceived (32.5%), once again by the masculine faction of the sample. Muslims seemed to view the intelligence of primates more positively than did non-Muslims (Fig. 4.3E & F). Bushbabies however were more often pointed out by Muslims as unintelligent (10.2%) than by non-Muslims (7.5%). A similar tendency can be seen in relation to non-primate species, especially gazelles (Fig. 4.3G & H): 59% of the individuals (n=139) that rated this species' intelligence highly were Muslim. As with appearance, domestic animals appeared to be considered unintelligent by Muslims, especially pigs (31%) and cows (24.7%). These livestock species are usually kept by non-Muslims, which might evoke more positive attitudes due to physical proximity. By contrast, non-Muslims hold more negative attitudes toward intellectual abilities of wildlife, especially in the case of hyaenas (18.4%).

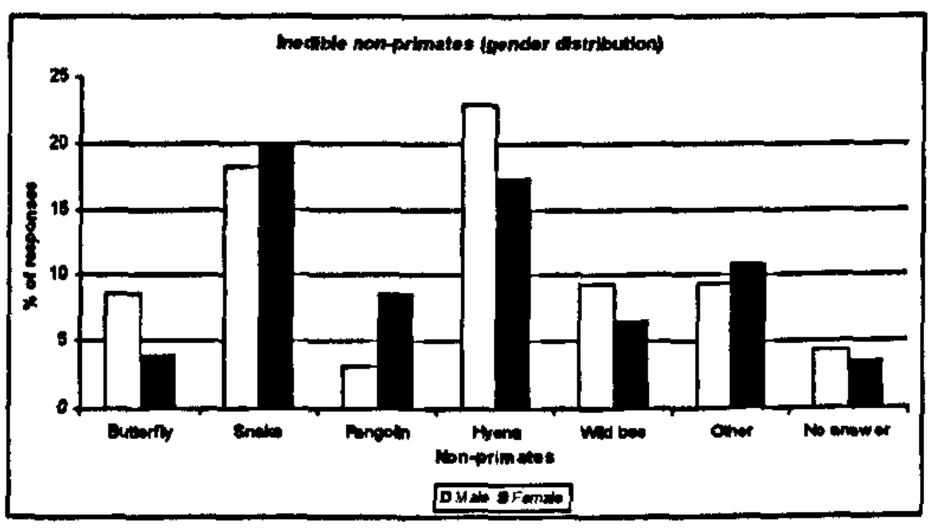
Figure 4.4. Ratings of species as edible or inedible as a percentage of total respondents (N = 257). Note that scales vary due to differences in the number and percentage of respondents for each subjective rating.



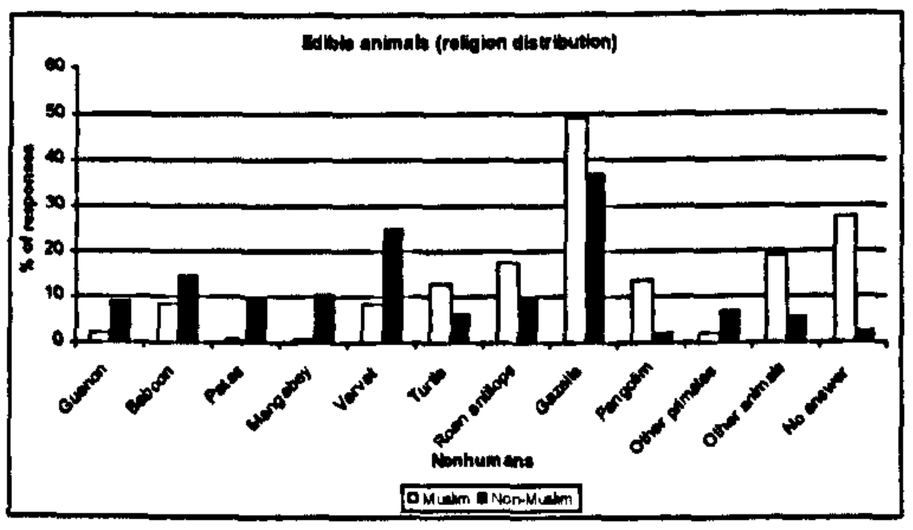
A. Animals considered edible by gender.



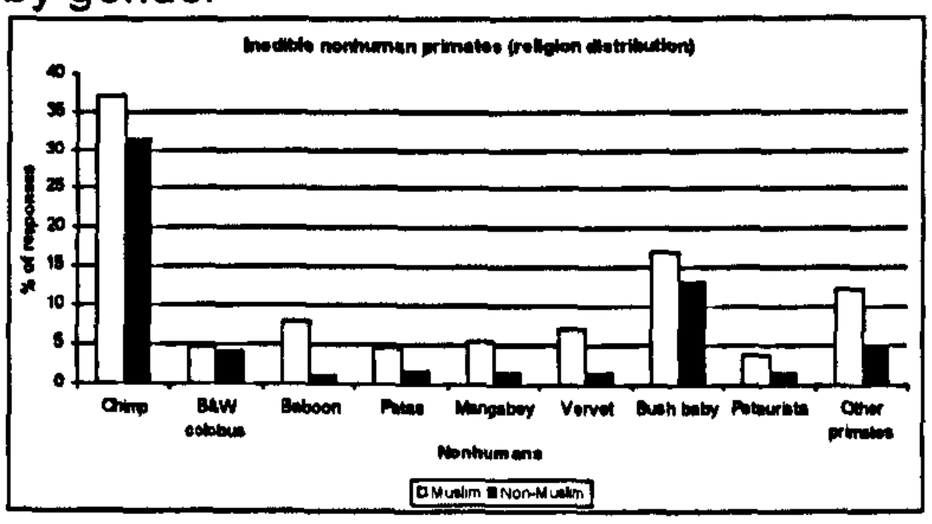
B. Primates considered inedible by gender.



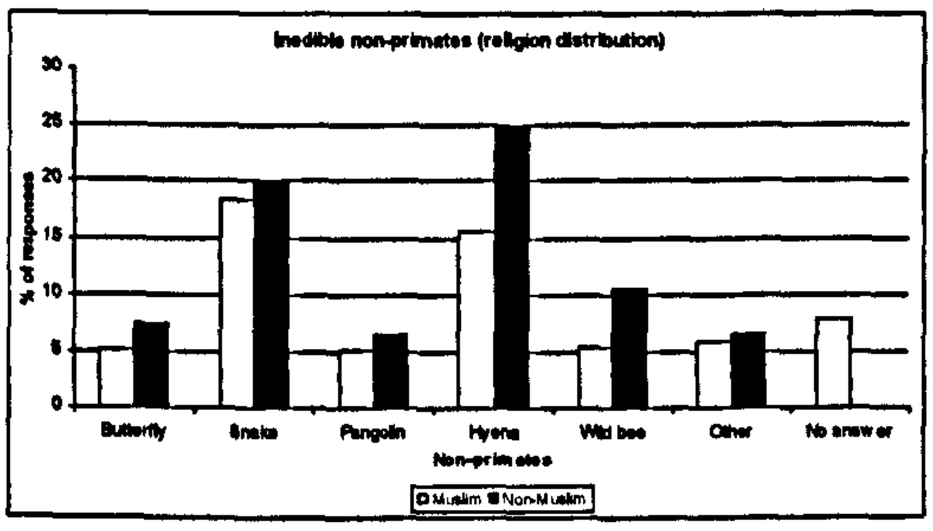
C. Non-primate species reported as inedible by gender



D. Animals reported as edible by religion



E. Primates indicated as inedible by religion by religion



F. Non-primate species indicated as inedible by religion

When interviewing respondents about edible species, I removed the photos of domestic animals (which are kept for food production, at least by non-Muslims) in order to better understand which wild species were hunted and / or traded as bushmeat. Thus, I could better comprehend which wild species are more susceptible to poaching and at a greater risk of extinction in this area of Guinea. Once limited in this way, the respondents' choices related to edibility did not present much of a range of answers, so I decided to combine edible primates and edible non-primate animals into a single graph for each independent variable (Fig. 4.4). In general, 88% of the respondents indicated that primate species were edible, especially baboons (22.6%) and vervet monkeys (33.1%). In

addition, gazelles were rated as highly edible (86.3%), primarily by men [44.7% (Fig. 4.4A)]. Of the primates that are considered as not edible (Fig. 4.4B), chimpanzees identified as inedible most frequently (68.5%), especially by men (37%). On the other hand, potentially dangerous, ugly or unintelligent animals – such as snakes (38.1%) and hyaenas (40.5%) – also seemed to be inedible (Fig. 4.4C). There were consistent and strong differences between Muslims and non-Muslims in those animal species which were considered edible or inedible (Fig. 4.4D-F). While primates were rated as edible by non-Muslims (68%), gazelles appeared to be a less problematic choice of edible wild species for Muslims (49.4%), and primate species seemed to be protected against bushmeat consumption by Islamic taboos. In fact, even chimpanzees which are seen as highly inedible by most respondents were more often indicated as such by Muslims (37%) than non-Muslims. We can ask, however, if it is the Islamic morality that prevents Muslims from indicating a preference for primate meat, or were they just telling us what we wanted to hear? Evidence from the ratings of species other than primates suggests that it was religious rather than a response phenomenon. Muslims had no hesitation in rating gazelles and antelopes as edible, even though the taking of bushmeat was also illegal. Furthermore, non-Muslims pointed out as inedible dangerous animals - snakes (19.8%) and hyaenas (24.9%) – more often than Muslims did (Fig. 4.4F), suggesting that non-Muslims were more likely to be engaged in hunting activities and their attendant hazards.

Some people believe that hyaenas are able to transform themselves in humans in order to attack the villagers, particularly women and children.[20] We therefore investigated whether the frequency of encounters with different species affected the perceptions of these species (Fig. 4.5). It was not my intention to obtain an accurate count of the number of times that people meet with wildlife. Having a real number of encounters between villagers and nonhuman animals could never be an option, since people in Guinea-Bissau have a low level of education (see Chapter 3) and only a few can count. My aim was to assess whether respondents perceived encounters as happening "frequently" or "rarely",

[20] See section 5.3.4 for further information.

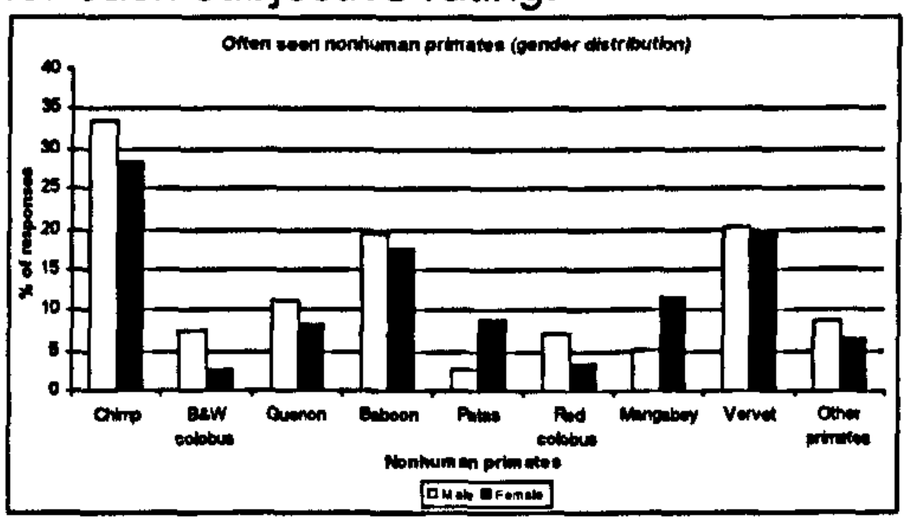
and consequently to relate encounter perception to how the people felt about the extent of conflict with or opportunities for hunting of different species.

Men perceived greater number of encounters with wildlife than did women (Fig 4.5A & B). In general, respondents mentioned meeting chimpanzees frequently (61.4%). Of the total of respondents (n=159) that stated that they saw this primate recurrently, 54.1% were men. Baboons and vervets, according to people's testimonies, are also very easy to find. Both these primates were indicated as being encountered frequently by 76.7% of the villagers, again more often by men. It is interesting that the primates seen frequently are those that people classified as edible. In addition, men – traditionally the hunters – were those who more often mentioned frequent encounters. As such, one is led to suspect that these individuals might see these primates more often as a consequence of the search for bushmeat. Nevertheless, all people, men or women, Muslim or non-Muslim, can potentially meet baboons and vervet monkeys in their farms, as these primates crop-raid incessantly. The non-primate species indicated as those that villagers meet more often were gazelles (13.6%) and butterflies (11.3%). The formers were mainly rated by men (8.2%) and the latter by women (6.2%). Once again, one can assume that perceptions of a great number of encounters with gazelles, as stated by men, was a consequence of men's hunting activities since gazelles were the most edible species as well. For species other than primates, there was a vast range of different answers which explained the large percentage (18.3%) of responses displayed in the "other" column. Patas monkeys (17.1%) and bushbabies (17.9%) were the primates that people rarely encounter, especially men. As I discussed above, patas monkeys are actually impossible to find in this area of the Guinean territory. Furthermore, bushbabies were hard to encounter as well, due to their nocturnal habits. Non-primates species appear to be generally harder encounter than were primates (Fig 4.5D). Hyaenas (59.5%), pangolins (49.4%) and roan antelopes (39%) were rated as the least frequently encountered. In the case of hyaenas, men specifically mentioned them more (31.1%) than women did, as a species that was perhaps expected to be seen in the bush, but was no longer present. During field work, people got confused

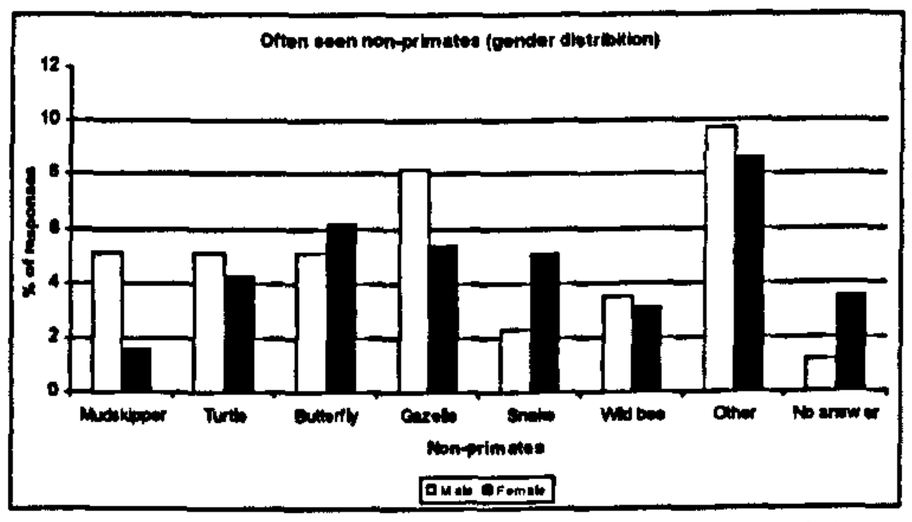
with the hyaenas photo, sometimes thinking that it was a leopard. From my informal conversations, I realized that hyaenas are not easily recognized by the respondents, which might corroborate the idea that villagers are not meeting them regularly. Muslims had a tendency to perceive a greater number of encounters with primates than did non-Muslims: chimpanzees (35%), baboons (21.4%) and vervet monkeys (21.4%) were the most frequently encountered (Fig. 4.5E). Muslims also stated that they see gazelles (7%) and butterflies [6.2% (Fig. 4.5F)] very often. As discussed above, these results were independent of any interaction between gender and religion.

Of the infrequently seen other animals (Fig. 4.5G & H), the species most frequently named by Muslims as not being seen were more diverse than those of the non-Muslims. Bushbabies seemed to be an exception since they were ranked as less seen more often by non-Muslims (10.9%). Muslims may either have simply has less experience with the animals of the bush, as I suggested above, and hence were more likely to say that many species were seen rarely, or they attended to the variety of species presented more closely.

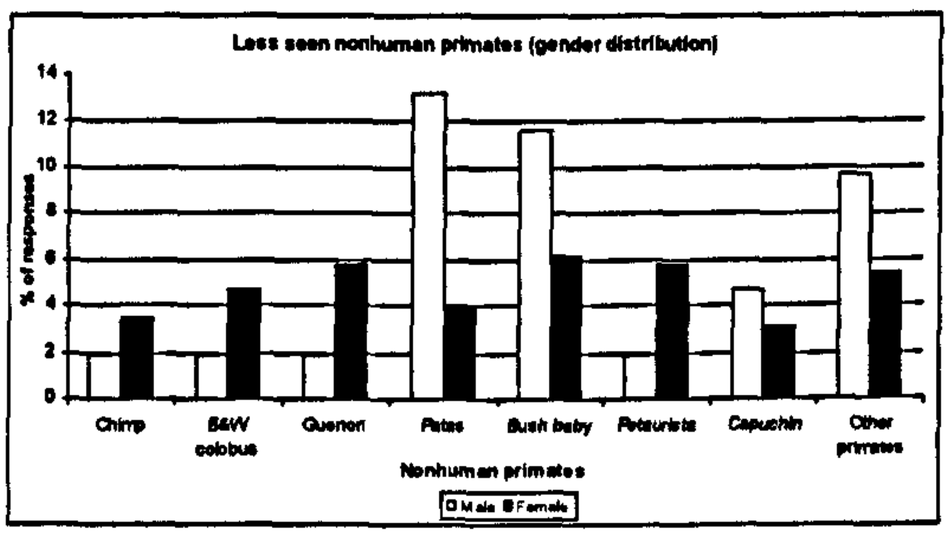
Figure 4.5. Ratings of frequencies of encounters with species as a percentage of total respondents (N = 257). Note that scales vary due to differences in the number and percentage of respondents for each subjective rating.



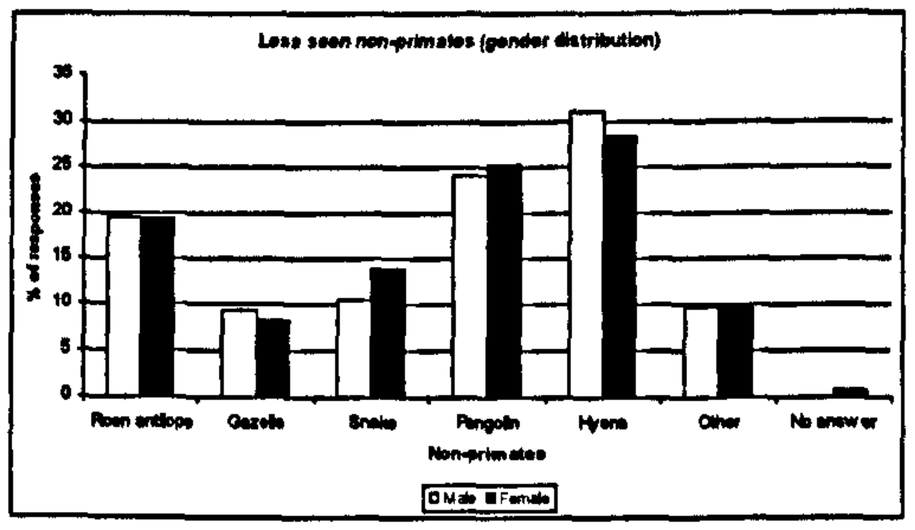
A. Primate species encountered by gender



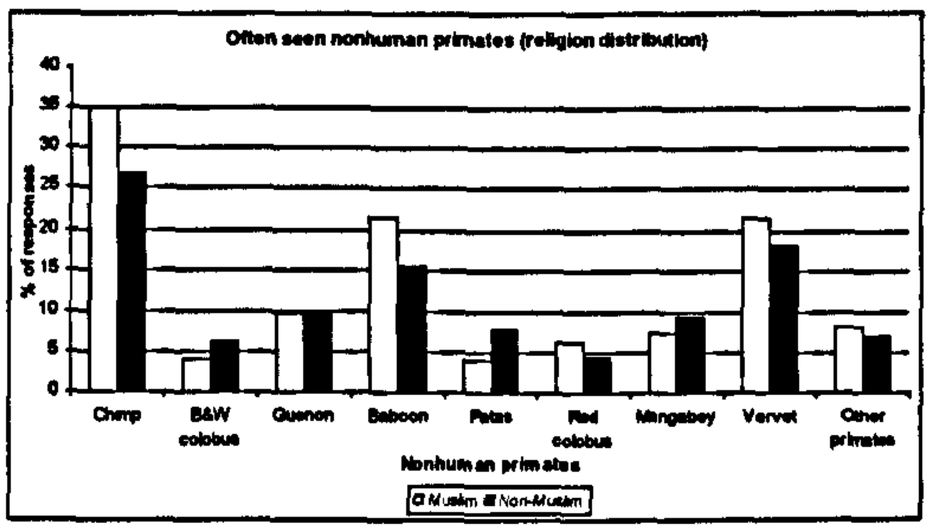
B. Non-primates species encountered by gender



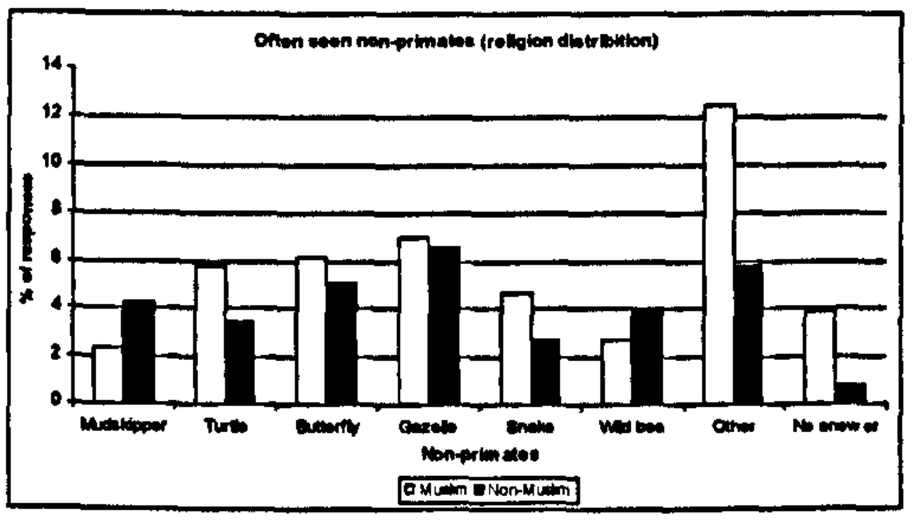
C. Primates people see less often by gender



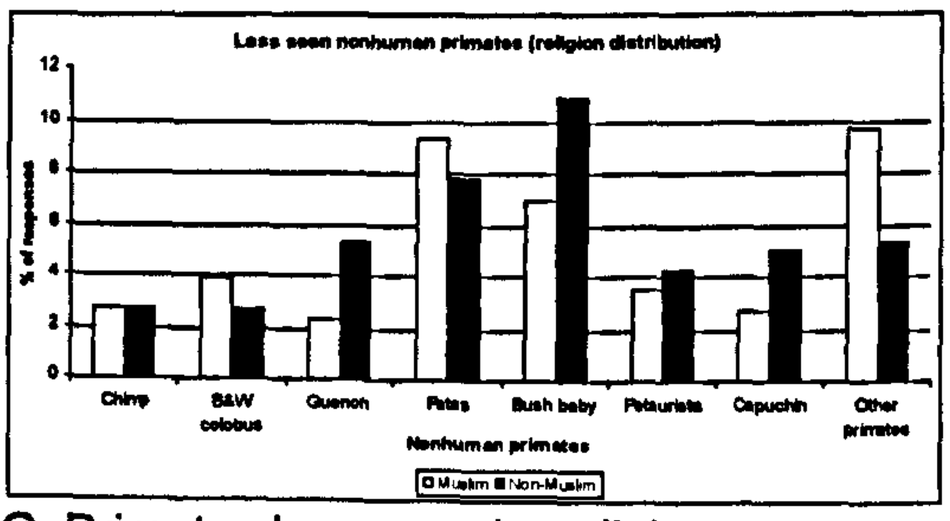
D. Non-primate species people see less often by gender



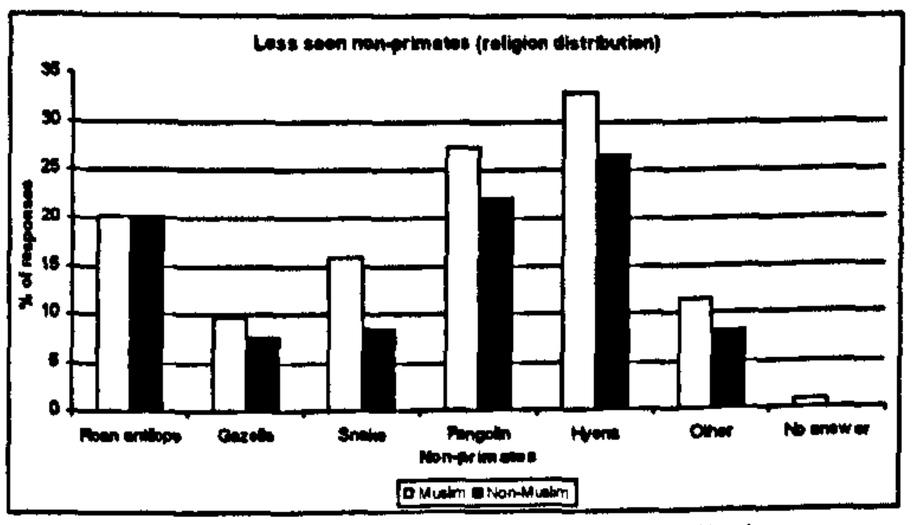
E. Primates often seen by religion



F. Non-primates often seen by religion

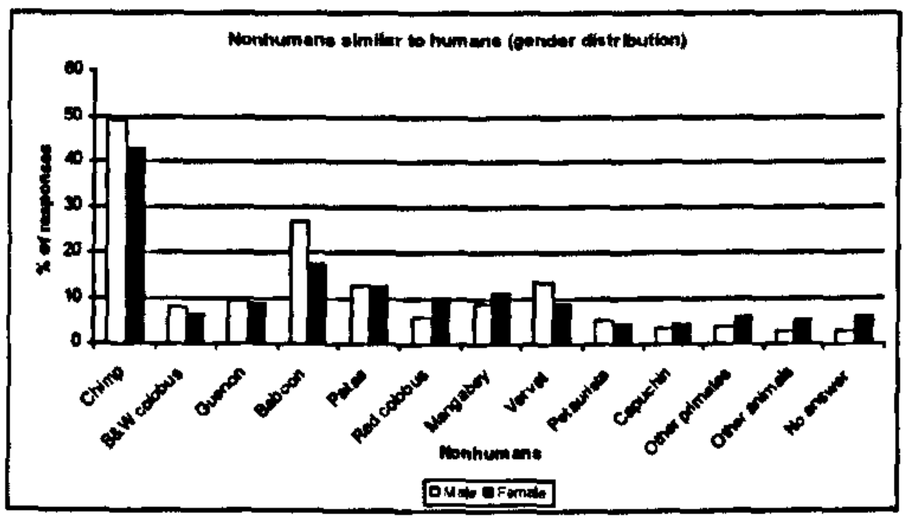


G. Primates less seen by religion

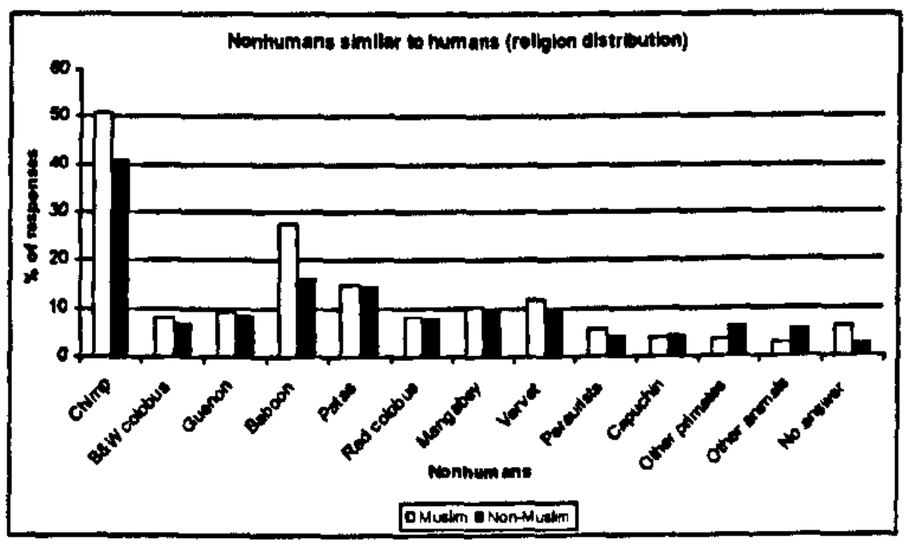


H. Non-primates less seen by religion

Figure 4.6. Ratings of species as similar or not similar to humans as a percentage of total respondents (N = 257).



A. Nonhumans reported as similar to humans by gender



B. Nonhumans reported as similar to humans by religion

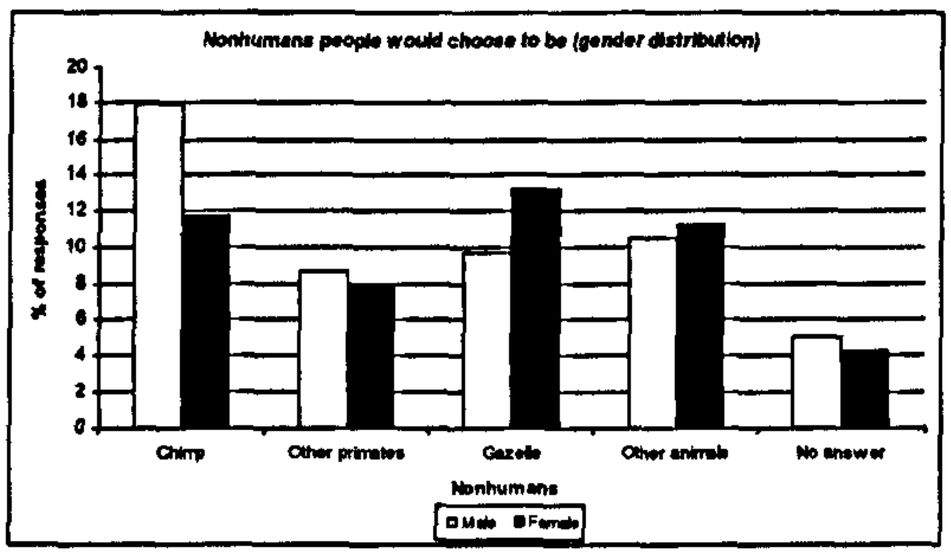
When asked about which animals that respondents believed were similar to humans, the choices comprised mainly primates (Fig. 4.6). Chimpanzees were the most frequently rated as like humans (91.8%), followed by baboons (44%). Both were pointed out more consistently by Muslims and men. "No answers" were also very frequent. Of the respondents who did not provide an answer to those species similar to humans, 68.2% were women and 72.7% were Muslims. We were told during data collection that it was against Islamic principles to compare humans with nonhumans. This does not, however, explain the gender difference (see Chapters 6 and 7).

When asked which animal the respondents would choose to be if they could not be humans (Fig. 4.7), chimpanzees were the most chosen species (29.6%). However, men seemed to be more interested in being a chimpanzee (17.9%) than did women. Men appeared to be generally more influenced by anthropomorphic features since they mainly chose primate species (26.5%) rather than other animals. Women, by contrast, showed a preference for gazelles (13.2%), and an aversion to chimpanzees. This species was singled out by 16.3% of women respondents as one of the animals they would choose **not** to be. While some men mentioned also chimpanzees (10.9%) as a species not to be, their choices generally seem to be more evenly distributed across the range of species than were the women's. There was no significant gender difference overall (χ^2=4.76 NS; ρ>.05). There was, however, an association between gender and species that people would choose not to be (χ^2 = 15.25, d.f. = 7, $\rho \leq .05$).

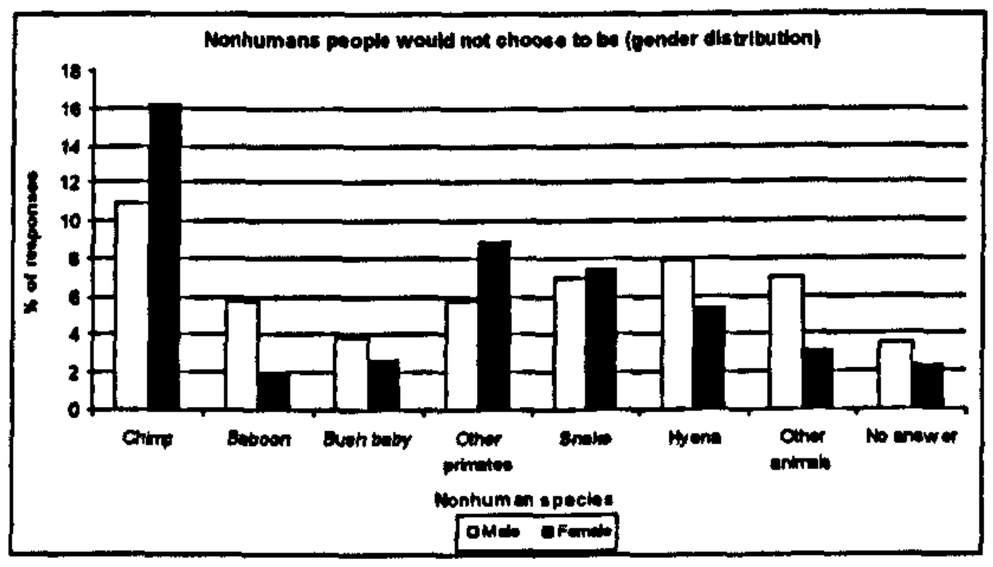
While Muslims would not make judgements about similarity to humans, when asked to chose an animal if they could no longer be human, they then preferred animals that more closely resembled a human (Fig. 4.7C). As such, they chose primates (28.4%) and chimpanzees were the most highly rated species of all (21%). Non-Muslims had a wider range of choices of species that they would be if no longer human and the differences between the religions were significant (χ^2=17.43, d.f. = 4, $\rho \leq .05$). Overall, the choices made by respondents as to species they would not like to be did not differ significantly by religion (χ^2=11.53, d.f. = 7, NS).

Chimpanzees definitely seem to be in limbo regarding their sociozoologic status. Once again, they are present in the choices of animals people would like **not** to be as well as those that they would most like to be (Fig. 4.7). Muslims rated them as a species to avoid slightly more often (14.4%) than did non-Muslims. In addition, Muslims do not seem to feel great affection for becoming a baboon (5.4%). Apart from chimpanzees and baboons, they also did not want to become snakes (8.9%). Non-Muslims singled out hyaenas (8.6%) as the animals they would least like to be, after chimpanzees.

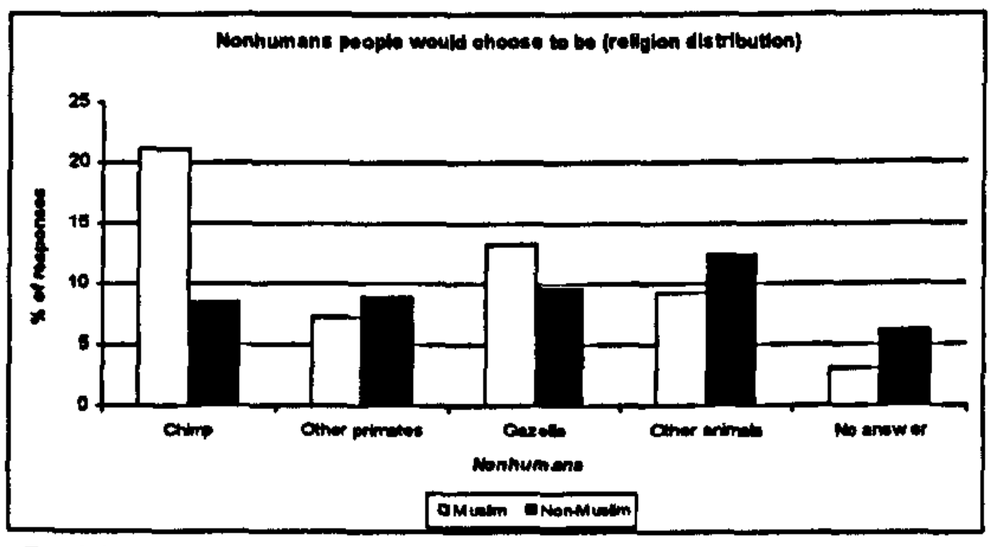
Figure 4.7. Ratings of animals respondents would chose to be, or would chose not to be, were they no longer human (N = 257). Note that scales vary due to differences in the number and percentage of respondents for each subjective rating.



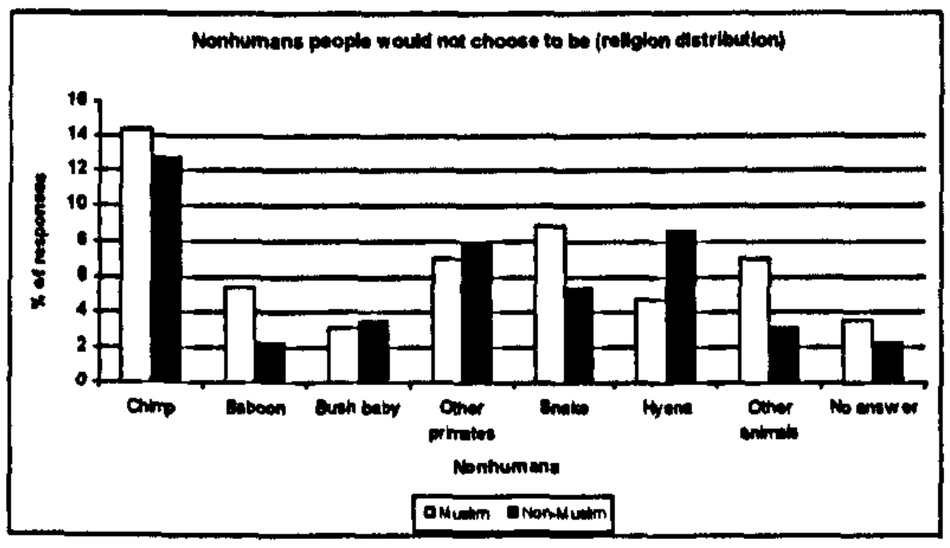
A. Nonhumans people would choose to be if they could not be humans by gender



B. Nonhumans people would choose not to be if they could not be humans by gender



C. Nonhumans people would choose to be if they could not be humans by religion.



D. Nonhumans people would choose not to be if they could not be humans by religion.

4.4 Discussion

Gender and religion appeared to play significant roles in the structuring of the socio-zoological scales amongst the people of Tombali.

Men tend to be more positive than women in their rankings of chimpanzees. Men see chimpanzees mainly as good and intelligent. During data collection, chimpanzees were referred to as very wise crop-raiders, since they appear to know exactly when it is safe to steal fruit from farms. This observation has been proved to be true in many other parts of Africa where chimpanzees live in close proximity with human settlements and where people hold the same opinion about these primates raiding behaviour (e.g. Naughton-Treves, 1997; Osborn and Hill, 2005; Vernon, 2005; Hockings, 2007). As such, men's perceptions of chimpanzees' cleverness might be related with this species' ability to elude the farmers' crop protection strategies. Possibly, the trickiest element of the men's

rating of chimpanzees is their classification of these animals as good. If chimpanzees are seen as smart due to their raiding skills, according with principles of values related to loss, they might be expected to be perceived of as bad. However, NGOs in this area have been trying to change people's attitudes toward this species in order to implement an eco-tourism programme, which uses chimpanzees as an attraction for paying foreigners. As such, meetings and environmental education sessions have been taking place in the National Park and men were always invited to take part – women were usually kept aside (Stringer et al., 2007; Bandiaky, 2008). It is therefore possible that men now see chimpanzees as an opportunity to improve their economic conditions and that chimpanzees are now perceived of as an important resource for their extrinsic value. Both Muslims and non-Muslims rated hyaenas and snakes negatively, possibly due to their potentially dangerous behaviour. These species are not perceived as respecting humans' territorial boundaries; they do not fear us and, thus, cannot be dominated by us. As such, according to Arluke and Sanders's (1997) classification, they might be seen as "demons" (see Chapter 1). Ironically, hyaenas – according to some elderly men's testimonies – are extinct in this region, but are still classified as bad. Finally, men mention a high number of encounters with wildlife, especially primates, probably due to their hunting activities as well as these species' crop-raiding behaviour.

Women appeared to be less positive towards chimpanzees than were the men. According to their testimonies during focus groups (see Chapter 6), chimpanzees are seen as a hazard that jeopardizes women and children's safety. There are examples of chimpanzees' attacking women and small children in Africa (e.g. Vernon, 2005; Hockings, Yamakoshi, Kabasawa and Matsuzawa, 2010), although we never confirmed whether this was happening in Cantanhez National Park. Perceiving chimpanzees as a potential risk was probably realistic for women. Female respondents appeared to prefer domestic animals. Chickens and goats were rated as good animals by female respondents, probably due to physical proximity and potential returns. Women are expected to accomplish their daily tasks in - or nearby - villages, which might make them to feel closer

to livestock and therefore more positive than to wildlife. Gazelles were also highly rated by women for positive attributes, possibly because they are considered "tasty" and due to a more gentle presence as well.

Muslims rated some primate species as bad, namely baboons and vervet monkeys. Since Muslims mainly have fruit and cash crop farms (Temudo, 2009), the conflict between people and these raiding species is potentially more serious than that experienced by non-Muslims. On the other hand, non-Muslims rated primates as edible, especially baboons and vervet monkeys, which suggests that non-Muslims are more eclectic in relation to their dietary habits than are Muslims. However, despite to Islamic restrictions regarding certain kinds of meat consumption, some young Muslims hunt and trade bushmeat as an extra source of income. While strict religious principles forbid consumption, these appear not prohibit the hunting or sale of this meat. . Due to the hunting and trading activities of young men, they may feel less vulnerable and dependent on agricultural activities, where success depends on factors that people cannot control (e.g. rain, temperature, soil, and raiding animals, among others). Although in the past, hunting activities were associated with magical and religious rituals, the existence of guns and other technology that facilitates hunters' achievement - associated with a higher educational attainment (see Chapter 3) - makes young men likely to perceive hunting as a more controllable income-generating activity. In Western societies, according to some authors (e.g. Lages, 2000; Bruce, 2002), this sense of being in charge of our lives as a result of technology and education being accessible to almost everyone has made secularization possible. Such a process might be starting in this area.

Finally, Muslims and men appeared to be more positive about anthropomorphised features than were women and non-Muslims. They more often rated chimpanzees as the species they would choose to be if they could not be humans. Among some of these ethnic groups, chimpanzees are believed to be former humans that were punished by God and sent back to the forest, and which probably explains why they were also consistently rated as very similar to humans and also inedible (see Chapter 5). Non-Muslims were very

eclectic in their choices of which animal they would be, which might be explained by their animistic beliefs. On the other hand, women tended to choose gazelles as a substitute to their human condition possibly due to their supposed tame temperament and because gazelles do not interfere with human lives. These gazelle traits are similar to some expectations about women. They are supposed to be submissive and to not interfere with men's authority over them.

4.5 Conclusions

After analysing respondents' choices in accordance with Arluke and Sanders model (op. cit, 1997), chimpanzees, from men's perspective, were perceived as good animals because they are believed to be a way to earn money in the future due to the eco-tourism project that are supposed to be implemented in the region. As such, chimpanzees have the same status as farm, laboratory and zoo animals have in Western societies. They are good because they exist in our lives with a purely utilitarian purpose.

On the other hand, women believe that chimpanzees are bad because they see chimpanzees as capable of subverting the sociozoologic order constructed by humans. Apparently, chimpanzees are perceived as animals that wish to rule over us. Possibly that is the same perspective that Muslims and non-Muslims have regarding snakes and hyaenas. Muslims, do not seem to like chimpanzees as well. However, in this case, chimpanzees are perceived as "vermin" that do not constitute a real physical threat, but are able to invade human territory to steal our food. Primates, in general, can be classified as "vermin".

Finally, women expressed positive affect toward domestic animals probably due to their useful role in women's lives. Gazelles, even living outside human territorial boundaries, are seen as docile and highly edible.

In conclusion:

- People were willing and able to rate animals according with the attributes we offered.
- Chimpanzees were ambivalently viewed by people, with men and women expressing opposite attitudes.
- Animals that were edible were rated highly for positive attributes.
- Contact with animals, in either a positive (hunting for meat) or a negative (crop-raiding) context appears to underlie many of the perceptions and attitudes towards wildlife.

CHAPTER 5 – THE GOOD THE BAD AND THE UGLY: PRINCIPAL COMPONENT ANALYSIS OF PERCEPTIONS OF ANIMALS

Plate 5.1. Baboon kept as a "companion animal" in Lauchande (Cantanhez National Park).

5.1 Introduction

After establishing a "preference ranking" in order to determine which wildlife species people from Tombali region state that they like and/or dislike the most, I now assess some of the behavioural and experiential factors which underlie these preferences (see Chapter 2). I adapted the sociozoologic scale structure developed by Arluke and Sanders (1996) to explore which attributes were assigned to which of 27 wildlife species. In the following analysis, I consider whether and how these attributes of "good" or "bad", "edible" or "non-edible", "pretty" or "ugly", "intelligent" or "unintelligent", "often seen", "less seen" and "similar to people" define dimensions of respondent's perceptions.

5.1.1 Hypotheses

As in the previous chapter, the following hypotheses were explored in association with my project's two main aims[21]:

(i) A correlation between positive attitudes and edibility was expected, except for chimpanzees which appear to have other distinct and defined attributes;

(ii) In general, chimpanzees are perceived as "good animals", given their human-like affinities and appearance;

(iii) Negative perceptions are due to a lack of knowledge regarding chimpanzees' behaviour, most likely as a consequence of a lower number of encounters between humans and these primates;

(iv) Regular encounters between villagers and primates in general might enhance negative attitudes, since such meetings can be correlated with the perceptions people have about primate crop-raiding behaviour.

These hypotheses helped understand which animals were positively or negatively perceived and to uncover some of the different factors that influenced these perceptions; e.g. aesthetic, utilitarian, or related to the level of conflict.

5.2 Methods and analysis

I anticipated that it would be very difficult to fully understand the underlying psychological or experiential reasons why certain animals were perceived as good or bad. For this reason, principal component analysis (PCA) was done to explore statistical associations between perceptions; firstly to identify correlations between perceptions and then to identify clusters of similar perspectives across the subjects (Field, 2005; Dancey and Reidy, 2007).

As detailed in Chapter 2, people chose three photos of animals out of the 27 presented and recognised to represent specific adjectives or qualities. Capuchins were excluded from the primate analysis. For each of the three species that were, for example,

[21] See section 1.4.1 for further information.

chosen as "good", the first chosen animal was given a score of 3 for that individual, and so on for each of the three choices. My assumption was that first chosen species represented the most salient or immediate representative of that quality (see for example Hayes, 1998). The total number of times that a species was selected as top for a specific quality was multiplied by three, when chosen second, multiplied by two and when chosen third, by one. If not mentioned in the context of any quality, the species was assigned a 0 for that participant. These values were then allocated to each available species across all 257 participants. Quality associated with each species by respondent was used as an independent variable, and values thus varied from 0 to 3. The total number of times that subjects pinpointed certain animals was, in itself, a signal of their importance in the Guinean sociozoologic scale. Of all the 26 local wildlife pictures shown to 257 people, only these five categories of animals were rated consistently enough to be able to enter them into the PCA analysis.

Respondent ID or other associated individual variables such as gender and ethnicity were not used in the PCA analysis due to reduction in the sample size below that required for PCA. As mentioned, I explored religion and gender as attributes that could contribute to perceptions of local wildlife separately and beforehand. Associations between these variables and the rankings of animals that people would/would not like to be if they could not be human were assessed using Chi-square and Cramer's V tests (see Chapter 4).

PCA was run in SPSS versions 14-17 with and without varimax rotation, and the initial correlation matrix between variables was examined to ensure that there were associations worth investigating. The correlation matrices were significant for only those relatively few animals which were chosen and rated consistently across participants: specifically these were chimpanzees, baboons, other nonhuman primates, gazelles and hyaenas. Initial exploration of the validity of PCA run separately on each respondent's rankings of the four species and the other nonhuman primates returned a K-M-O measure of sampling adequacy of > 0.50 for each species (Chimpanzees: K-M-O = 0.53 Bartlett's

test of sphericity X^2 = 208.42, df = 45, P < 0.001. Baboons: K-M-O = 0.519, Bartlett's test of sphericity X^2 = 11.9, df = 55, P < 0.001. Gazelles: K-M-O = 0.542, Bartlett's test of sphericity X^2 = 53.4, df = 36, P = 0.031. Hyaenas: K-M-O adequacy = 0.544, Bartlett's test of sphericity X^2 = 127, df = 45, P < 0.001. Other nonhuman primates: K-M-O = 0.53, Bartlett's test of sphericity X^2 = 109.12, df = 55, P =<0.001).

The factors retained for all animals were those that had eigenvalues greater than 1, especially relevant when the sample size exceeds 250 as in our study (Field, 2005). We retained all component loadings greater than 0.364 (Field, 2005).

Here I present correlation matrices, along with both the initial solution and the rotated eigenvectors, as suggested by Field (2005). Scree plots are shown to validate the number of main factors determined from the criteria of eigenvalue > 1.

5.3 Results

5.3.1 Chimpanzees

For chimpanzees, initially, the variables "pretty", "ugly" and "inedible" seemed to be problematic in relation to their sample size (Table 5.1) due to correlation coefficients lower than 0.5. One solution to low correlation values is dropping at least one sample from the analysis (Field, 2005). However, exploration of the validity of PCA returned a K-M-O measure of sampling adequacy of 0.53 for chimpanzees. Thus PCA appeared to be suitable for chimpanzees and for all the variables measured in relation to this species.

The eigenvalues produced from the PCA suggested that there were four important components contributing to the way respondents see chimpanzees, each with values greater than 1.0. These four components explained 57% of the total variance observed across all the analysed variables (Table 5.2). The scree plot was less clear than the eigenvalues, as it suggested the existence of three rather than four components (Figure 5.1).

Table 5.1. Anti-image correlation in relation to chimpanzees' features

	Good	Bad	Pretty	Ugly	Intelligent	Unintelligent	Inedible	Similar to people	Often seen	Less seen
Good	.553(a)	.337	-.020	.164	-.035	.149	-.100	-.126	-.106	.013
Bad		.519(a)	.129	.188	.031	-.023	-.167	.003	.027	-.063
Pretty			.454(a)	.284	-.078	.018	-.067	-.099	.154	.065
Ugly				.454(a)	-.096	-.066	-.193	-.158	-.001	.014
Intelligent					.590(a)	.244	-.029	-.081	-.133	.014
Unintelligent						.544(a)	-.176	-.018	-.037	.104
Inedible							.462(a)	-.136	-.037	-.174
Similar to people								.629(a)	-.143	.079
Often seen									.586(a)	.235
Less seen										.534(a)

a. Measures of Sampling Adequacy (MSA).

Table 5.2. Total variance explained by each component before and after rotation regarding perceptions about chimpanzees

Component	Initial eigenvalues			Rotation sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.82	18.2	18.2	1.51	15.1	15.1
2	1.57	15.7	33.9	1.47	14.7	29.8
3	1.19	11.9	45.8	1.38	13.8	43.6
4	1.11	11.1	56.9	1.34	13.4	57.0

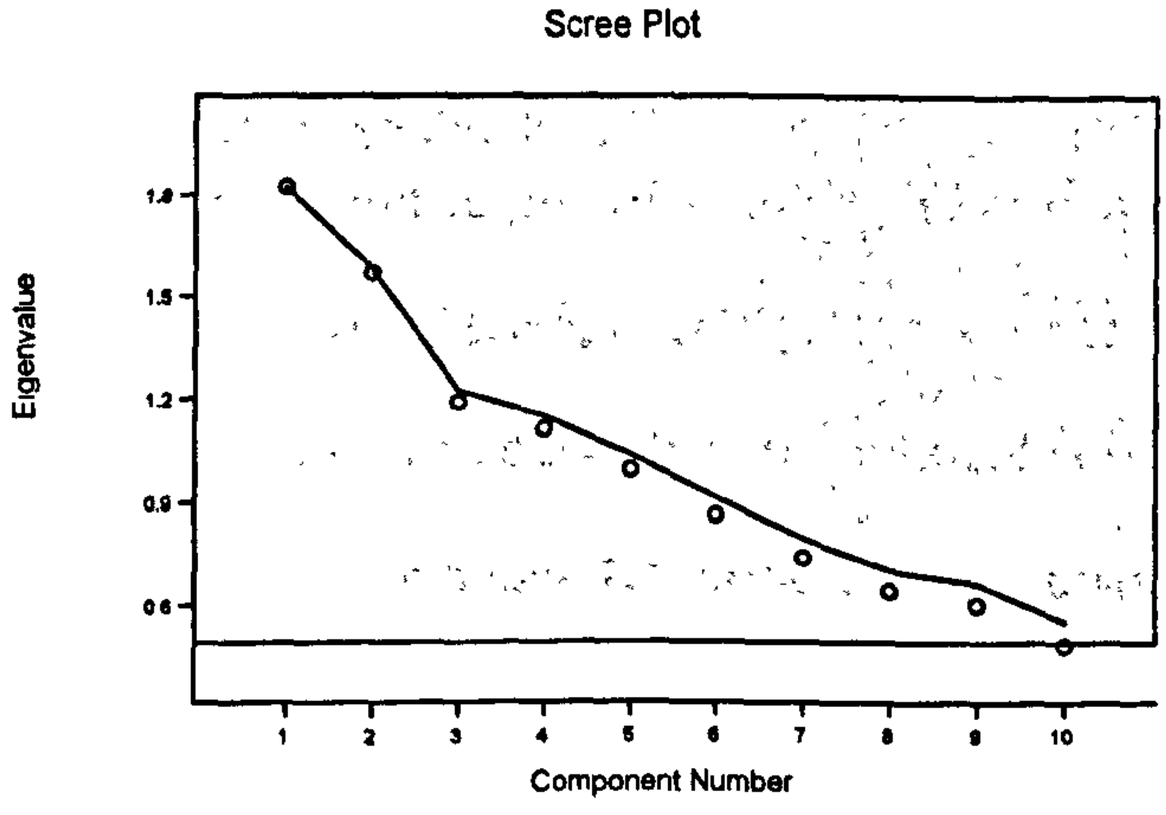


Figure 5.1. Scree plot of the variance explained by each component in relation to the subjects' perceptions about chimpanzees.

In common with the PCA factors, Table 5.3 suggests that the way people perceive chimpanzees falls into four different clusters of attitudes. The first component tended to match with positive attitudes. This group of respondents ranked the variables "intelligent" and "good" highly. The second component was constituted of people who mentioned a significant number of encounters with chimpanzees. This point of view should not

necessarily be seen as positive. In fact, participants who meet chimpanzees very often might be those who are experiencing crop-raiding in their farms. However, the feature "bad" was negatively correlated with the variable "often seen", which can be interpreted as a reflection of the potential positive attitudes towards the encounters that this cluster of respondents have with the species (see Bryman and Cramer, 1994) As such, component 2 might also reflect people who positively see chimpanzees, as in component 1[22]. The negative correlations observed between elements of two components makes their interpretation less straightforward (Bryman and Cramer, 1994), but since these relationships none the less help us to better understand the apparent contradictions of some components and the perceptions of the respondents, we retained all the traits. The third component included people that ranked highly "inedible", "similar to people" and "ugly". Being perceived as similar to humans may be a form of protection against poaching, and thus makes chimpanzees inedible and ugly according to aesthetical principles. Among Guinean people, chimpanzees are viewed as ancestors that were punished by God due to their misbehaviour, and hence they are both ugly and "human" or inedible. Even such potentially negative perceptions might assist a future conservation programme, since the consumption of chimpanzee meat seems to be a taboo. Finally, the fourth cluster did not discriminate much about how respondents perceived chimpanzees apart from being seen as "ugly" once again. Nevertheless, this point of view was linked with negative attitudes, since the features "good" and "pretty" were negatively correlated with "ugly". This fourth component has only weak explanatory value, but does appear to represent an aesthetic dimension.

In short, apart from some taboos that might be protecting chimpanzees from poaching and bushmeat, people did not appear to be very fond of chimpanzees. Fortunately, their human resemblance and local traditional beliefs have been protecting them from hunting.

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[22] Interpretation was made according to Field (2005), pages 443-468.

Table 5.3. Perception component matrix for chimpanzees, after rotation (varimax)

	Component			
	1	2	3	4
Unintelligent	-.743			
Intelligent	.669			
Good	.491			-.377
Bad	-.429	-.392		
Less seen		-.790		
Often seen		.641		
Inedible			.789	
Similar to people			.631	
Pretty				-.806
Ugly			.391	.649

Rotation converged in 7 iterations.

5.3.2: Baboons

Baboons appeared to have an important role in the daily lives of participants, and they were also rated frequently. PCA was again used as means to better understand people's perceptions.

Some of the variables shown in table 5.4 had low MSA results, especially for parameters related with intelligence and the number of encounters people had with baboons - e.g. the variable "less seen". However, as with the chimpanzee PCA, the sampling adequacy was robust and I decided to retain all variables. The eigenvalues indicated that there were five components explaining 58.4% of the total variance (Table 5.5). The scree plot also clearly suggested five components (Figure 5.2).

Table 5.4. Anti-image correlation in relation to baboons' features

	Good	Bad	Pretty	Ugly	Intelligent	Unintelligent	Edible	Inedible	Similar to people	Often seen	Less seen
Good	.536(a)	.083	-.193	-.028	-.033	.000	-.070	-.246	-.047	-.002	-.067
Bad		.575(a)	.075	-.105	-.013	-.090	.018	-.095	-.081	-.055	-.023
Pretty			.572(a)	.074	-.078	-.023	-.149	-.051	.012	-.033	.034
Ugly				.527(a)	.107	.062	.025	-.062	-.074	-.052	-.113
Intelligent					.460(a)	.161	.067	-.017	-.201	.064	.002
Unintellingent						.460(a)	.093	.005	-.052	-.080	.015
Edible							.471(a)	.173	-.067	-.127	-.021
Inedible								.507(a)	-.071	-.033	.067
Similar to humans									.533(a)	-.179	-.002
Often seen										.552(a)	.044
Less seen											.460(a)

a Measures of Sampling Adequacy (MSA)

Table 5.5. Total variance explained by each component before and after rotation regarding perceptions about baboons

Component	Initial eigenvalues			Rotation sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.52	13.8	13.8	1.4	12.7	12.7
2	1.41	12.8	26.6	1.4	12.5	25.2
3	1.23	11.2	37.8	1.3	11.5	36.7
4	1.14	10.4	48.2	1.2	11.0	47.7
5	1.12	10.2	58.4	1.2	10.7	58.4

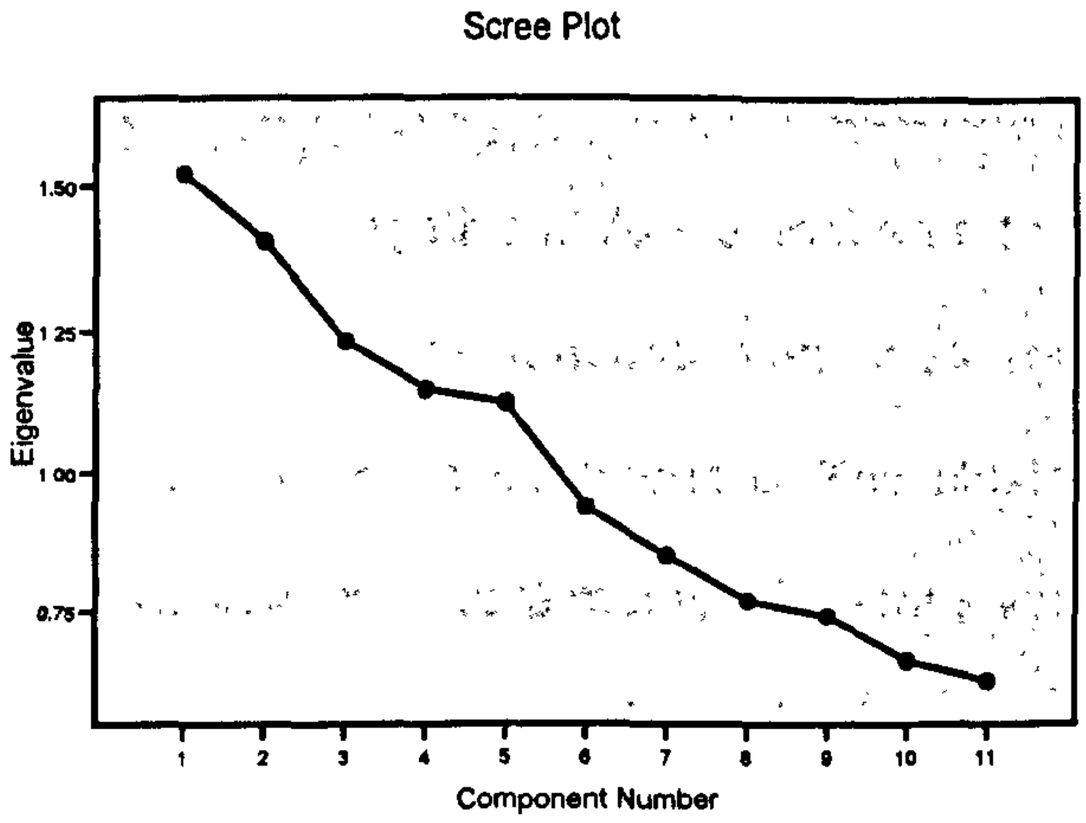

Figure 5.2. Scree plot of the variance explained by each component in relation to the subjects' perceptions about baboons.

Table 5.6. Perception component matrix for baboons, after rotation (varimax)

	Component				
	1	2	3	4	5
Good	.793				
Pretty	.622				
Inedible	.559		-.546		
Similar to people		.721			
Often seen		.623			
Bad		.505			
Edible			.788		
Intelligent				.779	
Unintellingent				-.652	
Less seen					.701
Ugly					.699

Rotation converged in 9 iterations.

As shown in Table 5.6, respondents' perceptions in relation to baboons could be divided in two different groups: (i) positive and (ii) negative. The positive group consisted of components one and four, and included believing that baboons were good, pretty and inedible. The fourth cluster tended to classify baboons on the basis of their intelligence. While this feature can not necessarily be assumed to be a positive attribute, cleverness is often perceived as good or desirable from a human perspective, as found for companion animals in Western societies (Arluke and Sanders, 1996; Beck and Katcher, 1996; Sanders, 1999). On the other hand, negative attitudes appeared to be clustered in the second, third and fifth components. The most negative attitudes were held by respondents that appeared to be very knowledgeable about baboons. This cluster ranked baboons as similar to people, probably because they were meeting baboons very often. These same respondents also mentioned that baboons were "bad". People who depend on farms to survive might also be those who saw baboons more often, namely while they crop-raid. As such, baboons might be perceived as "bad", because they are competing with humans for resources. Respondents falling in the third component were those who stated that baboons were edible. Edibility is a feature open to misinterpretation. If a species is considered edible, this might mean that its meat is perceived as "tasty", which is a positive aspect. However, since hunting and bushmeat consumption are major threats to species

survival, "edibility" was retained here as a negative feature and as a potential hazard to the continued existence of baboons. Finally, component five includes respondents who rarely met baboons and who also saw them as ugly animals. People stating that they did not see baboons very often might indicate that these primates and people were not in conflict. But the aesthetic point of view – with baboons being ugly even when rarely seen - suggests that people are able to perceive the different species in very different ways and these traits (conflict, edibility, and beauty) do not co-vary in the same way for each species.

5.3.3: Gazelles

By contrast to baboons, gazelles clearly represent the opposite position on the Guinean sociozoologic scale; gazelles are perceived of as pretty due to positive perceptions linked with edibility and a lack of conflict with human activities.

Thus, gazelles are a good example of Guinean fauna perceived in an extremely positive way. Generally speaking, gazelles were ranked more often for positive features, which resulted in lower MSA values in variables measuring negative qualities (Table 5.7). Nevertheless, I decided to keep nearly all the variables – except "inedible" (never ranked) and "ugly" (ranked only once) – in order to be able to make a comparative analysis for this species against the others.

Table 5.7. Anti-image correlation in relation to gazelles' features

	Good	Bad	Pretty	Intelligent	Unintelligent	Edible	Similar to people	Often seen	Less seen
Good	.587(a)	.078	-.149	-.103	.044	-.122	.047	-.005	-.013
Bad		.443(a)	.086	-.088	.007	-.082	.024	.035	-.104
Pretty			.569(a)	-.062	.041	-.079	.099	.011	-.064
Intelligent				.573(a)	.071	-.076	.045	-.143	-.007
Unintelligent					.612(a)	.006	.021	.025	.037
Edible						.531(a)	-.085	-.022	.068
Similar to people							.498(a)	.033	.010
Often seen								.527(a)	.141
Less seen									.488(a)

a. Measures of Sampling Adequacy (MSA)

The eigenvalues suggested that there were four main components contributing to perceptions related to gazelles (Table 5.8). These components explained 53.8% of the total variance across all the variables. The scree plot (Figure 5.3) suggested the existence of two major components and three lesser one; I retained four components with eigenvalues greater than 1. As with the other species, the PCA adequacy was high, retaining all the variables.

Table 5.8. Total of variance explained by each component before and after rotation regarding perceptions about gazelles

Component	Initial eigenvalues			Rotation sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.46	16.2	16.2	1.33	14.8	14.8
2	1.19	13.3	29.5	1.22	13.5	28.3
3	1.13	12.6	42.1	1.22	13.5	41.8
4	1.06	11.8	53.9	1.08	12.0	53.8

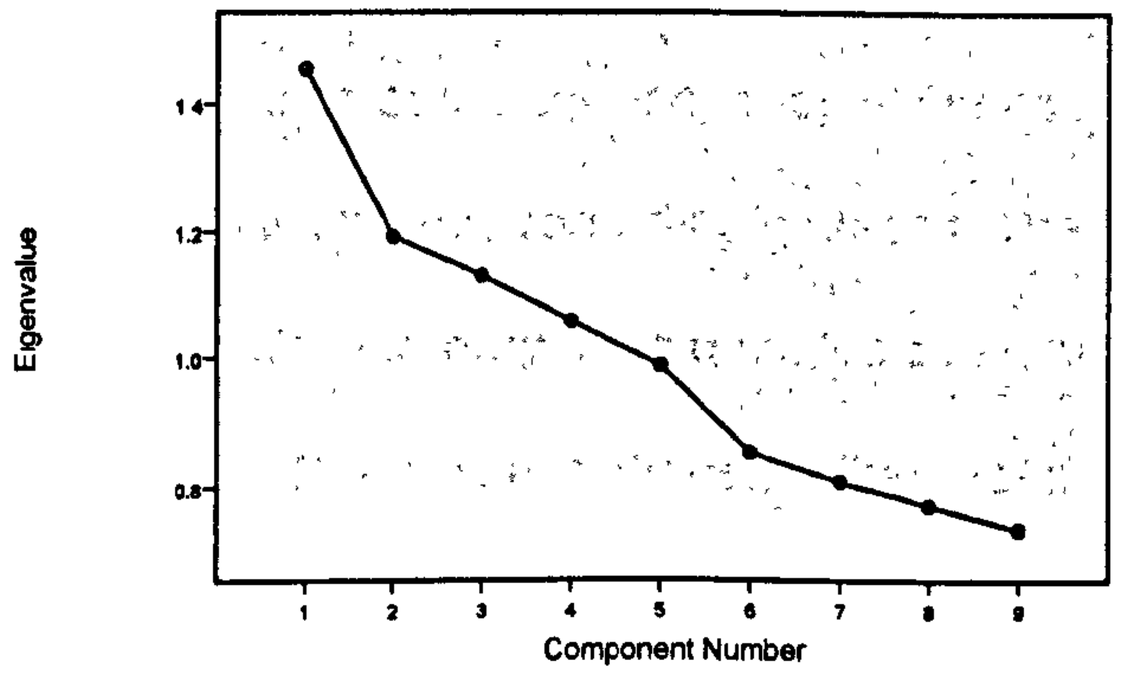

Figure 5.3. Scree plot of the variance explained by each component in relation to the subjects' perceptions about gazelles

Table 5.9. Perceptions component matrix for gazelles, after rotation (varimax)

	Component			
	1	2	3	4
Pretty	.705			
Good	.687			
Bad	-.416	.662		
Intelligent		.650		
Unintelligent				
Often Seen			.728	
Less Seen			-.713	
Similar to people				.774
Edible				.626

Rotation converged in 6 iterations.

After rotation (Table 5.9), there was only one cluster of respondents exhibiting negative attitudes toward gazelles. Component two suggested that respondents who ranked "bad" highly were also those who ranked "intelligent" highly as well. While cleverness may generally be seen as something "good", in the case of gazelles this quality was perceived as negative. Two possible explanations for these results are: (i) an artefact of statistical correlation; (ii) bad and intelligent were jointly related to gazelles' ability to avoid poachers and, as a consequence, people's plates. All the other respondents sustained positive attitudes regarding gazelles. The first component suggested that those individuals who perceived gazelles as being good animals also believed that they were pretty. This cluster suggested that, apart from the utilitarian point of view, people of Guinea-Bissau also perceive wildlife in an aesthetic way. The third group of people was that mentioning a good number of encounters with gazelles. Considering that gazelles were not competing with people for resources – which means that they were not easy to find nearby the farms - these respondents might be those searching for gazelles inside the forest for hunting purposes. Finally, the fourth component consisted of people who see gazelles as similar to humans and also edible. From the beginning of this research, I assumed that being perceived as similar to humans could be, per se, a taboo regarding meat consumption - which explained some of the opinions about chimpanzees held by respondents. However, humanity and edibility were not in conflict in the case of gazelles for at least some respondents. Edibility generally – according with the

Guinean point of view – was related with positive attitudes, which influenced villagers perceptions of gazelles as good animals.

5.3.4 Hyaenas

Table 5.10. Anti-image correlation in relation to hyaenas' features

	Good	Bad	Pretty	Ugly	Intelligent	Unintelligent	Edible	Inedible	Similar to people	Less seen
Good	.562(a)	.074	.023	.013	.006	.093	.004	.004	.033	-.017
Bad		.471(a)	.131	-.102	.062	.021	-.059	-.282	.014	.063
Pretty			.479(a)	.073	.025	-.090	-.431	-.088	-.105	.009
Ugly				.502(a)	.018	-.027	-.005	.042	-.029	-.115
Intelligent					.542(a)	.142	.007	-.004	.044	-.040
Unintelligent						.488(a)	.072	-.118	.053	.017
Edible							.474(a)	.077	.058	.051
Inedible								.481(a)	-.029	.016
Similar to people									.391(a)	.043
Less seen										.546(a)

a. Measures of Sampling Adequacy (MSA)

Finally, at the opposite end of the Guinean sociozoologic scale to gazelles, we can place hyaenas. During data collection, hyaenas were reported as bad animals that use to hunt domestic animals and attack people – namely children - in the villages. The features associated with negative attitudes were most often ranked for hyaenas. As with gazelles, I decided to keep all the variables (Table 5.10) – except "often seen" that was never ranked – in order to enable comparisons with gazelles and the other species. As before, sampling adequacy for the PCA was high. The decision to keep "similar to people" in the analysis was related with some respondents' statements that hyaenas were capable of transforming themselves into humans. Five main components emerged from the PCA regarding the way people see hyaenas (Table 5.11). These five clusters of people explained 60.7% of the total variance across the variables. The scree plot (Figure 5.4) suggested two major components, but for comparisons with the other species, I included all components with eigenvalues of greater than 1.

Table 5.11. Total of variance explained by each component before and after rotation regarding perceptions about hyaenas

Component	Initial eigenvalues			Rotation sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.49	14.9	14.9	1.42	14.2	14.2
2	1.42	14.2	29.1	1.30	13.0	27.2
3	1.08	10.8	39.9	1.20	12.0	39.2
4	1.06	10.6	50.5	1.12	11.2	50.4
5	1.02	10.2	60.7	1.03	10.3	60.7

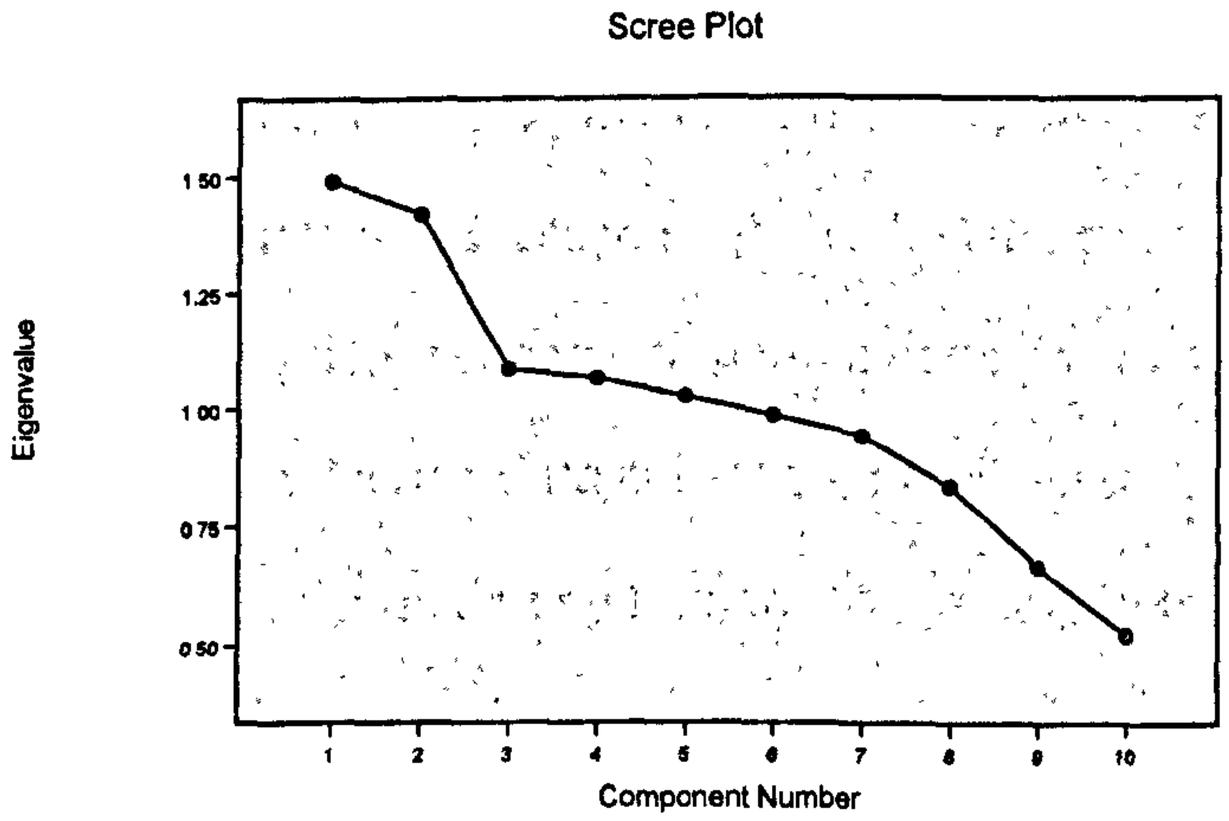

Figure 5.4. Scree plot of the variance explained by each component in relation to the respondents' perceptions about hyaenas

Table 5.12. Perception component matrix for hyaenas, after rotation (varimax)

	Component				
	1	2	3	4	5
Edible	.852				
Pretty	.827				
Bad		.820			
Inedible		.728			
Unintelligent			.784		
Intelligent			-.660		
Good					
Ugly				.780	
Less seen				.682	
Similar to people					.934

Rotation converged in 5 iterations.

While it might be assumed that respondents' attitudes toward hyaenas would be mainly negative, the first cluster seemed to express a positive opinion about them (Table

5.12). This first group of people tended to see hyaenas as edible and pretty, and this cluster came as a surprise. Neither edibility nor beauty seemed to be likely features that people would choose to characterise hyaenas. Among Guinean people, there appeared to be individuals who appreciated these animals. The beauty that hyaenas seemed to hold was not easy to understand, but may derive from their similarity to domestic dogs. Dogs live inside the villages, like other domestic animals and help people hunt; this close proximity might contribute to the development of positive attitudes toward dogs and by extension to animals similar to them. On the other hand, some respondents confused hyaena photos with that of a leopard, which might explain the positive aesthetical evaluation of this nonhuman. The second component comprised people that perceived hyaenas as bad and inedible. During data collection, I realised that hyaenas were covered by a taboo regarding their consumption by humans. According to traditional beliefs, hyaenas are able to transform themselves in humans in order to hunt domestic animals and attack villagers. These concepts are similar to those held in the West regarding wolves and wolfmen. Hyaenas in Guinea-Bissau are known as "lobo", Portuguese for "wolf", which may underlie the perception of hyaenas as bad and surely explains the fifth component that comprised respondents who believed that this nonhuman was similar to humans. The third component had hyaenas classed as unintelligent. An intelligent / unintelligent dimension could relate to the apparent conflict between hyaenas and humans. The fourth component consisted of people that reported low numbers of encounters with hyaenas and who also held a negative aesthetic perspective of the species. That villagers saw hyaenas only rarely (if ever these days) might lead to a low level of knowledge about the way they really look. However, there are reasons to suggest that the species is seen in the same way humans imagine human criminals (Dias and Andrade 1997, Wilkstrom and Sampson 2006); illicit behaviour is not associated with beauty. The number of legends about hyaenas' misbehaviour helps Guinean people to crystallise these negative perceptions.

5.3.5: Other nonhuman primates

Due to a lack of detailed data about other primates, species by species, and in order to compare a general "primate" PCA perception with those of chimpanzees and baboons, I grouped responses to all the other local nonhuman primates. During data collection, primates as a class of nonhuman were sometimes reported as bad animals that use to crop-raid and attack people both in the villages and in the farms. Other people referred to primates as similar to humans, mentioning quite often behavioural or morphological similarities between us and them. In addition, some primates are kept as companion animals.[23] All the variables in the PCA had good MSA values (Table 5.13), and thus all were taken into account in the analysis.

Table 5.13. Anti-image correlation in relation to primates' features (excluding chimpanzees and baboons)

	Good	Bad	Pretty	Ugly	Intelligent	Unintelligent	Edible	Inedible	Similar to people	Often seen	Less seen
Good	.582 (a)	.033	-.064	.068	-.106	.048	.008	.066	-.073	-.018	-.048
Bad		.618 (a)	-.050	-.043	.098	-.122	.049	-.069	-.027	-.099	-.049
Pretty			.607 (a)	-.045	.005	-.073	-.177	.017	-.046	-.016	-.149
Ugly				.576 (a)	.077	-.028	-.057	-.131	-.059	.074	-.071
Intelligent					.549(a)	.092	-.147	-.021	-.007	.067	-.018
Unintelligent						.608(a)	-.043	-.032	-.072	.066	-.050
Edible							.487 (a)	.208	-.057	-.225	-.005
Inedible								.503 (a)	-.121	-.087	.031
Similar to people									.602 (a)	-.028	-.104
Often seen										.426 (a)	.032
Less seen											.607 (a)

a Measures of Sampling Adequacy (MSA)

[23] The way people perceive companion animals is not always clear (Arluke and Sanders, 1996). In the case of Guinea-Bissau, humans might keep primates at home not just because they feel affectionate for them, but mainly because they can be a source of proteins in the future. As such, as soon as primates become a problem for the household, due to misbehaviour, they are killed and end up in a pot. In Western cultures, this paradox in relation to companion animals is also true. Of course, their meat consumption is a taboo, though as soon as they start to disobey our rules, they are "put to sleep" or abandoned. As such, one can assume that a good animal can be transformed in a bad animal very quickly, no matter the culture where it lives (Twining et al., 2000).

Table 5.14. Total variance explained by each component before and after rotation regarding perceptions about primates (excluding chimpanzees and baboons)

Component	Initial eigenvalues			Rotation sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.56	14.2	14.2	1.43	13.0	13.0
2	1.50	13.6	27.8	1.30	11.7	24.7
3	1.14	10.4	38.2	1.24	11.2	35.9
4	1.07	9.7	47.9	1.20	11.0	46.9

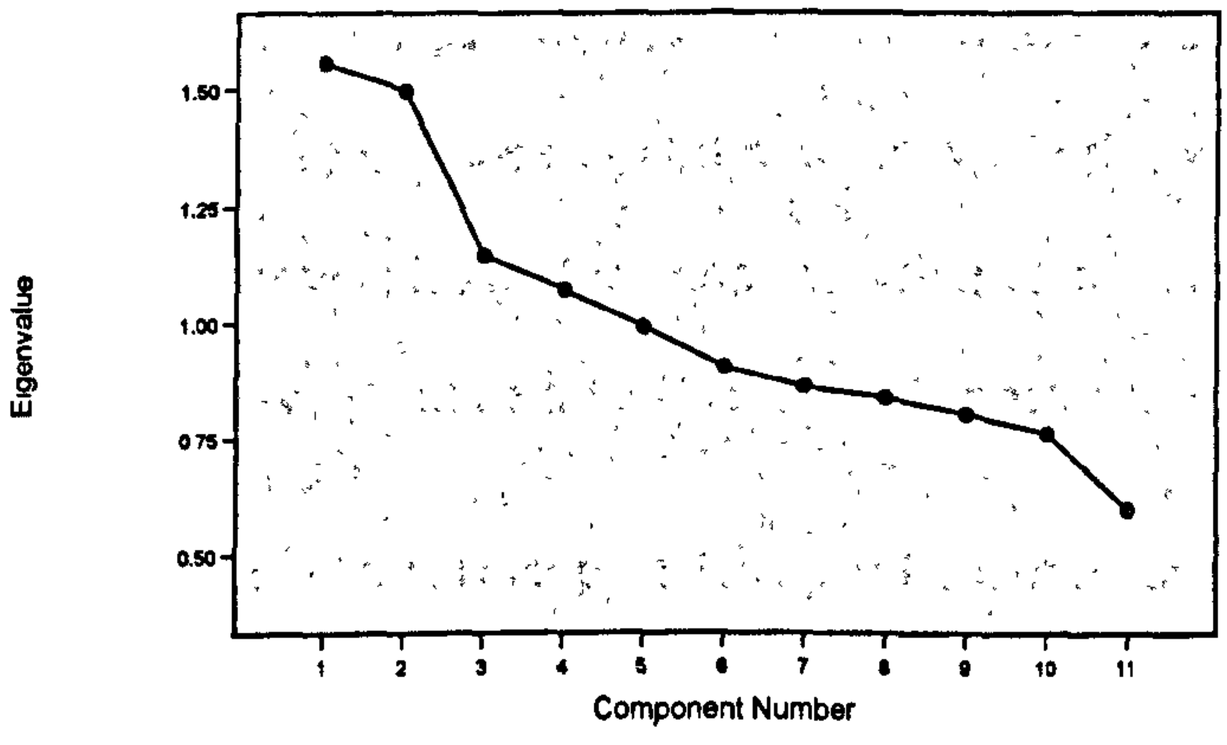

Figure 5.5. Scree plot of the variance explained by each component in relation to the subjects' perceptions about primates apart from chimpanzees and baboons

The PCA analysis suggested that there were four components regarding the way people see primates (Table 5.15). The scree plot (Figure 5.5) suggested the existence of two major components with up to three minor ones. As with the other analyses, I included all the components with eigenvalues of up to 1. These four clusters explained 46.9% of the variance reported.

The first cluster is difficult to interpret. Participants falling into this component reported a low number of encounters with primates. In addition, for these respondents, primates are pretty, unintelligent, and edible, although they are also similar to people. Since these results are from responses to a group covering several different species of primates, one cannot assume that all these features are related to all of the 10 different species of primates included in the data collection. One common factor, suggested by the low number of encounters between respondents and primates, is that this group of respondents might not be experiencing crop-raiding. This possible lack of conflict might

inform the aesthetical dimension of attitudes in this cluster. Being edible is another feature that contributes to primates being seen in a positive way, from the Guinean point of view. However, being edible does not explain perception of a lack of cleverness nor of the similarities respondents recognise between nonhuman primates and humans. If primates are perceived of as similar to us, then surely they should be perceived as intelligent as well? It might be suggested that, being a human caricature, primates therefore cannot be as clever as we are. For chimpanzees, due to their perceived similarities with humans, their consumption as meat was supposed to be a taboo, while this was not the case for primates more generally, nor was it true for baboons. Overall, the first cluster of respondents appeared to have positive attitudes toward primates.

Table 5.15. Perception component matrix for primates apart from chimpanzees and baboons, after rotation (varimax)

	Component			
	1	2	3	4
Less seen	.635			
Pretty	.635			
Bad		.665		
Intelligent		-.661		
Unintelligent	.381	.510		
Often seen			.828	
Edible	.366		.648	
Inedible				.765
Similar to people	.358			.590
Good				
Ugly				

Rotation converged in 8 iterations.

The second component potentially represented people that experienced crop-raiding. Such people see primates as bad and unintelligent animals. When a nonhuman is perceived as bad, it can be suggested that these attitudes are related to "misbehaviour" – i.e. primates are bad because their behaviour does not correspond to our expectations, especially when they are in direct conflicting with people over significant and limited resources. From the villagers' perspective, if nonhuman primates are in conflict with humans, this is due to their lack of cleverness. The third cluster included respondents that

see primates as a source of protein. These respondents also mentioned a high number of encounters with primates, and they may be the hunters searching for bushmeat inside the future reserve. Finally, the forth component includes people that see primates as inedible, probably due to their human-like appearance.

5.4 Discussion

Between two and five components emerged from the adjectives applied to the four species and other primates in general (apart from chimpanzees and baboons). At least one component had loadings of the value adjectives that could be interpreted as indicating positive perceptions of all the species, even the hyaena. At least one component also suggested a cluster of negative perceptions for chimpanzees, baboons, other primates and hyaenas. For gazelles, being considered as difficult to capture in the context of high edibility was a slightly negative component. In fact, an animal "misbehaviour", from humans' point of view, is usually associated with behaviour patterns that do not correspond with people's expectations towards that specific species. If one expects gazelles to be tame with humans, being able to elude hunters would turn perspectives of game animals into bad ones. That also happens in Western societies with companion and laboratory animals. For instance, if a lab animal – perceived of as good due to its utility to humans – manages to escape, it will turn into a bad animal because it chose not to collaborate with humans (Arluke and Sanders, 1996).

Being perceived as similar to humans might be a form of protection against poaching, which also results in chimpanzees being rated highly as inedible. Chimpanzees were also aesthetically ugly. Among Guinean (non-Muslim) people, chimpanzees are viewed as ancestors that were punished by God due to their misbehaviour, and hence they are both ugly and "human", in addition to being inedible. However, even such potentially negative perceptions might assist in their conservation since the consumption of chimpanzee meat seems to be a taboo. Anthropomorphised animals – such as cats

and dogs in Western cultures – are highly inedible (Arluke and Sanders, 1996). The consumption of' meat where the animal, in some extent, shares with humans some important features such as the ability to communicate, to show affection and to learn complex skills, among others – is taboo. While we cannot compare chimpanzees sociozoologic status with that held by Western companion animals, in Guinea Bissau – there is no other anthropomorphic animal similar to chimpanzees. The recognition of these human-like characteristics might be the key to the efficient protection of this endangered species.

Edibility is a feature open to misinterpretation. If a species is considered "edible", this suggests that its meat is desired and therefore sought-out. Hunting and bushmeat consumption are major threats to conservation and biodiversity programs throughout West Africa (Oates 2002; Rose 2002; Hambler 2004). As such, we kept "edibility" as a conservation-negative feature, since it represents one of the hazards to the continued existence of species such as baboons and gazelles. For instance, in Democratic Republic of Congo, bushmeat is not a major ingredient in rural and more traditional cuisine (de Merode and Cowlishaw, 2006), although it represents 25% of the household income (de Merode, Homewood and Cowlishaw, 2004). People seeking to purchase bushmeat in markets are usually wealthy. As such, poverty alleviation programmes across Africa might increment bushmeat sales in the future, if no conservation efforts (such as bushmeat price increase, high taxation among others) were made in protected areas (Wilkie, Starkey, Abernethy, Effa, Telfer and Godoy, 2005). There are several factors that motivate people to consume bushmeat: (i) its consumption may constitute a way to keep urban families connected to their rural past (Wilkie et al., 2005); (ii) it can represent the only source of proteins that villagers have access to, especially during rainy season (Carpaneto and Fusari, 2000; de Merode et al., 2004). We do not yet have data on the reasons why people living in Cantanhez National Park eat bushmeat, though – from informal conversations – we know that bushmeat consumption and trade are present and that a

great percentage of the animals that are hunted came from the protected area where a management plan and legal controls do not exist (see Chapter 3).

Negative perceptions can be produced by human-wildlife interactions such as crop-raiding, which can help us to predict the extent to which people are willing to collaborate with a conservation project (Lee, 2010). Primates in particular are notorious crop-raiders, and are almost impossible to deter (Naughton-Treves, 1997; Hill, 2000; Gilligham and Lee, 2003; Kagoro-Rugunda, 2004; Lee and Priston 2005; Hockings, 2007). Raiding primates – and particularly baboons - are very astute, highly destructive and able to evaluate exactly when it is safe to "visit" the farms (Naughton-Treves, 1997; Hill, 2000; Strum, 2010). However, if people state that they do not see baboons very often, this might mean that these primates and people are not in direct conflict. Either the baboons are raiding when people are not present or there are fewer baboons; potential evidence of a major decrease in baboon populations in this region. In addition, for baboons, the rating of high on ugly could represent fleeting glimpses or generalized fear which translates into an aesthetically negative perspective (Wilkstrom and Sampson, 2006).

Gazelles are a good example of Guinean wildlife perceived in an extremely positive way. The components suggested positive clusters of good, pretty, often seen and edible. For most other species, cleverness is seen as something "good", while in the case of gazelles, this quality appeared to be perceived as negative, possibly as cleverness allows them to elude hunters and to keep away from people's plates. Gazelles were perceived as pretty, due to positive perceptions linked with edibility and a lack of conflict with human activities. That this species is mainly viewed as tame and under human control, suggests that in general gazelles can be considered to hold a high moral status in the Guinean sociozoologic scale (Arluke and Sanders, 1996). Gazelles may represent animals that are a mixture between the wild species that are seen in an extreme positive way – such as dolphins in Western societies – and livestock that have a more utilitarian role due to their meat and milk producing function. From the outset of this research, we assumed that being perceived as similar to humans could act, per se, as a taboo

regarding meat consumption. However, gazelles are clearly rated as both "similar to humans" and highly edible. It appears that edibility is related to positive attitudes – although not necessarily attitudes useful for conservation purposes, as previously mentioned.

Legends about hyaenas' misbehaviour may crystallize the negative perceptions noted here. According to Guinean traditional beliefs, hyaenas are able to transform themselves into humans in order to hunt livestock and attack villagers; thus there is a taboo on their consumption by humans. Hyaenas, in this context, can be considered, according to Arluke and Sanders (1996), a mixture between "freaks" (due to the combination of animal and human features) and "demons" (due to their hazardous behavioural conduct toward people).[24] A tendency to perceive these animals as interfering with villagers' lives might also lead respondents to perceive of hyaenas as unintelligent. Hyaenas have become progressively rare in this region, so they will be accurately perceived of as infrequently seen. In addition, their similarities to dogs might contribute to perceptions of being pretty.

In general, primates other than chimpanzees and baboons are seen in a positive way. Apart from one cluster suggesting that primates were bad and unintelligent – probably due to people experiencing crop-raiding - respondents seem to have positive attitudes toward these species. However, since I combined all the local primate species included in the photos into a single category, it is important to be cautious about these assumptions. Certain primates might be perceived positively, while others are not.

5.5 Conclusions

Species appearance, utility and behaviour define people's sociozoologic classification. Being perceived as "good" or "bad", depends on how well an animal fits on human's expectations on how a good animal must act. For instance, gazelles – probably the most

[24] See section 1.2 for further information.

positively positioned wild animal in the Guinean sociozoologic scale – can be negatively perceived if able to elude hunters. The same effect might occur with other species, namely primates that are able to dodge farmers' efforts and strategies to prevent their crop-raiding. Hyaenas, for example, have the ability to transform themselves in humans to kill domestic animals and people in the villages. This behaviour – even if a myth – mixes animal's features with sacred and human-only characteristics that limit their placement in people's classification scales.

Anthropomorphised animals – such as chimpanzees – might benefit from a higher status (at least for some parts of the population, see Chapter 4), since they are seen as human ancestors and, thus, consumption of their meat is taboo. Nevertheless, being edible is a positive attribute of most wildlife – but not from the conservation perspective in this context. Animals whose meat is considered tasty are valued as good. Livestock in Western societies similar to species hunted for bushmeat in Guinea-Bissau and many other parts of Africa is very valuable, both economically and from a nutritional point of view.

In conclusion, results from the PCA extracted clusters suggest that:

- As a rule, gazelles are perceived as good while hyaenas are mainly seen as bad animals. Primates, including chimpanzees and baboons, have both positive and negative attributes among these respondents, which makes their precise placement on the sociozoologic scale difficult.
- Negative perceptions regarding chimpanzees might be due to their crop-raiding behaviour. Other primates, including baboons, are seen as raiders too, which contributes to their negative perception by villagers.
- Negative attitudes toward primates also seem to be associated with a high number of encounters with humans. This suggests that these species are frequently met in the farms, while damaging crops.

CHAPTER 6 - PERCEPTIONS ABOUT THE RESERVE AND THE ANIMALS: WOMEN'S PERSPECTIVE

Plate 6.1. Women and children from Iemberém (Cantanhez National Park).

6.1 Introduction

Gender as a factor in understanding conservation attitudes and practice has been a major concern in a number of studies (Chapter 1), as women can be both highly engaged and participatory – at the forefront of actions and activities (Flinton, 2003; Arjunan, Holmes, Puyravaud and Davidar, 2006; Martino, 2008) or disenfranchised, disempowered and unable to engage with activities (Mehta and Kellert, 1998; Lee, 2004; Chambers, 2007; Moser 2007). Focusing on just women's' perceptions of the risks and benefits of the protected area in this chapter will give us the opportunity to understand women's biggest daily constraints and the way they perceive and relate with the National Park and its wildlife. Since there are gender differences on the way people relate with the conservation efforts, different strategies will be needed to engage men and women (Lee 2004; Martino, 2008). As discussed earlier, women often have both different economic needs (Flinton,

2003; Kanji, 2003; Mukadagi and Nabalegwa, 2007; Stringer et al., 2007; Bandiaky, 2008) and perceptions about the wildlife that they share their environment with (Kaltenborn et al., 2005; Bandiaky, 2008). As such, collecting information on women's points of view on this specific context is essential.

The patterns of risks and general socio-economic development in the region were based on a predominately male perspective (see Chapters 3 and 7); here I attempt to address this one-sided view through participatory female-only focus groups.

6.1.1 Hypotheses

The following hypotheses were explored according with the project's third and fourth aims[25]:

(i). Women's livelihoods will rely on natural resources. The scarcity of services and commerce in Tombali dictates the need to practice agriculture, hunting and the exploitation of timber and non-timber forest resources from the remaining patches of forest;

(ii). The gazetting of the Cantanhez National Park will produce a lack of confidence in the future, since NGOs and authorities operating in that area have not introduced economic alternatives or a compensation plan for the loss of revenue from activities;

(iii). Women will perceive the National Park as the reason why villagers are struggling against famine, since crop-raiding have been increasing due to expanding wildlife populations, especially those of primates;

(iv). Despite negative perceptions about the protected area and wildlife, women will still perceive social researchers as a chance to obtain help in improving their lives.

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[25] See section 1.5.1 for further information.

6.2 Methods and analysis

Five focus groups (total N=47 women) in five different villages were conducted during September 2008. Women-only groups were vital since men in this society often control women's activities and women appear to be less engaged - more negative and fearful - with the conservation projects in their area (see Chapters 4 and 5). Despite their apparent lack of power, women can be considered latent decision-makers since traditionally Guinean women are in charge of all the economic / subsistence work. They are expected to plant and tend farms, prepare all foods, look after children and ensure that men's "needs" are met. They shop when farm produce needs to be supplemented, and they will sell palm oil, rice, soap, baskets and other surplus commodities. As the major economic producers and consumers, they have a broad notion of the constraints on villagers' daily life.

Our main aim with the focus groups was to meet with small women's assemblies during a short period of time (30 minutes approximately as they are always busy) to obtain comments and opinions about (i) the constraints they face everyday, (ii) the village's economic system, (iii) their feelings about the National Park and – of course – about chimpanzees[26]. These focus groups were designed as informal discussion groups, in order to keep the subjects focused and comfortable with my presence. Men were not allowed to attend the meetings.

Apart from some difficulties in getting in touch with the subjects (see Chapter 2), local women's groups were the initial point of contact. During our meetings we informally discussed female villagers' daily life constraints, economic problems, perceptions about wildlife – especially chimpanzees – and the National Park (see appendix I). Villages' chiefs had been contacted beforehand in order inform them about my research aims and to obtain their consent to collect data (see Chapter 2). I always obtained the women's permission to use a voice recorder during the meetings.[27]

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[26] See appendix I.
[27] See section 2.5 for further information.

As mentioned in Chapter 2, a female interpreter from Bissau – Guinea's capital city – helped me with the translations. It was crucial to have someone fluent in Portuguese and Creole to assist me, since focus group transcription can be a delicate task, namely when one has a group with up to 10 subjects trying to speaking at the same time. I needed to make sure that I was not going to lose any information.

6.3 Results: Perceptions and links of stuff

Four basic themes were of interest in relation to testing the hypotheses above. Each of the sub-issues qualitatively associated with these themes is presented in Table 6.1.

Table 6.1. Summary of the themes that emerged from focus groups content analysis

Themes	Sub-issues	Total number*
Women's daily life constraints		**82**
	Farming and its intrinsic and extrinsic limitations (physical effort, farming and crop-raiding)	8
	Financial constraints (palm oil, no money and rice price speculation)	52
	Famine (cassava and Ramadan)	71
National Park establishment		**70**
	Wildlife pests (chimpanzees, baboons, monkeys in general and porcupines)	33
	Limitations related with the National Park establishment (reserve, no poaching or hunting, more animals, more bush, no compensation plan or alternatives)	64
Economics		**70**
	Food	65
	Money (earning/collecting and spending money)	52
Future expectations		**8**
	Attitudes toward the interviewer (getting help from researchers)	8
Total		

* Total number of phrases that included, at least, one of the codes above.

6.3.1 Women's major daily livelihood constraints

The meeting's first discussion point was that of women's everyday major constraints.

Asking broader questions was a tactful way to start our conversation, since I wanted to avoid giving directions to interviewees, especially regarding the forest and wildlife.

Women highlighted farming as their biggest problem (figure 6.1). Agricultural activities, according with women's testimonies, were associated with extreme physical effort (intrinsic limitation). Perceptually, the profits women can make from harvesting and the efforts they have to make to obtain these profits are not balanced. The proximity with

wildlife is also seen as a (extrinsic) limitation that has been worsened by the National Park establishment. During our meetings, crop-raiding was mentioned several times as a major threat to agricultural success. Both physical effort and crop-raiding appeared associated with financial constraints and famine.

Since the intense physical effort of farming does not correspond to the profits women obtain from farming, money is a chronic problem. Most of the time, the rice they harvest does not last the whole year. Especially during the rainy season, women have to buy rice to feed their families, and in order to get money to buy the rice, they make palm oil, a very valuable ingredient in Guinea-Bissau cuisine. Normally, they sell palm oil to other villagers or they exchange it directly for rice – generally with Balanta people. However, knowing that villagers are in need, sometimes traders will speculate and inflate the price of rice; an issue associated with major life constraints.

"*We make the palm oil, we sell it and we buy the rice. (…) The problem is not a lack of rice; the thing is that they want to raise the prices. We go to the boutique and they say to us that the rice is over. But this is just to raise the prices. (…) You take the palm oil with you, but is the rice's owner that decides the price.*"

(Focus group 1, Iemberém)

This rice price speculation and crop-raiding were both qualitatively associated with statements about famine. Women believe that the (potentially false) scarcity of rice in the markets and wildlife are making people starve (figure 6.2). Famine, as reported by these women, may be more cultural than biologically associated with crop failure. Rice is the basis of Guinean cuisine - as is palm oil – which means that every time people lack this component in their meals, they will perceive this lack as dietary restriction, even if when they have other food supplies like cassava to avert true famine.

"*Our problem is getting food for us and for our children. It's a big sacrifice. At the moment we have a big problem, there is no rice in Iemberém and we are having cassava. We cannot stand cassava anymore.*" (Focus group 2, Madina)

Famine was also mentioned in relation with Ramadan. This Islamic celebration is perceived by women as something that they cannot change. Fasting is imposed by a superior entity – Allah – as a sacrifice. People, female Guinean Muslims in this case, do not see religion as a personal choice but rather suggest that features associated with Islamic observance are externally imposed and compulsory.

During our conversation with women, health and education were never spontaneously mentioned. These issues are apparently seen as secondary problems, though malaria was highlighted as their major health concern. This omission does not come as a surprise given Maslow's hierarchy of needs (Maslow, 1970), where physiological needs, such as averting famine, are the most basic needs and only once these are met will the next needs be considered.

Health then comes as the second most important element in these women's lives while education was never mentioned and may be included only in the last group of needs (Pieri, 1997). Most of the poverty in the world is not located in wild areas, even though, there are c. 16 million of poor people living in very remote areas like Cantanhez National Park, that need assistance poverty alleviation (Redford, Levy, Sanderson and Sherbinin, 2008).

6.3.2 The Cantanhez National Park according with women's perspective

After exploring women's daily livelihood constraints, I asked them directly about the National Park. I wanted to access their perceptions about the reserve – the forest and its wildlife. Again, I did not mention any specific issues, especially animal species. Considering that this project is about chimpanzees' conservation, I felt that it was important to understand in which extent chimpanzees were part of these subjects' lives and also the kind of attitudes women held toward them. All the answers were provided spontaneously.

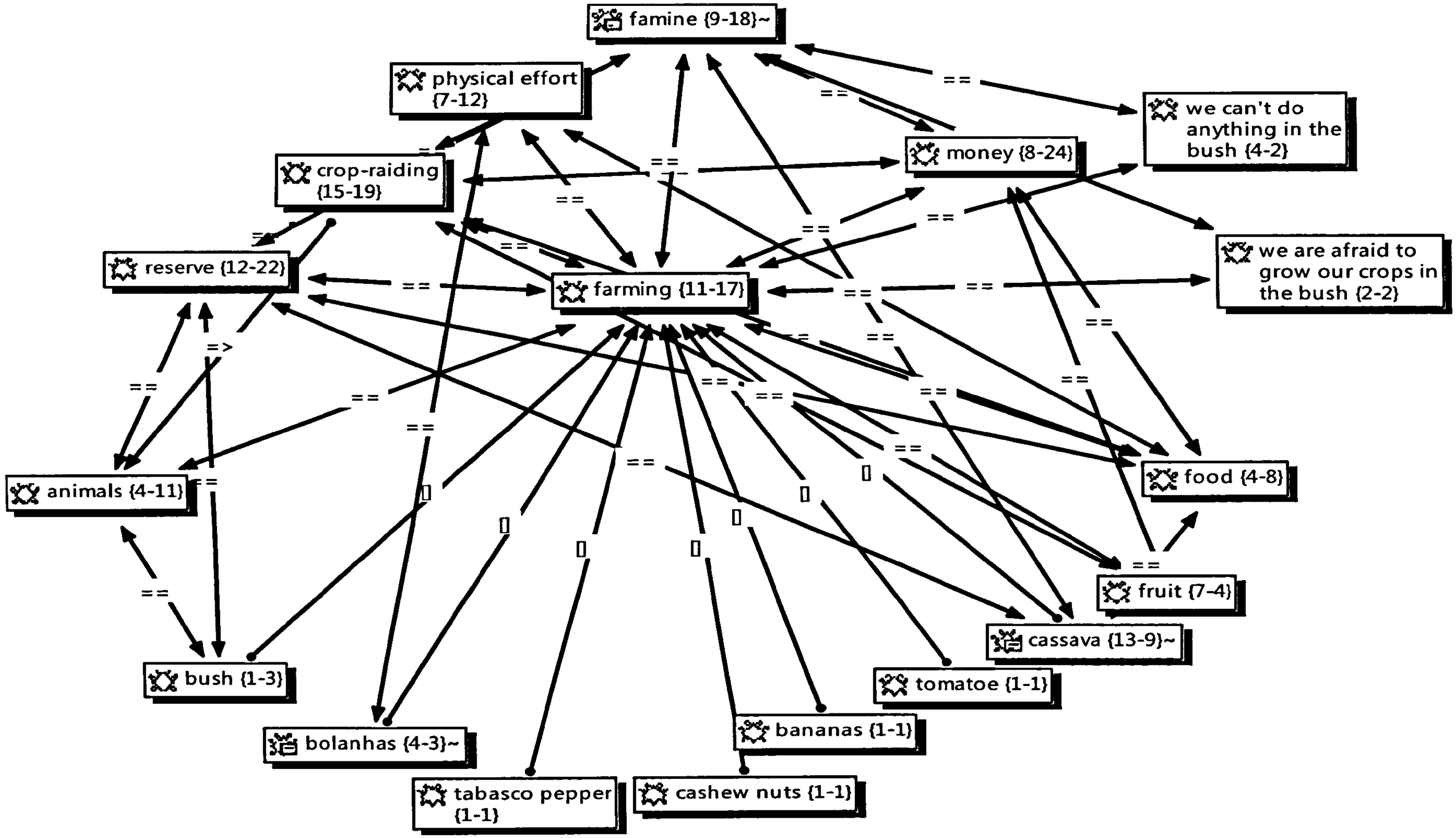

Figure 6.1: "Farming" network according to women's perceptions. For this and all subsequent figures (including Chapter 7) representing networks extracted in Atlas, the signs in the arrows represent: == *is associated with*; [] *is part of*, => *is cause of*, <> *contradicts*; is a *is a*. Numbers in the {} represent: the first value, the number of links with other codes; the second value, the number of times the code was referred in the interviews/meetings.

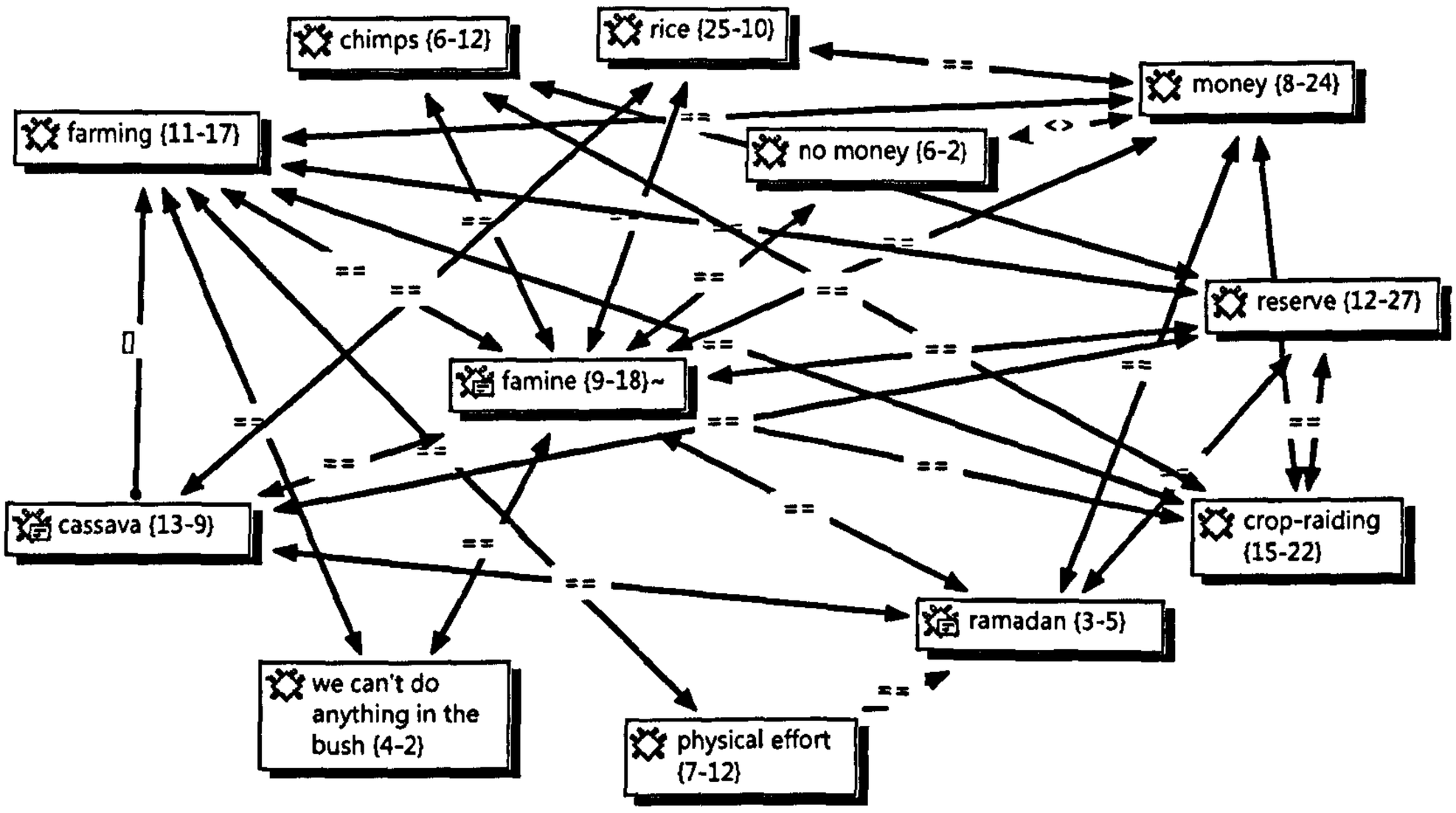

Figure 6.2: "Famine" network according to women's perceptions.

In all focus groups, the reserve was singled out as a major threat to people's survival (figure 6.3). Codes related to the National Park and major livelihood constraints were simultaneously present in 54 phrases. Since its establishment, the National Park imposed a new range of rules that people are supposed to respect. No hunting or poaching and no farming activities inside the reserve boarders were both mentioned as synonymous with increasing numbers of animals. Women mentioned several times that the bush (natural habitat, consisting of regenerating areas of former farmlands and forest patches) had become so much more wide spread that these almost "swallowed" the human settlements, and allowed animals to invade villages and croplands. The women questioned suggested that this close proximity to wildlife and the increase in crop-raiding would not be an issue if the authorities had given them both an explanation for the existence of the protected areas and determined a compensation plan for crop losses. Finding alternatives to the villagers' lifestyle in the context of restrictions imposed by the Park was noted as mandatory if they were to be able to abide by the new rules associated

with the Park. Women felt caught in a situation where they remain dependent on forest services, even while knowing that they can no longer exploit them. They also see the reserve and its animals – especially chimpanzees – as having more rights than humans.

"*The bush brought us a never ending range of problems. First, the reserve; now we have monkeys, baboons, chimpanzees, … There are plenty of animals that do not have food in the bush anymore. (…) They are having our crops. The bush was reserved. Nobody is helping us. This year, chimpanzees ruined our farms. There is nothing left.*"

(Focus group 2, Madina)

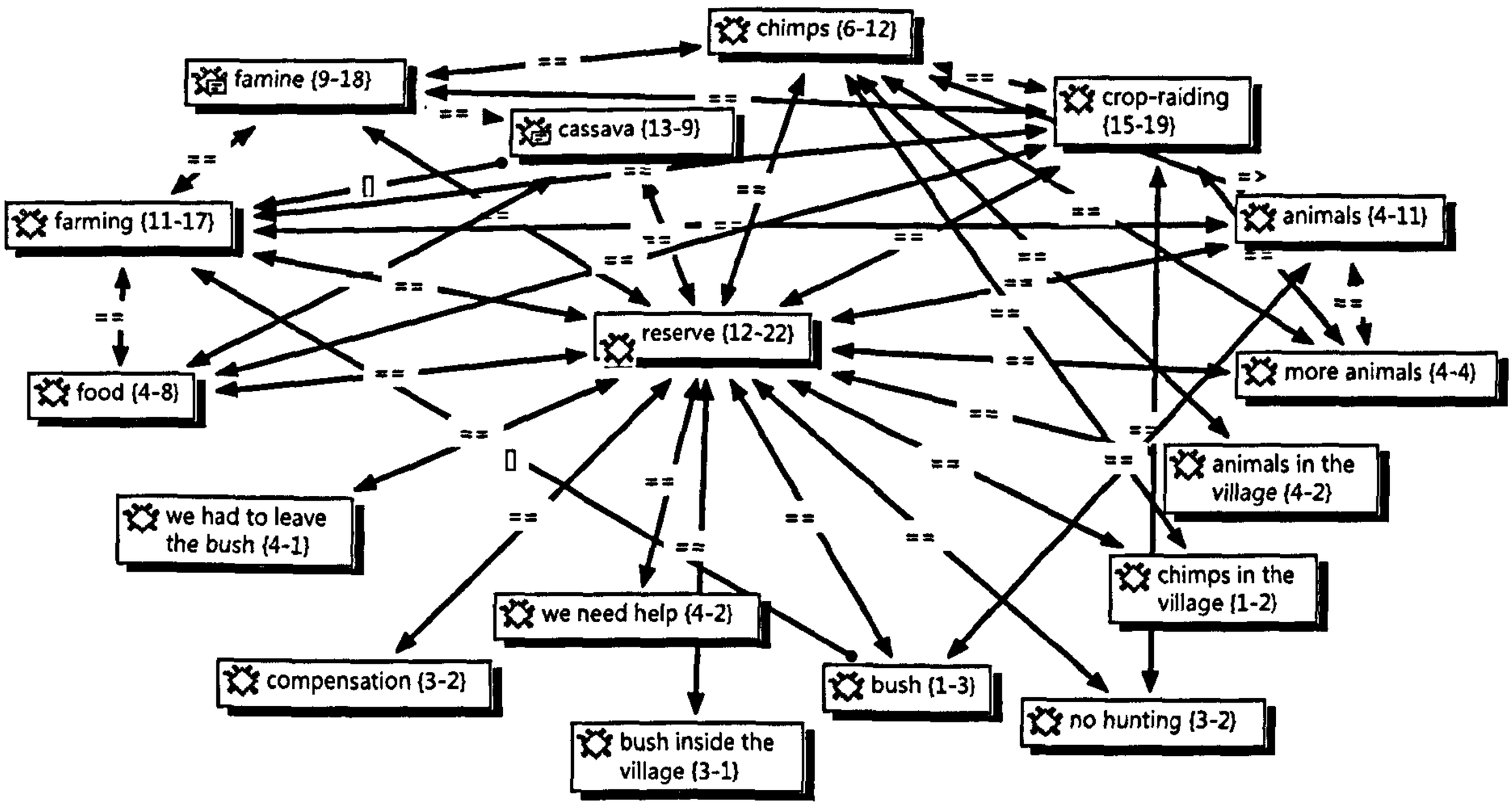

Figure 6.3: "Reserve" network according to women's perceptions.

6.3.2.1 Women's perceptions about chimpanzees

The reserve's wildlife is viewed as partly responsible for women's negative perceptions about the National Park. According to the women's testimonies, primates are the worst animals of all, especially chimpanzees (figure 6.4). Chimpanzees are considered dangerous and a pest by females (as well as "ugly" – see Chapter 4); they are seen as largely responsible for raiding episodes in fruit farms (the most profitable plantations) and

for attacking women and children.[28] During our meetings, women referred to chimpanzees six times, four of those were associated with crop-raiding behaviour. Chimpanzees were also mentioned as astute animals that are aware of the new rules established by the National Park. Women believe that chimpanzees know that men cannot shoot them anymore, which allows them to safely steal food, reinforcing their crop-raiding behaviour. During all the focus groups, I never had any evidence of a feminine positive attitude toward chimpanzees. Chimpanzees are perceived as the perpetrators of all these subjects' problems, especially famine and low profits from agricultural activities.

"We planted peanuts, but the baboons ruined everything in the bush, and the chimpanzees took everything we use to harvest: oranges. My husband wants to go to AD[29] to tell them that he will kill all the chimpanzees that use to raid in our backyard. This year we do not have any oranges to sell. Last year we did not harvest one single orange to sell. This is what we sell to buy food to feed our children. If it is everything ruined, what are we suppose to do? This year we made up our minds, even me that I am a woman; I also know how to use a gun. I am a female, but I will get a gun and shoot them all!"

(Focus group 2, Madina)

6.3.3 Women's subsistence and economic context

Considering that famine was highlighted as one major daily constraint, the ways that women feed their households provides further insights into their economic constraints.

As noted above, women are dependent on farming and forest services to get food and money. Of all the resources they can obtain from the bush, palm oil and traditional medicines are the most important. Palm oil is the most important of all, since it helps women get money to buy other supplies, such as rice. It was mentioned 17 times all over the meetings.

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[28] There are some rare incidents on women and children being attacked by chimpanzees (e.g. Vernon, 2005; Hockings, Yamakoshi, Kabasawa and Matsuzawa, 2010), though there are no data regarding this in Guinea-Bissau.
[29] "Acção para o Desenvolvimento" (AD) is the name of a Guinean NGO working in Tombali.

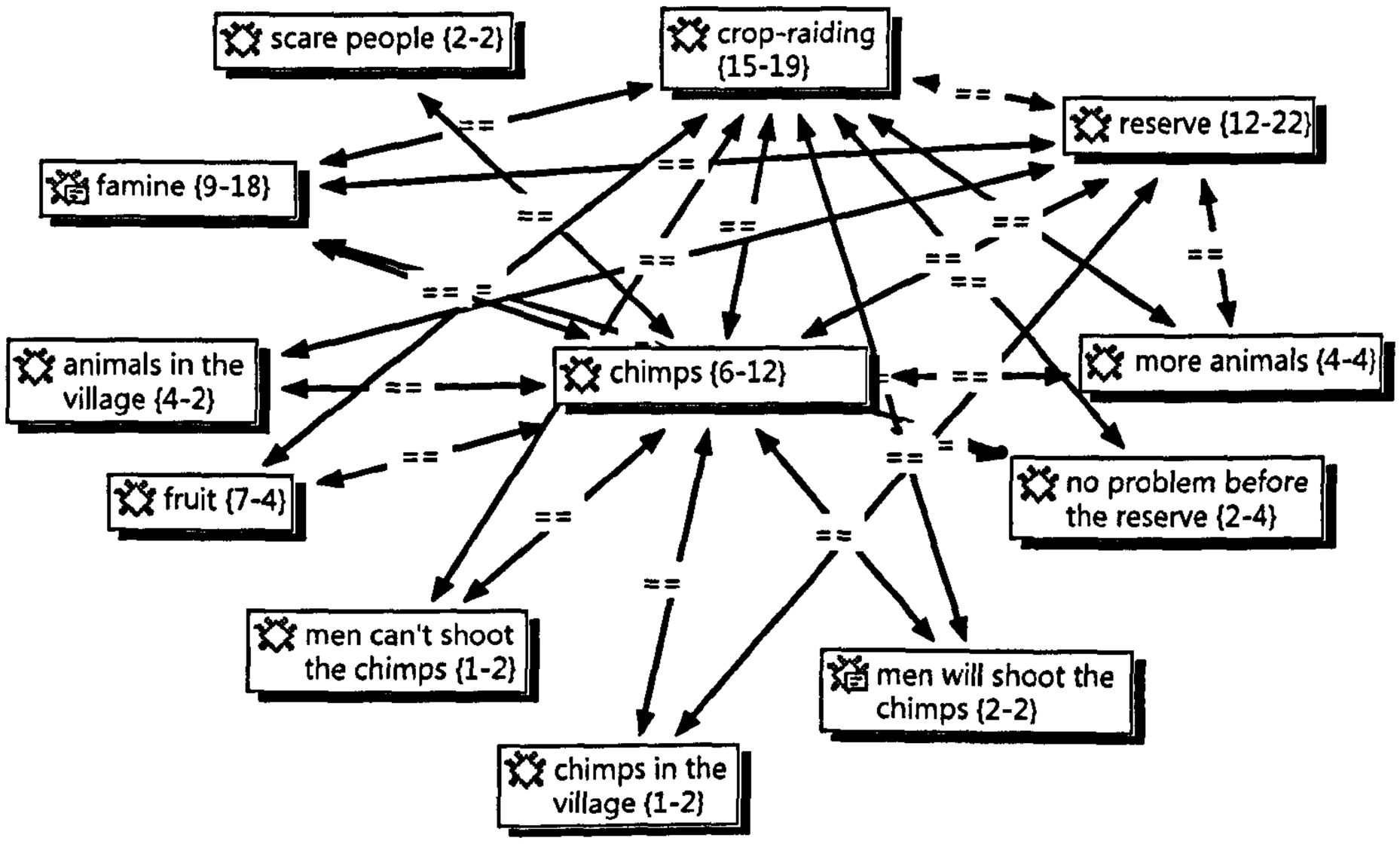

Figure 6.4: "Chimpanzee" network according to women's perceptions.

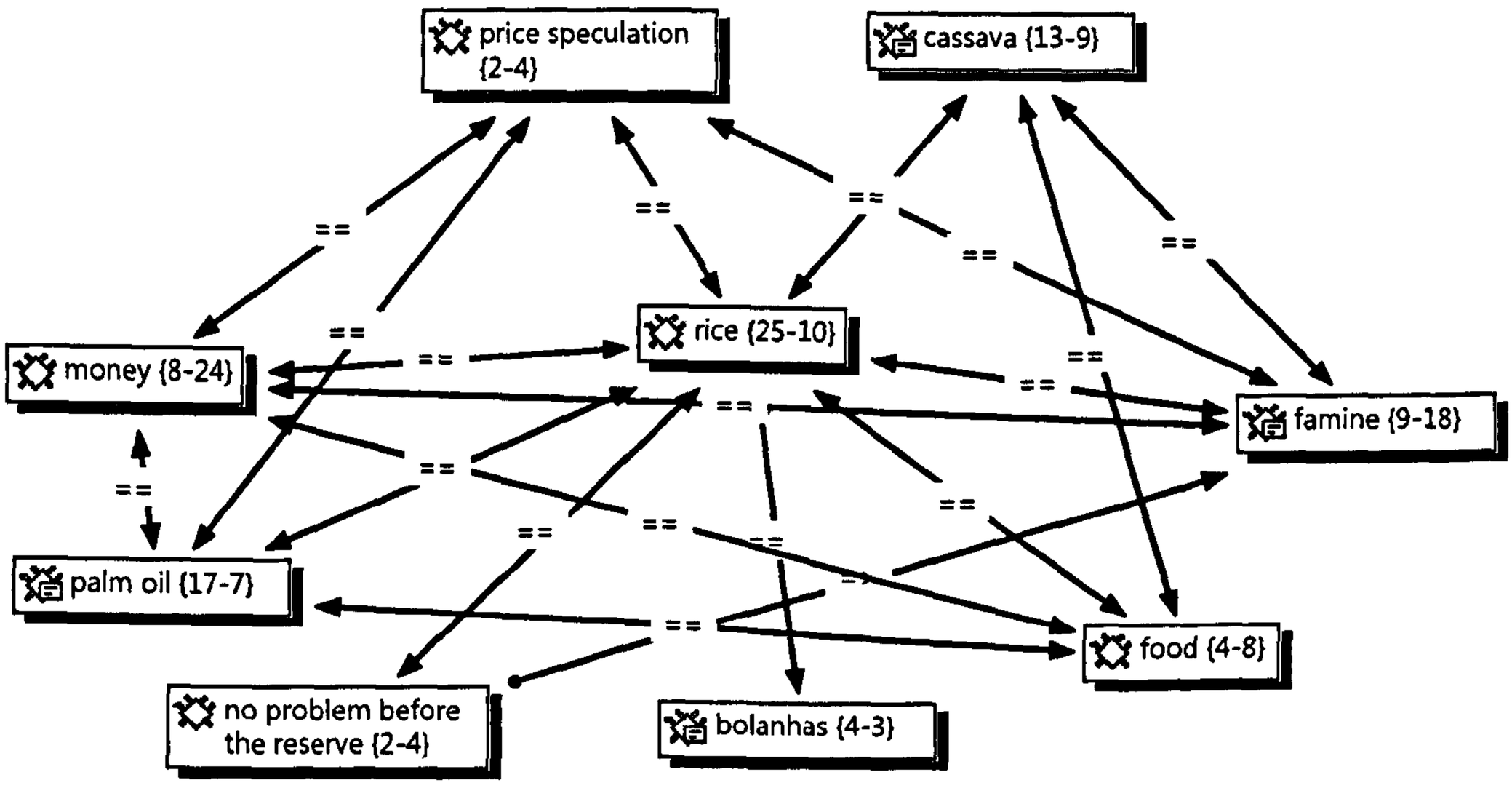

Figure 6.5: "Rice" network according to women's perceptions.

Rice is the most important and valuable ingredient of the Guinean diet (figure 6.5). Traditionally, people grew their own rice in the "bolanhas", rice plantations where this cereal is grown in swamps near rivers. However the ocean has been invading their plantations - due to a progressively shorter rainy season and rising sea levels – and

ruining the crops. As an attempt to solve these problems, people started to use other less sustainable and productive methods to grow rice, which is the case of "mpampam"[30] or dry field rice grown on recent bush clearings. People also grow several kinds of fruit (e.g. bananas, papayas, mangos, cashew nuts and oranges) that they mainly sell to Bissau traders. Cassava, peanuts, beans and sweet potatoes are also grown but, apparently, they are not seen as a potential source of income.

Every family has its own farm and, in general, the women all grow the same kind of products. Apart from some home made soap and handicraft artefacts (mainly baskets), there is no diversification of economic activities beyond subsistence. In addition, the villages do not have infrastructure capable of providing non-subsistence employment for people. Effectively, villagers have no alternative to using the forest and its resources to survive, even if this means breaking National Park rules. Furthermore, controlling or managing crop-raiding is usually related with poaching and /or hunting of the raiders and bushmeat consumption.

When asked about their meat consumption habits, women revealed that they only have meat on very special occasions. Meat was apparently hard to obtain. While people had some livestock - especially chickens, goats, cows and pigs (only in Balanta villages) - there was no habit of consuming domestic animals on a regular basis. Beef is the most appreciated meat for Muslims. In general, women only mentioned domestic animals and fish as potentials sources of protein. Only in the first focus group (Iemberém) did women admit the existence of hunters in the village. They made it clear that hunting was an illegal activity; however they stated that there was a considerable number of hunters in the village that hunt in a daily basis. Women also declared that there was a clear distinction between hunting and trapping, suggesting that the latter procedure would be less seriously punished than that of hunting. Snares are typically used to prevent crop-raiding in farms. When asked about the animals that are usually hunted, they said:

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[30] "Mpampam" rice is grown inside the forest. In order to open a sufficiently big area to plant the cereal, people have to slash-and-burn ("pábi").

"Gazelles, bush-goats, … Mainly gazelles because bush-goats are too smart. Porcupines get trapped; they do not need to be hunted. Bush-pigs as well."

(Focus group 1, Iemberém)

No other focus group reported hunting as a regular practice. Women mainly referred to this issue as a men's topic. Primates were never pointed out as potential bushmeat, although from our previous visits to Guinea-Bissau, we know that this is not true (Pais 2005). Inside Guinean borders – as in many other parts of Africa (Rose, 2002) – there is a thriving business related to primate meat consumption in the big cities.

6.3.4 Future expectations

The attitudes that subjects reported about my research work were generally positive. In the beginning women perceived my visits as a waste of time. This region of the country has been targeted by a considerable number of social researchers working for aid and development NGOs, which made the women suspicious about the compensation that villagers can get from interviewers. Ethically, should one expect people to collaborate in these studies without giving rise to expectations of compensation? However, in all my meetings, women mentioned that my interest in their lives could be a way to get help from Europeans. As such, despite all the disillusionment they might have felt in the past, they still believed that social research can bring them a brighter future.

6.4 Discussion

Women's livelihoods relied on natural capital as evidenced through their dependence on subsistence farming. In all focus groups, women reported that farming was their most significant life constraint (figure 6.6). People from this region are totally dependent on agricultural activities and forest resources to survive: women need crops to get some income and to be able to feed their families.

The establishment of the Cantanhez National Park produced a lack of confidence in the future since the reserve brought restrictions on farming – especially on slash-and-

burn procedures – and on hunting and/or poaching activities. In addition, women perceive an increase in crop-raiding behaviour as a result of a protected and possibly growing wildlife population, especially for primates. According to these women's testimonies, the level of conflict between humans and wildlife is increasing due to the establishment of the National Park. This might also explain why women tended to rate higher domestic animals and gazelles in their sociozoologic scales (see Chapter 4). These animals, according with the villagers testimonies do not interfere with the farms and the villages.

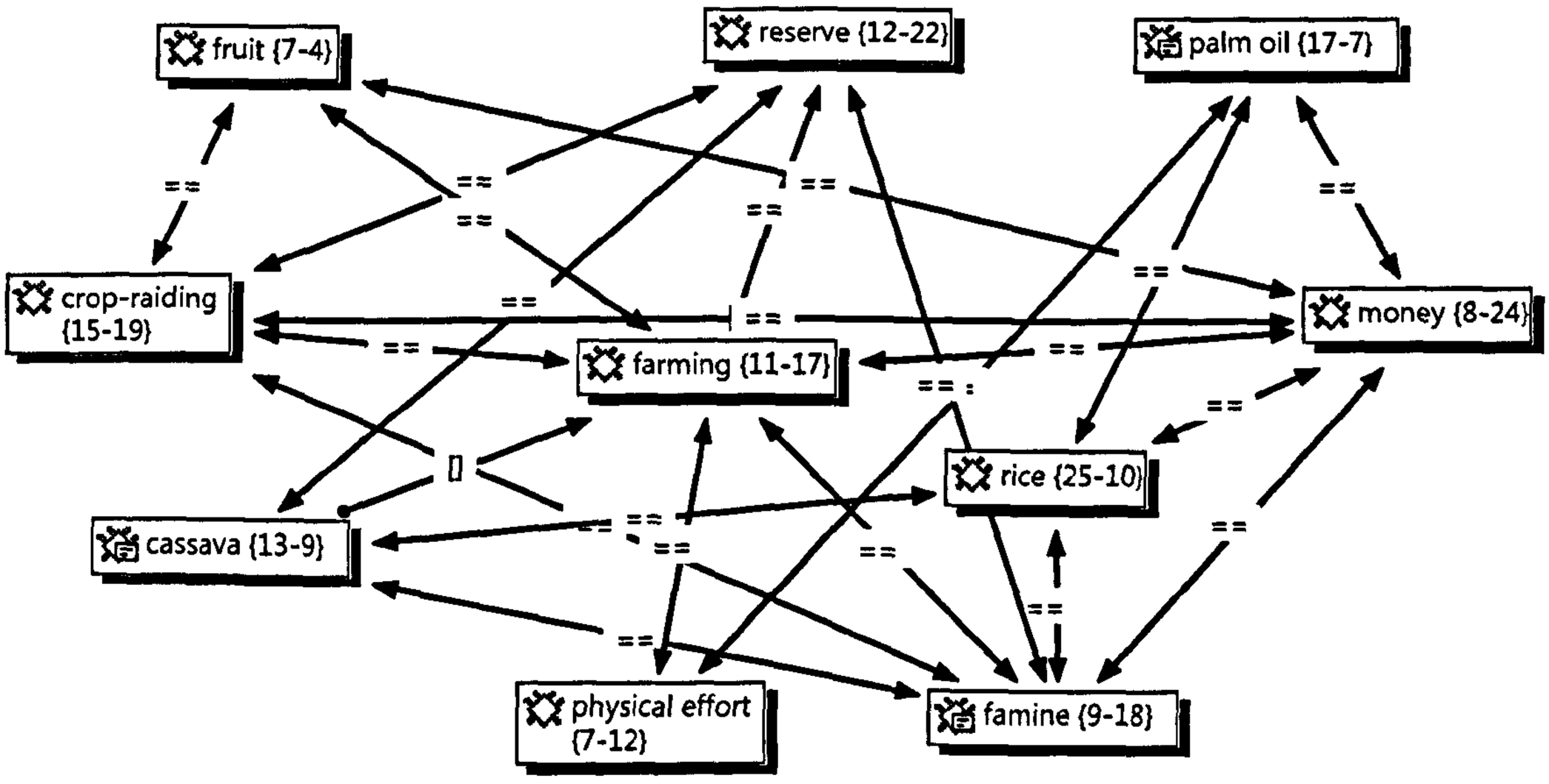

Figure 6.6: Network of ten most mentioned codes from women's focus groups

Hunting as a regular subsistence practice was mentioned only in one village. However, this is men's activity, and illegal, which might explain women's reluctance in giving us more information. Besides, women did not seem to feel positively to wildlife in general (see Chapter 4), apart from gazelles that are perceived as tame animals. In many parts of Africa, going inside the forest to hunt or to clear bush for agriculture are male activities (Flinton, 2003; Kalibo and Medley, 2007; Mukadagi and Nabalegwa, 2007). This lack of experience may contribute to the negative perceptions –revealed as fear or

distaste – that women hold regarding the forest and its wildlife. Women are especially vulnerable regarding poverty (Moser, 2007). While men are expected to go inside the forest to hunt and to slash- and-burn in order to grow cash-crops, women are responsible for feeding their families at any cost, even without any control over income and other resources. In a context where conflict between humans and wildlife is a rule, the absence of a crop-raiding compensation plan also made women feel caught in an economic system with no capacity for response to losses or changes in the environment (see section 1.3).

For these reasons, the National Park was perceived in a negative way. Women clearly viewed the National Park as the main reason why villagers were struggling against famine, another major limitation. Famine was also said to originate from rice price speculation in addition to crop-raiding. Women perceive the absence of rice in their families' meals as a more precarious situation than it potentially is in terms of calories, especially since alternatives such as cassava were available. Nevertheless, this perception of famine should not be neglected, since it makes the National Park harder to be accepted.

Chimpanzees were mentioned frequently during our meetings, and they were perceived as the worst crop-raiders in the forest, and consequently guilty of causing human malnutrition. They were also seen as dangerous. It was noted above (see Chapters 4 and 5) that chimpanzees are perceived as attackers, able to kill children and to severely injure women. In Cantanhez National Park, rumours spreading the idea that these primates are able to rape women, to murder babies and to mug defenceless human beings are very frequent. Although chimpanzees' (rare) attacks have been described in other parts of Africa (e.g. Reynolds, 2005; Hockings et al., 2010), I never confirmed that such events really occurred in Cantanhez National Park. During focus group data collection, no positive attitudes toward this species were ever expressed.

Despite all the limitations to their economic lives and general wellbeing that these women described, they still believed that they can have a better future, relying on help

from social researchers. Although this can be seen as good news for researchers, interviewers have to keep in mind that these women might be simulating these responses for our benefit. Without many other chances to improve their lives, women might feel tempted to tell us what they believe we want to hear in order to get our help.

6.5 Conclusions

According to the women's point of view, the National Park is seen as the source of a new set of restrictions regarding farming and hunting activities. All these new rules produced a decrease in their income and an increase in the animal populations. As such, women living in Cantanhez are struggling in a context of conflict with wildlife, which is not helping women to improve their lives and, as a consequence, is contributing to crystallizing women's negative perceptions towards the protected area and its wildlife. Women (see Chapter 4) rated more highly, for positive attributes, those species that do not interfere with their economic activities (e.g. domestic animals and gazelles).

Issues regarding wildlife in general were only raised when conflict was mentioned. Hunting, by contrast, is seen as a men's topic and was not discussed among the women. The social division of labour is clear (Moser, 2007). While men go inside the forest, women stay in or nearby the villages. Everything related with daily routines inside the villages is seen in a less negative way than the activities associated with the forest (National Park) which are perceived in a negative and fearful way. Chimpanzees, for instance, are seen as dangerous for women and children (Reynolds, 2005; Hockings, 2010), just like snakes and hyaenas.

Social researchers – like me – may be seen as potential "saviours" that need to be satisfied in order to get assistance that will improve women's lives. NGOs operating in the region for more than 20 years are no longer seen as reliable.

In conclusion:

- The absence of services and infrastructures in this region – at least in the villages I visited during data collection – makes women perceive their survival as dependent on natural capital from the forest and agriculture.
- Women specifically complained about NGOs and the National Park authorities because the reserve establishment did not bring any livelihood alternatives or a crop-loss compensation plan. Instead, it brought a new range of rules that created even more restrictions on their lives, such as prohibitions on farming and hunting/poaching opportunities.
- Primates, particularly chimpanzees, are seen as largely responsible for the women's problems. Chimpanzees were mentioned as one of the most serious threats to people's survival due to their cleverness in crop-raiding.

CHAPTER 7 - PERCEPTIONS ABOUT THE RESERVE AND THE ANIMALS: THE MEN'S PERSPECTIVE

Plate 7.1. Interviewing men from Farim (Cantanhez National Park).

7.1 Introduction

Conservation attitudes are known to differ by gender and socio-economic status (power imbalances; see for example Mehta and Kellert, 1998; Lee 2004; Arjunan et al., 2006; Mukadagi and Nabalegwa, 2007; Bandiaky, 2008). Having shown that women's concerns relate to food security and problems of ensuring harvests, and that these concerns tend to produce negative perceptions of the protected area and wildlife, I will now compare these attitudes with those of their husbands and partners.

Here I address the men's perspectives on socio-economic constraints on livelihoods, their attitudes towards the National Park and its services, towards wildlife such as chimpanzees and, finally, their expressions of expectations for their futures. In-depth interviews, incorporating most of the same focus group topics (see Chapter 6), were

conducted with 47 individual men, for two reasons. The first was to attempt to access information about hunting and bushmeat, activities which are now illegal or restricted and thus only likely to be discussed in private. Secondly, so as to be able to compare women's and men's points of view in discussions unconstrained by gender or power issues (see section 7.2).

7.1.1 Hypotheses

The hypotheses explored here were adapted from those examined in the previous chapter:

(i) Similar to women, from the man's perspective the survival of households will be dependent on ecosystem services;

(ii) A lack of confidence in the future will be evidenced, since NGOs and authorities operating in Cantanhez National Park have not introduced any economic alternatives or a compensation plan;

(iii) The establishment of the National Park will be highlighted as a major problem, since men can no longer farm or hunt inside its boundaries. Wildlife, and especially chimpanzees, will be established as a significant risk factor due to crop-raiding activities;

(iv) Men, who have higher status and greater control over resources and life events, may be more positive than women about the villagers' future in relation to the reserve.

7.2 Methods and analysis

Male in-depth interviews (N=47) were conducted in the second stage of field work - September and October 2007. Adult men were interviewed in order to assess the perspectives of hunters (Flinton, 2003) and the "empowered" within the community (Moser, 2007). Having an informal conversation with potential hunters seemed to be the best way to draw out information associated with bushmeat trade and consumption, which is illegal and therefore needs to be approached with considerable tact. In addition, it is

predominantly men in these ethnic groups who act as household heads, which dictates a need to assess their perspectives regarding constraints on villagers' daily lives. These individual interviews were also important for accessing and validating qualitative information previously derived from the fixed-response questionnaires and to confirm the differences found between men and women in their perspectives on conservation issues (Chapter 4 and 5). As mentioned, the interview script included most of the topics raised in the focus groups meetings (see Chapter 6) to facilitate comparisons. Different interview and recording methods were used for men and women and sample sizes were dissimilar with a higher number of male interviewees, which makes analysis by comparison difficult. Nevertheless, since the same basic issues were explored during all stages of data collection – initial interviews, in-depth interviews with men and focus groups with women - and since gender has been revealed to be one of the most important variables regarding actions and attitudes towards environmental conservation (see for example Flinton, 2003; Lee, 2004; Kalibo and Medley, 2007; Mukadagi and Nabalegwa, 2007; Bandiaki, 2008; Reed and Christie, 2009), even a rudimentary comparison like the one I am presenting here, will be informative. The strength of this work is that the participants, whether alone or in groups, male or female, were facilitated in raising issues of concern to them. The open structure of the interviews allowed for triangulation of main concerns (Bloor et al., 2000; Silverman, 2005) – seeking cross-references among issues – irrespective of the absolute numbers of respondents or the nature of the conversation. It also allowed for gender specific concerns to emerge rather than "forcing" answers into a fixed question format.

Data collection took place in 13 different villages (including the 5 villages where focus groups with women took place), all situated inside the National Park boundaries. Men were first contacted individually and told about my research aims. After the interviewee gave his consent, I started our dialogue by asking the person about his major livelihood concerns as a way to create rapport. The interview script included items regarding (i) the constraints villagers face every day, together with health, education and

political issues, (ii) the village's economic system and people's dependence on ecosystem services, (iii) men's feelings about the National Park and its fauna, especially chimpanzees (see appendix I). Each interview lasted up to 50 minutes. I always obtained the men's permission to use a voice recorder during the meetings.[31] All the respondents were interviewed individually with a translator present (see Chapter 2).

In general, I found that men were easier to interview than women, since they were typically not engaged in any of the daily activities that women usually have to complete. As such, men appear to be more relaxed and collaborative with the researchers than were the women. September, as mentioned in chapter 6, is the month of Ramadan and during this period due to the limitations imposed by fasting and the rainy season, men remain inside the villages rather than going out to hunt. As a result, it was easy to contact with the interviewees, which allow me to complete data collection in a short period of time of approximately 7 weeks. The concentration in time is important, as the same temporal problems were facing all respondents and therefore their responses would be less affected by changes in seasons, harvest activities or regional political issues.

The interview script was organized so as to give no "directions" or expectations to respondents as to what the interviewer wanted to hear (Silverman, 2005; see Chapter 2). For instance, during the interview, I never specifically mentioned chimpanzees. My aim was to explore how much this species was part of the villagers' psycho-social domains of perception.

As mentioned above and detailed in Chapter 2, a male interpreter living inside the Cantanhez National Park helped me with the translations. It was crucial to have another man as an assistant in order to create an easy rapport between myself and the respondents. It was also important to guarantee that I had someone fluent in both Portuguese and Creole to help me translating the answers *in situ*, since I aimed to enter the audio recordings directly in the software (ATLAS.ti), without losing any information. All

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[31] See section 2.5 for further information.

the questions were previously tested by using back translation techniques (Douglas and Craig, 2007; see Chapter 2).

The audio recordings were entered into ATLAS.ti (version 6.2). The analysis was made according to textual and conceptual principles, as described in Chapter 6. To assist with the analysis, and due to a large number of codes (232), families of codes (15) were also created.

7.3 Results: Men's attitudes towards and perspectives on the Park

In order to make comparisons and to test the hypotheses posed above, I maintained the same four basic themes that were established for the analysis of the women's focus groups (see section 7.2). However, I added a fifth theme related to dietary habits since men hunt and, consequently, are good informants regarding hunting activities associated with bushmeat. Each of the sub-issues that emerged from the analysis and that were associated with themes is presented in Table 7.1. Again, no statistical tests are presented due to a small sample and a totally qualitative data set (Krueger and Casey, 2000).

The themes and sub-issues are all related, although I tried to split them into different categories on the basis of frequency of association, in order to make analysis possible. In some cases, codes were included simultaneously in more than one theme – which is the case of "farming" and "famine"– because they were associated with more than one topic. As such, the total number of times that a theme or a sub-theme is mentioned is exaggerated due to the number of times a code is repeated in the entire set of interviews. However, these repeats are related to the transverse or crossing distribution of codes across the entire data set. The code "farming" was used 123 times and "famine" 101 and they were mentioned as daily livelihood constraints, as economic issues, and as limitations from the National Park, and so on.

Malnutrition was mentioned as the worst constraint that families have to face in their daily lives. When asked about the villagers' biggest problem, men's first thought was:

famine. The idea of starvation was associated with this theme in 68.1% of the 47 interviews.

When asked what causes famine, men mainly mentioned the National Park as the origin of malnutrition. The establishment of the protected area forced villagers to leave the forest and, consequently, their farms. Nevertheless, some of the interviewees stated that they could not give up growing their crops inside the National Park, since they had no other choice with regards to land. Traditionally, people in the south of Guinea-Bissau used to grow rice in fresh water swamps near rivers. Deforestation – associated with a shorter rainy season - has contributed to the rising salinization of these places making rice plantations almost impossible. As a result, villagers have had to slash-and-burn inside the forest in order to grow their crops and to develop other methods of planting rice, further increasing the extent of the deforested area.

7.3.1 Men's major livelihood constraints

Apart from the prohibition of farming in the National Park – a rule that people do not often respect – men also mentioned crop-raiding as a major threat to people's survival. Hunting is outlawed in Cantanhez National Park, and although enforcement is almost entirely lacking, people know that are not supposed to hunt any wildlife, even if their aim is to prevent attacks on their crops. As such, interviewees appeared to perceive wildlife as pests that are forcing villagers to lose their food resources. Additionally, men referred to the wildlife population as increasing since the foundation of the reserve. Only 4 (8.5%) respondents admitted that increasing human population growth could be responsible for villagers' malnutrition.

Table 7.1. Summary of the themes that emerged from interviews content analysis

Themes	**Sub-issues**	**Total number***
Men's livelihood constraints		**578**
	Major constraints (e.g. famine, rice, crop-raiding, National Park establishment, etc.)	461
	Education (e.g. no school, no teachers, school fees, no money, etc.)	217
	Health (e.g. malnutrition/food, no hospital, no medicines, no transportation, no money, etc.)	227
National Park establishment		**614**
	Wildlife (e.g. chimpanzees, baboons, nonhuman primates in general, etc.)	242
	Forest (e.g. slash-and-burn, farming, hunting, etc.)	394
	Reserve (e.g. wildlife, forest, reserve, no poaching or hunting, NGOs, no compensation plan or livelihood alternatives, etc.)	366
	Ecosystem services (resources)	145
Economics		**647**
	Farming (e.g. rice plantations, crop-raiding, farm supplies, etc.)	382
	Money (earning/collecting and spending money)	383
	Work (e.g. fishing, farming, hunting, trading, etc.)	279
	Hunting (e.g. bushmeat, snares, crop-raiding, etc.)	283
Dietary habits		**497**
	Food (e.g. rice, palm oil, fish, meat, etc.)	441
	Meat consumption (e.g. wildlife, livestock, trade, hunting, etc.)	223
Eco-tourism		**277**
	Future expectations (e.g. compensation plan, rain, National Park, tourists, participation in research, etc.)	277
Total		

* Total number of phrases that included, at least, one of the codes above.

Education was spontaneously mentioned as these people's major problem only three times. Getting a proper education or attending school does not seem to be a priority for these men. Still, when asked directly about problems related with their children's education, men referred to financial limitations as a major threat. Without money, men stated, families cannot afford school fees, stationery and the teachers' salary. In Guinea-

Bissau there are two types of schools: public and communitarian. Public schools are supposed to be totally free. Unfortunately, Guinea's current economic problems have preventing the Government from financially supporting children's education. As a solution, communities and NGOs have been building schools all over Guinea in order to establish a parallel educational system. These schools are not free, however, which means that only children from families that can afford education may attend. Of all the thirteen villages I visited, only four had a school (Cachamba Sosso, Cadique Nalú, Lautchande and Madina). The other nine villages had a school nearby. All these schools were all fee-paying and thus represented a significant drain on household incomes.

Health was spontaneously mentioned as a daily life constraint only by 4 men. Men only referred to health and illness when asked directly about it (figure 7.2). In general, there is little medical support in the region of the National Park. In Iemberém, inside the Park, there is a hospital built by a group of Evangelical missionaries which provides limited medical advice and medicines, but non-Christians have to pay for these services. If the patient's condition is serious, the person can only get medical help at great expense in Catió or Bissau (minimum of six hours by road). Since Iemberém's hospital is far from the majority of the villages, with high charges for appointments and prescriptions, people are forced to fund transportation to the major cities. As there are few cars or motorcycles, ill people have no choice other than walking. "No transportation" was mentioned by 30 interviewees as a major problem in relation to health. The lack of adequate medical support (e.g. medicines, doctors, transportation, etc.) dictates the use of traditional medicines. Men also appear to perceive health as an element associated with the quality of food and water. Malaria and its symptoms (diarrhoea, fever and headaches) was the most mentioned disease. An aid NGO recently provided mosquito nets to households to reduce malaria, so men's knowledge of this disease could have been a product of their enhanced perception or of the receipt of bednets from the NGO.

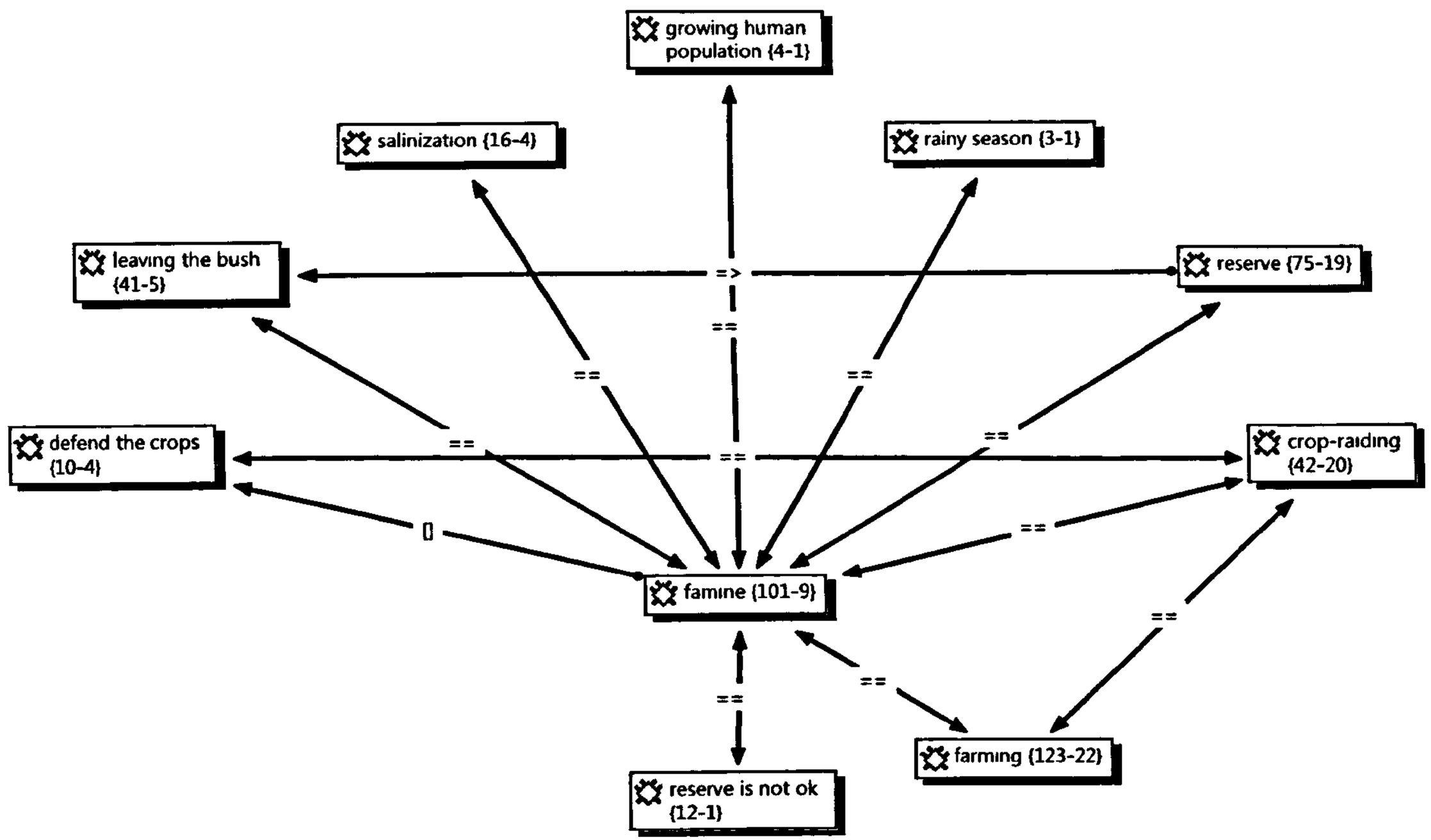

Figure 7.1: "Famine" network according to men's perceptions.

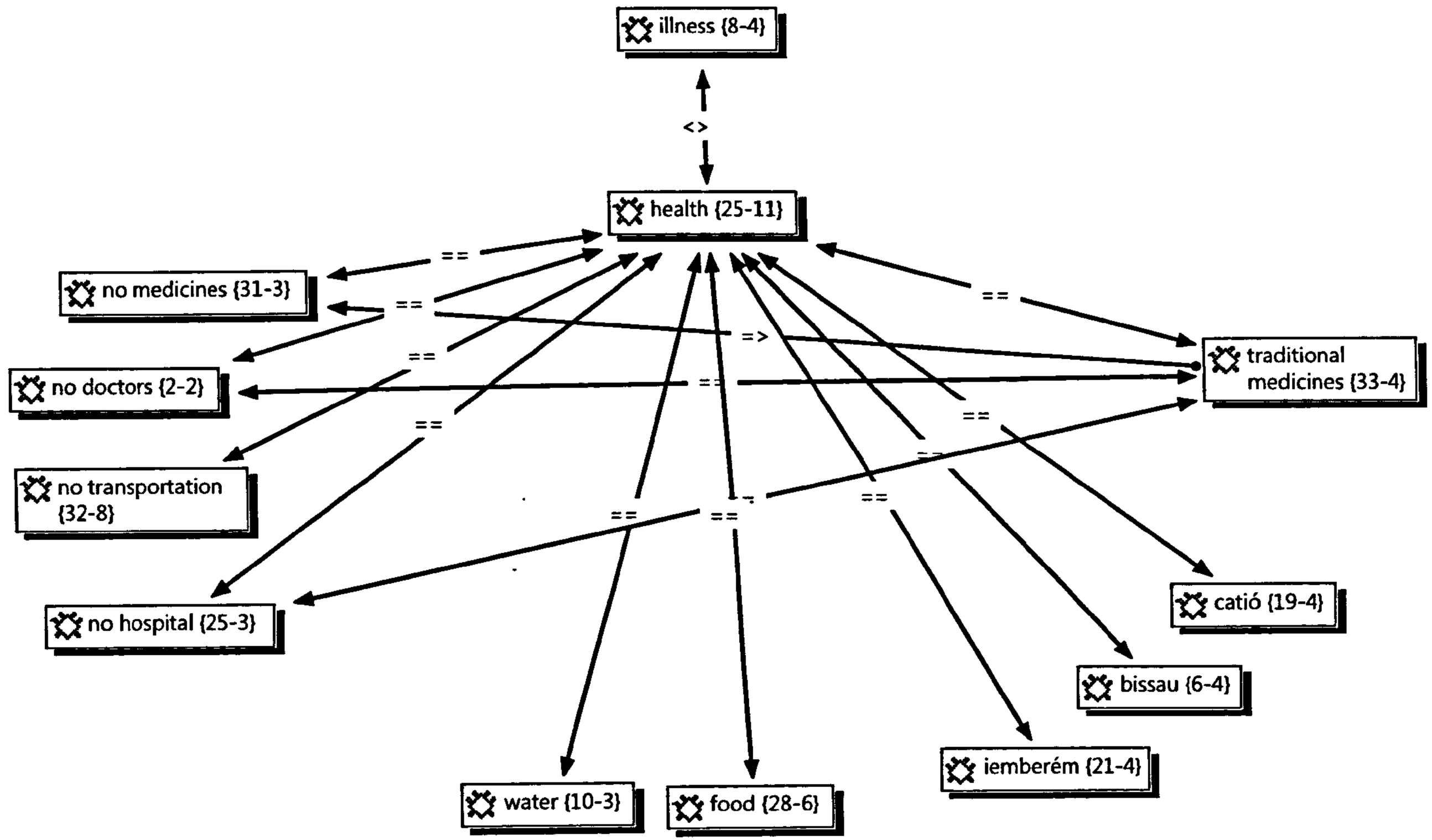

Figure 7.2: "Health" network according to men's perceptions.

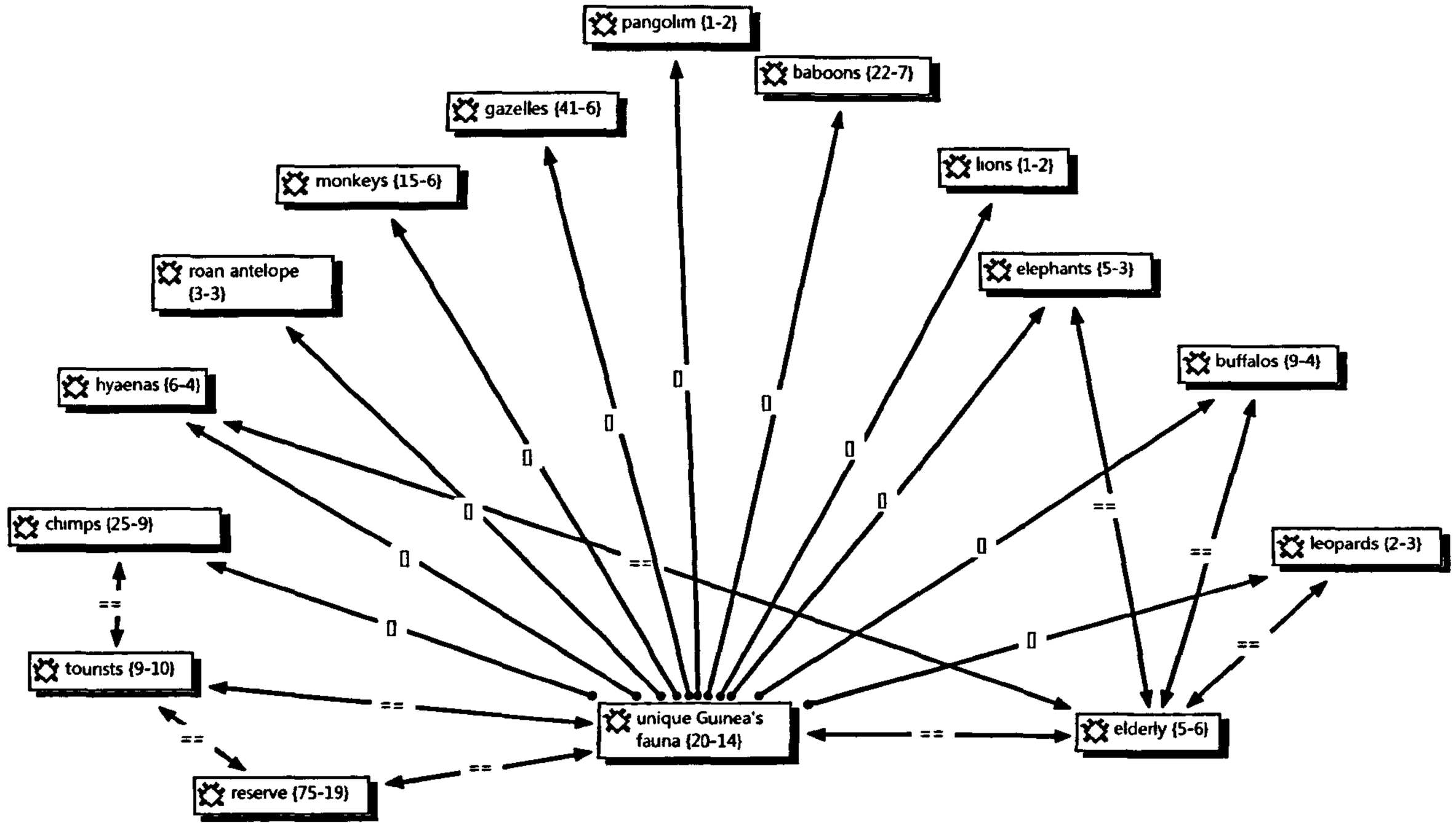

Figure 7.3: "Unique Guinea's fauna" network according to men's perceptions (Awareness of wildlife).

Although men were asked about political issues, this theme was seen as unimportant at the time of interview. Politics and related topics are not seen as a livelihood constraint, since interviewees believe that politicians, elections and political parties are not a priority. In Guinea-Bissau, the "Government" is seen as something distant and unhelpful (Forrest, 2003; Nóbrega, 2003).

7.3.2 Men's perspective on Cantanhez National Park

In general, men did not have a totally negative perspective on the National Park – 48.9% of the respondents stated that the National Park establishment was good. Men, in contrast to the women, apparently believed that the reserve might be something positive in the future, though it had brought some additional problems into their lives that are far from being solved.

One of the most important aspects of the National Park mentioned by men was the unique fauna of Guinea-Bissau (figure 7.3). Men seemed aware that the wildlife species living inside the reserve can bring prosperity to human communities. Local NGOs have been promoting tourism and other theoretically profitable activities, and thus have raised positive awareness of such issues. It is important to be able to distinguish awareness from attitudes to wildlife, as illustrated below.

Men named 11 wildlife species living in the National Park. The most often mentioned species were gazelles (87.2%), which is understandable since this animal is perceived as aesthetically appealing and highly edible.[32] Chimpanzees were the second most frequently mentioned (53.2%). I will give details of how respondents actually perceive these animals below, although chimpanzees were singled out as important for conservation purposes. Baboons came next in frequency of mention and primates in general after them. Nonhuman primates appeared to have an important status in these

[32] See chapters 4 and 5 for further information.

subjects' minds since they were mentioned 38 times in 25 interviews. Unfortunately, as I discuss below, they are perceived as pests due to their crop-raiding behaviour.

Buffalos, leopards, elephants and hyaenas were mentioned as part of the unique Guinean fauna, though men referred to them as part of the past. Only the elderly men had the chance to encounter these animals in the forest, which – for some respondents – might be seen as a symptom of the collapse of forest large mammal biodiversity in that part of Guinea-Bissau.

"They (animals) won't last forever. Old people say that, in the past, there were buffalos, hyaenas and leopards. I never saw any..."

(Interviewee 22, Cachamba Nalú)

Despite the quotation above, men mostly believed that the animals will last forever (80.9%). The National Park establishment and hunting prohibition are thought to protect wildlife. Some of the interviewees stated that, after the reserve's foundation, wildlife populations had increased considerably (figure 7.4).

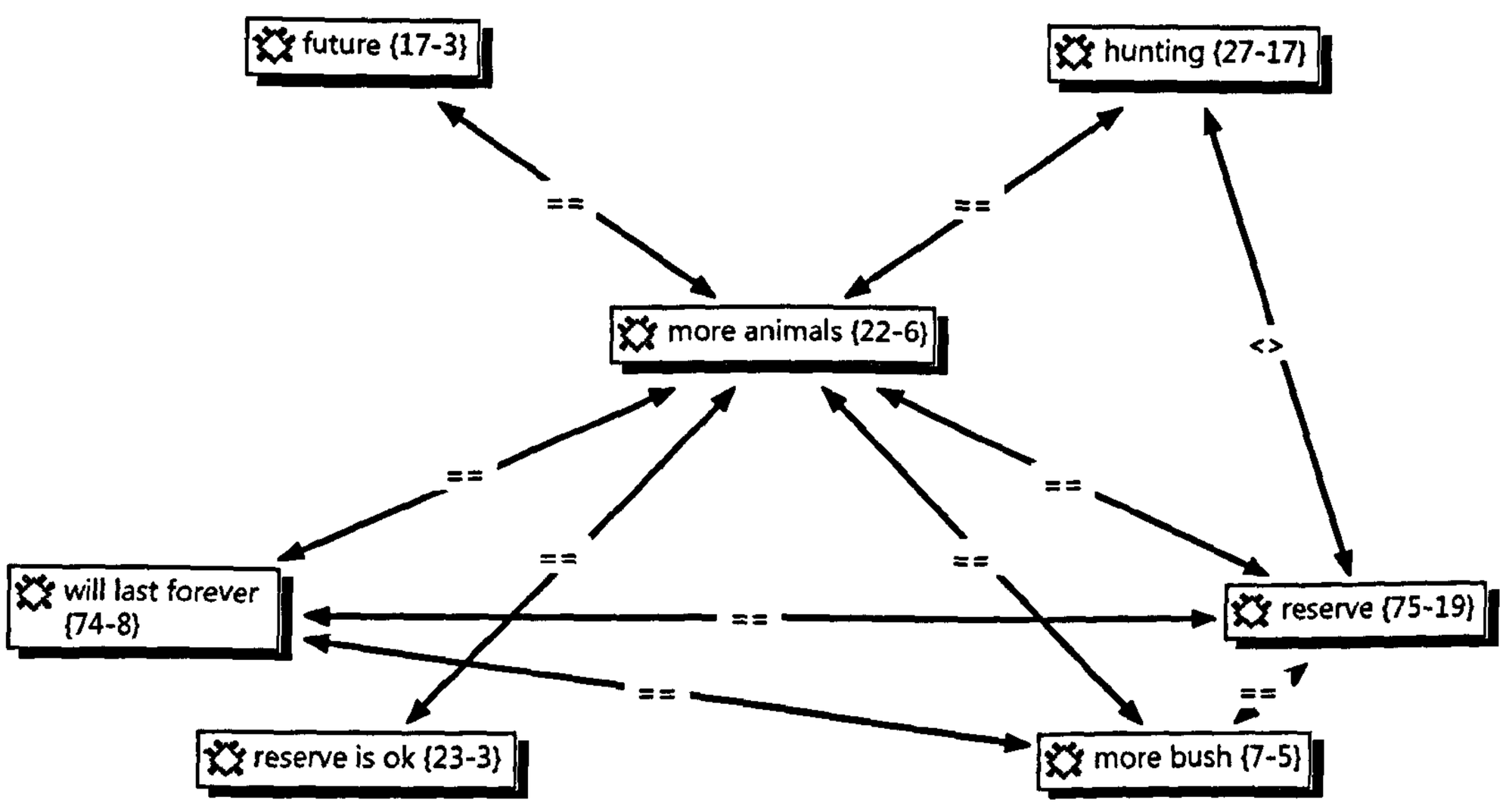

Figure 7.4: "More animals" network according to men's perceptions (Increasing wildlife populations).

Natural habitats (bush and forest) were seen as the most important aspect of the villager's survival. The forest and its associated services provide food, water and shelter to people in this region. They grow their crops in the forest and rely on their farms to guarantee food for them and their families. Most of the villages do not have clean wells, women get water from the "bush". Elderly men also referred to the forest as the shelter that saved people during the War of Independence with the Portuguese in the 1970s. Natural habitats and their animals are perceived as a unit, where the forest's existence dictates the animals' survival.

"*Once we have bush, animals will last forever.*"

(Interviewee 1, Madina)

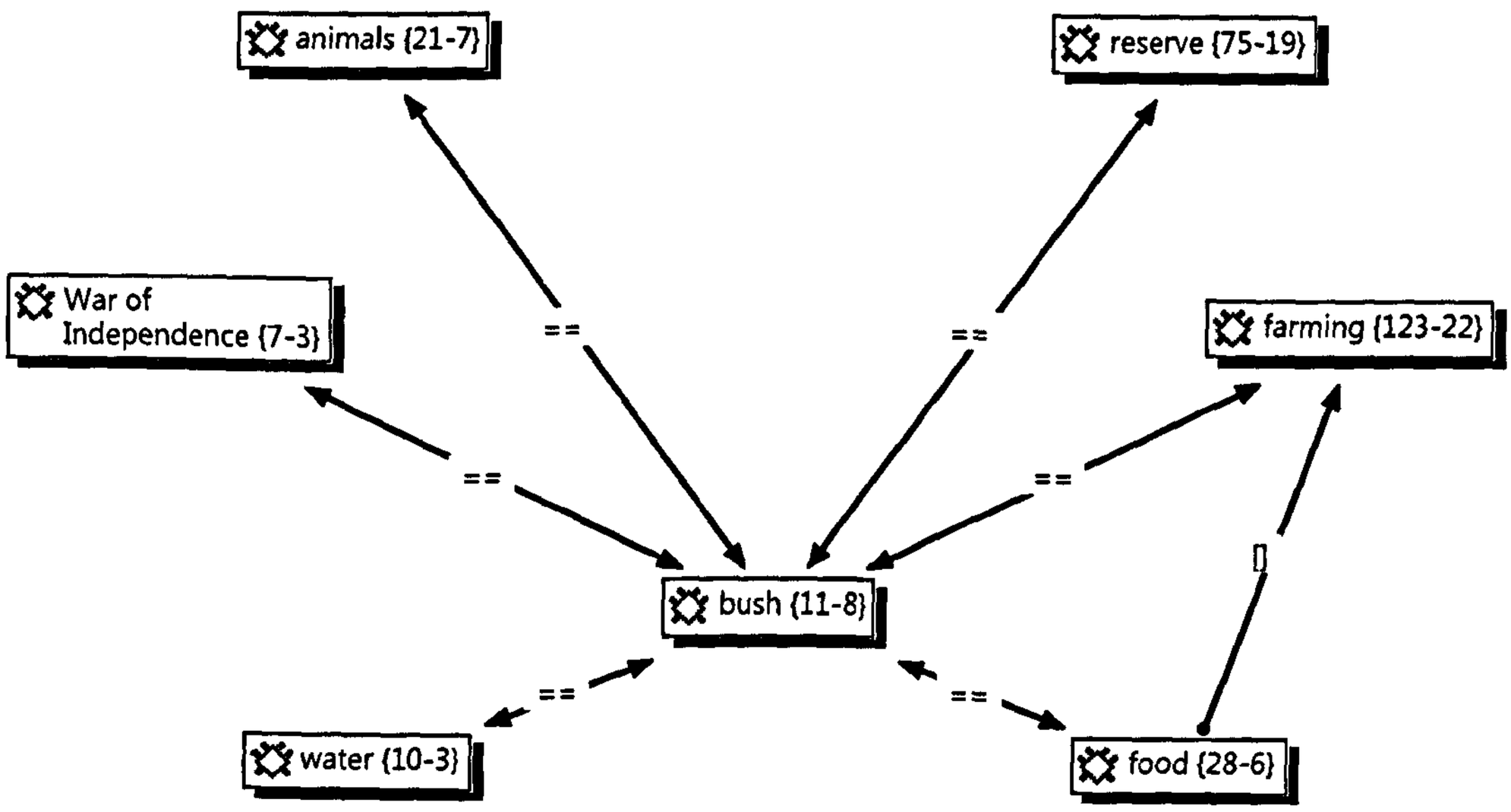

Figure 7.5: "Bush" network according to men's perceptions (bush = natural habitats / forest and wildlife).

The establishment of the National Park brought little improvement to people's livelihoods. Villagers have been forced to leave the bush, and to cease farming activities and hunting. However, since the NGOs associated with the Park establishment have failed to establish a compensation plan or devise economic solutions to make these inhabitants less dependent on these ecosystem resources, attitudes towards the

protected area and its rules were generally negative. Some of the interviewees stated positive attitudes toward the reserve, that the forest and its protection of wildlife would bring more rain, more bush and more animals – and, consequently, tourists. However, many other respondents referred to the National Park as the main reason why people are starving. Men appeared to think that the protected area is now the reason why the bush will last forever (72.3%).

7.3.2.1 Men's perceptions about chimpanzees

Chimpanzees were noted as part of the unique Guinean fauna (figure 7.7). Only one interviewee referred explicitly to the species as similar to humans and only two stated that chimpanzees are inedible. The most significant association with chimpanzees was that of crop-raiding. Thirteen individuals mentioned both codes – "crop-raiding" and "chimpanzee" – in the same phrase. Chimpanzees were thought to prefer to raid cultivated fruits; oranges, mangos, papayas, and other cash crops such as cashews. These perceptions of chimpanzee raiding as directed to cash crops accounted for why some farmers had such a negative perception of chimpanzees. Chimpanzee crop-raiding results in reduced profits.

In addition to the negative attitudes toward chimpanzees as crop-raiders, men also commented that protection of these animals is important because they might attract tourists – mainly wealthy Europeans and Americans - to the National Park. Zoos were also mentioned once. Since the respondents had noticed that chimpanzees gain the attention of researchers, one individual mentioned the possibly of poaching chimpanzees to sell them to zoos abroad. Chimpanzees, like most of the other ecosystem services, were perceived of as yet another commodity.

"What I know is that chimpanzees are animals that white people never met. They can be caught to be taken to Portugal or Holland to stay in a Zoo. People have to pay to go inside zoos to see the chimpanzees. That's a good thing."

(Interviewee 36, Lautchande)

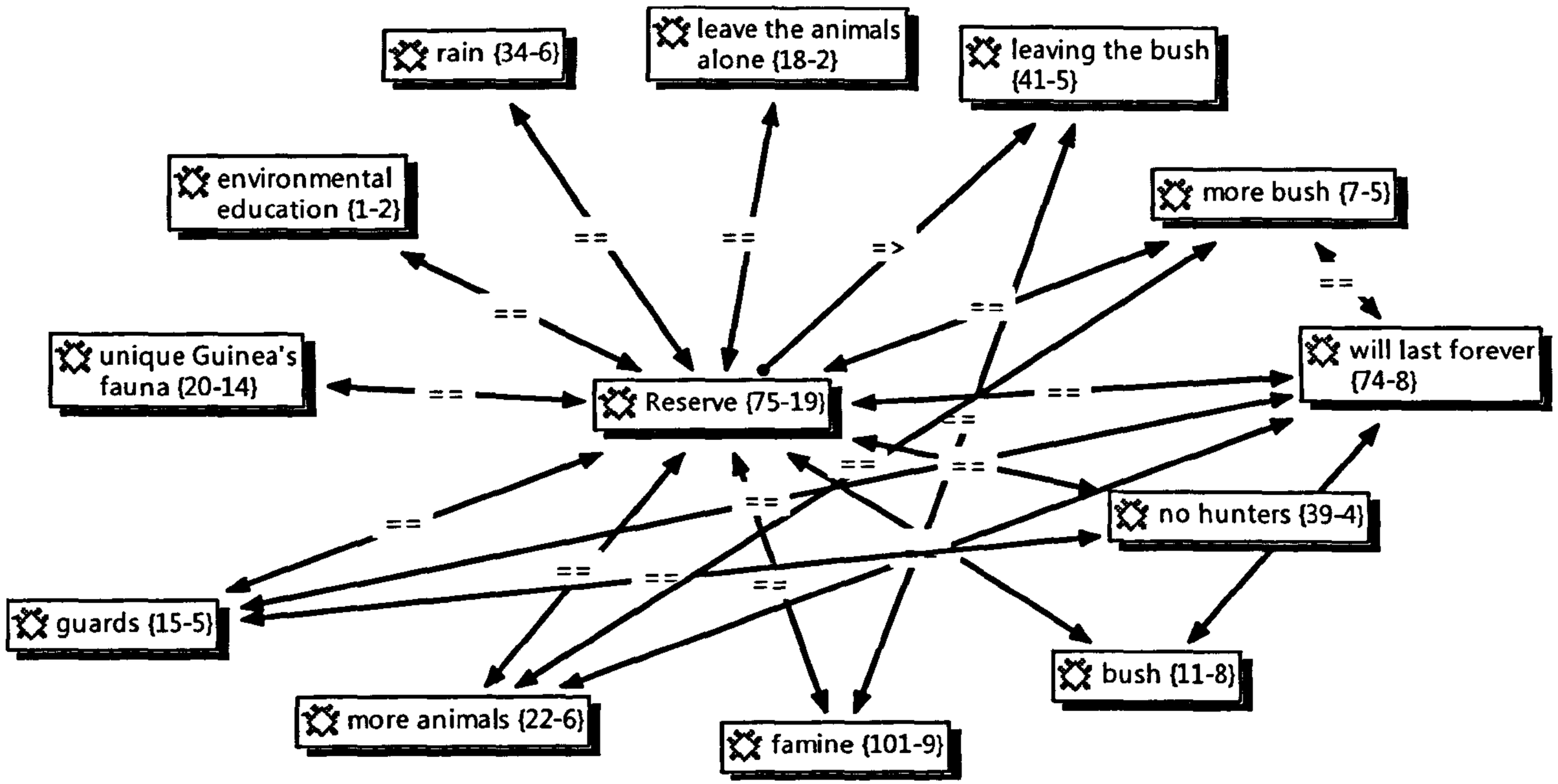

Figure 7.6: "Reserve" network according to men's perceptions.

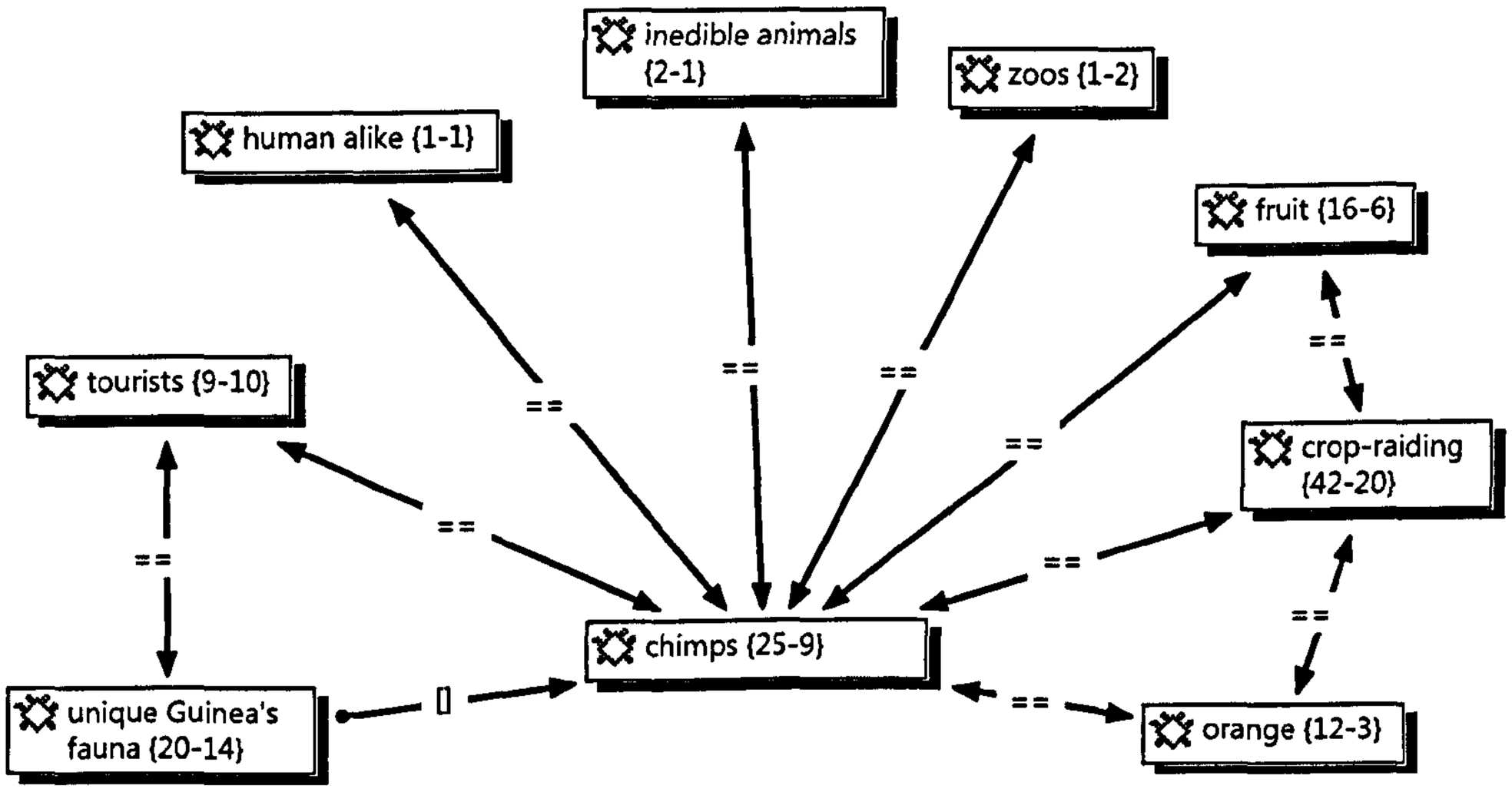

Figure 7.7: "Chimpanzee" network according to men's perceptions.

7.3.3 Men's economic activities: subsistence and trade

Villagers in this region rely on agricultural activities for their subsistence.[33] In addition, local inhabitants were almost totally dependent on ecosystem services. Fishing, hunting and handmade baskets and soap were noted as part-time economic activities, although basketry and soap were women's work. Men referred to timber, traditional medicines and palm oil (*Elaeis guineensis*) as the most important forest resources. Palm oil was mentioned by all the male interviewees as the most important way to earn money so as to buy other provisions such as rice and meat (figure 7.8). Since palm oil is a very valuable ingredient in Guinean cuisine, villagers find it easy to sell it to the traders who come from Bissau looking for agricultural produce (bananas, mangos, oranges, cashew, etc.). The oil is time-consuming to gather and requires men to climb trees to collect the palm nuts. Women process the nuts to make the oil. While men trade in palm oil, women tend to produce it, making it seen as "bush" related activity rather than a production related activity. Thus men perceive its economic value while women perceive it as physical effort.

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[33] See chapter 3 for further information.

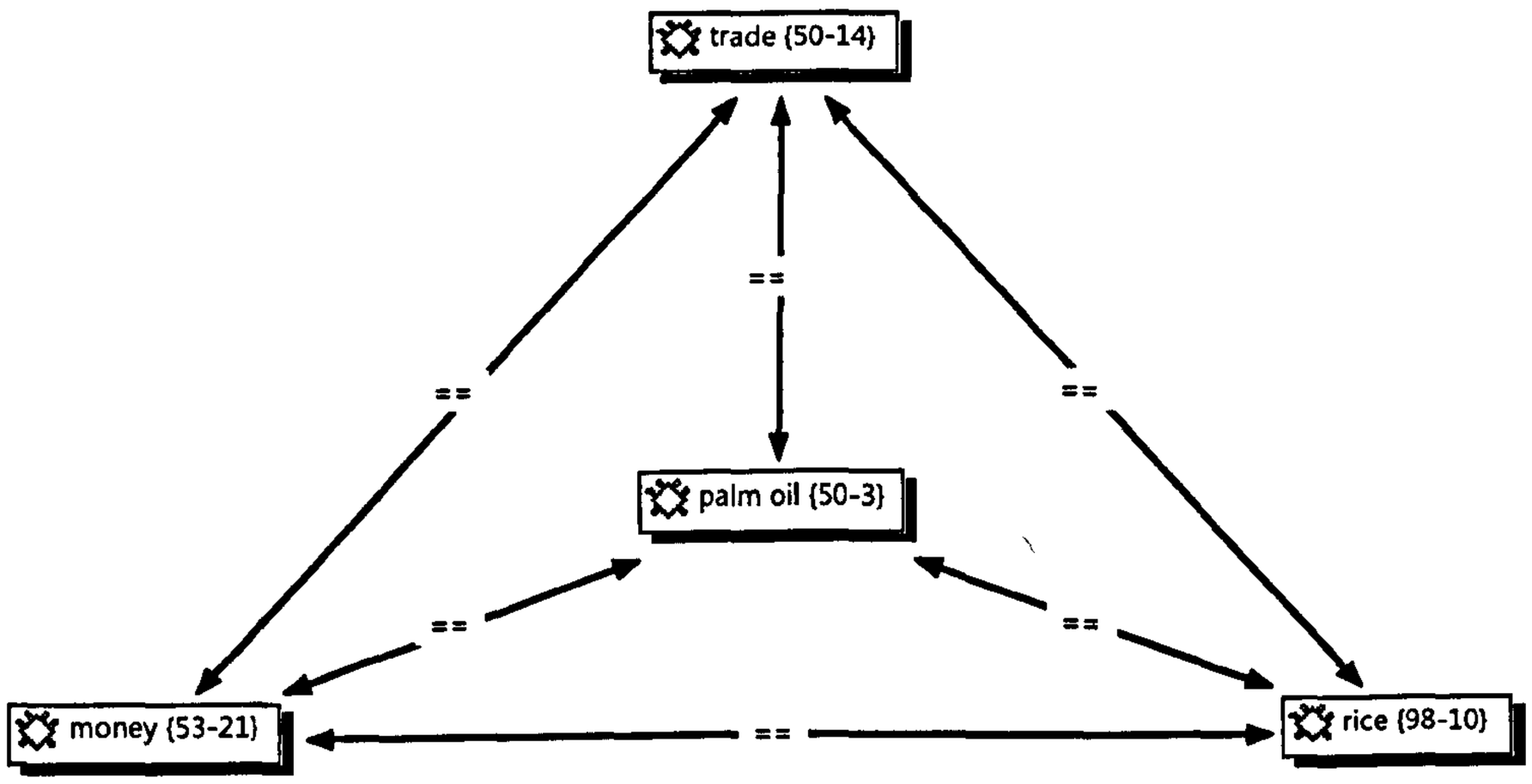

Figure 7.8: "Palm oil" network according to men's perceptions.

Hunting is discussed separately as the second most frequently mentioned activity after farming, and hunting has consequences for biodiversity conservation.

Of the major agricultural produce grown in this region - oranges, sweet potatoes, peanuts, mangos, beans, corn, banana, cassava, tomatoes, chilli peppers – rice was perceived of as the most important (figure 7.9). This cereal was referred at least twice in each interview. Rice is crucial in these people's lives and forms the basis of their diet. Thus the cereal is so important that, when villagers mentioned rice as a problem, they used it as a metaphor to define famine.

Farming was linked with deforestation. Slash-and-burn was the activity mentioned by the majority of men as their primary duty in order to grow crops. Apart from a few farms nearby villages and rice plantations (paddy) in swamps, all the other farming involved deforestation, especially in the case of "mpanpan" or dry rice. Slash-and-burn was forbidden within the National Park, limiting the choice and number of farm sites severely. The lack of a compensation plan for prohibited farms in the forest left the villagers with no alternatives but to plant illegally. For men, farming was associated with work and physical effort (at least via forest clearance since they did not actually work the fields) and food. It was also linked with crop-raiding and, as a consequence, famine.

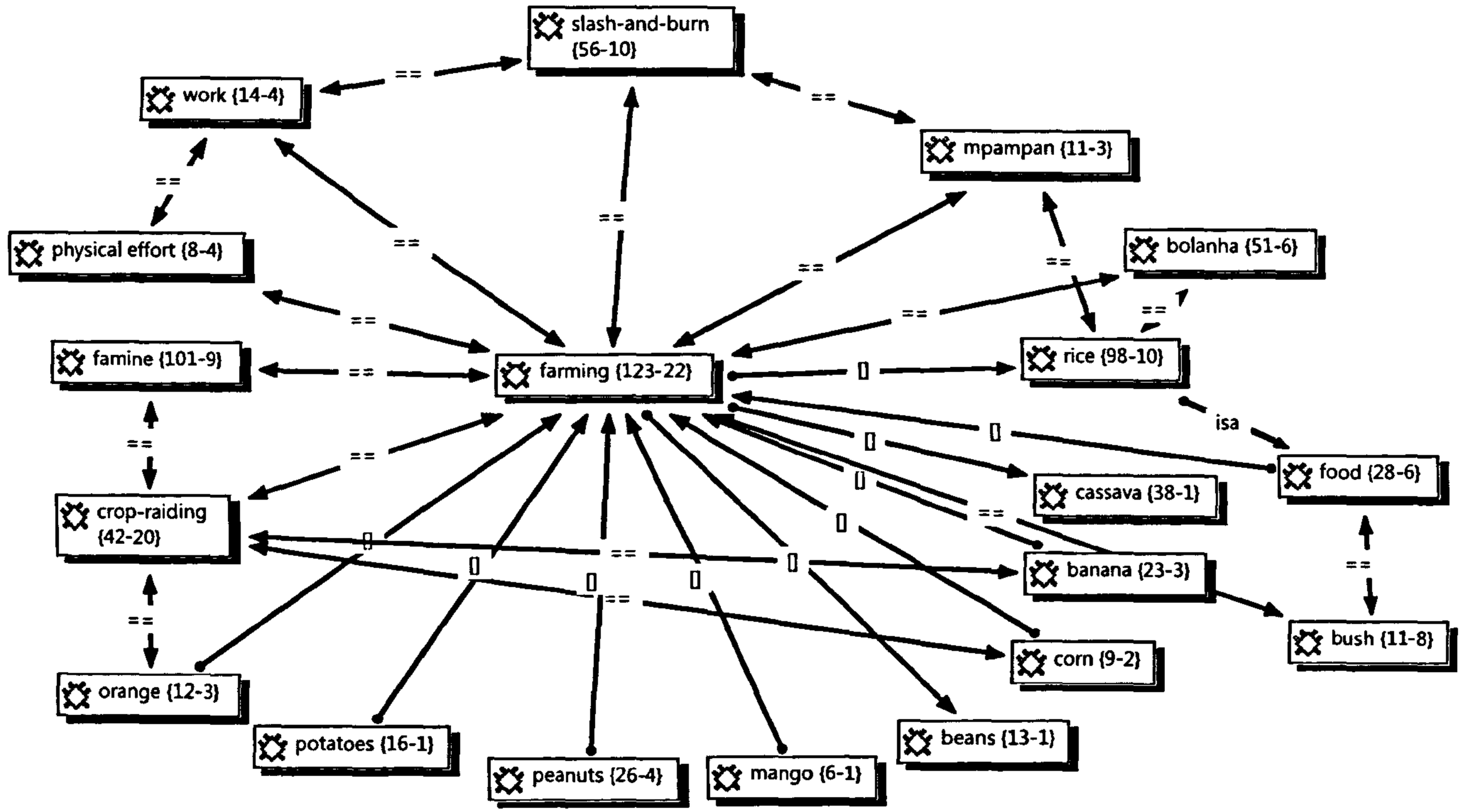

Figure 7.9: "Farming" network according to men's perceptions.

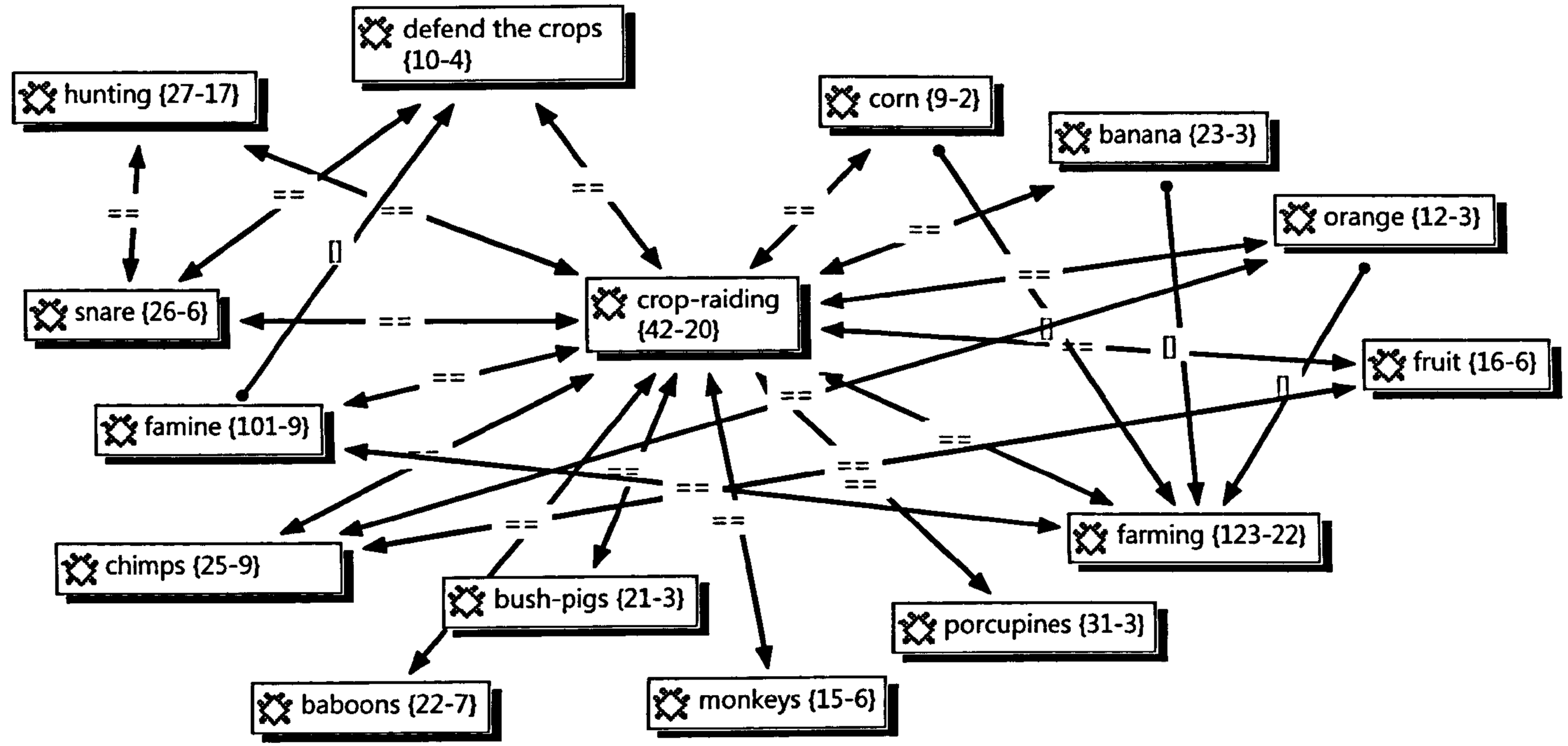

Figure 7.10: "Crop-raiding" network according to men's perceptions.

From men's testimonies, some animals were perceived of as raiding more frequently than others. Gazelles, duiker (called bush-goat), and squirrels were mainly non-raiders. Porcupines were the most frequently mentioned raider, while chimpanzees, baboons and nonhuman primates in general were also frequently thought of as raiders (figure 7.10). The nonhuman primates were thought to steal fruit, and fruit was a relatively good source of income for buying additional foods. As a consequence of primate crop-raiding, the men said, the villagers' famine increased. Men used snares to target the crop-raiding individuals that "dared" to steal people's source of income. After the establishment of the National Park, rules about hunting, including snaring, became stricter. Men did not, however, perceive of snares as hunting – these were "problem animal controls". This mismatch between perceptions of the activity by men and authority led to low compliance and threats to the continued existence of some nonhuman primate species.

Few families, even those which trade in produce or palm oil, have sufficient disposable income to hire labour or pay salaries. Wages were not therefore seen as a major source of income to these interviewees. However, disposable cash was very important because it meant that men could afford to buy rice, especially during rainy season, when the cereal is scarce on the subsistence farms, medicines, school fees and clothes. Cash could also be used to buy meat which was important to hunters in the bushmeat trade. When I asked the men what they did with any money that they managed to earn, apart from buying rice, oil and general food supplies, they specifically mentioned meat and fish. Since people can only rarely afford these commodities, they are seen as treats and not as necessities. The effect of a limited cash economy meant that returns from hunting may have been reliant on a trade extending far beyond the local villages.

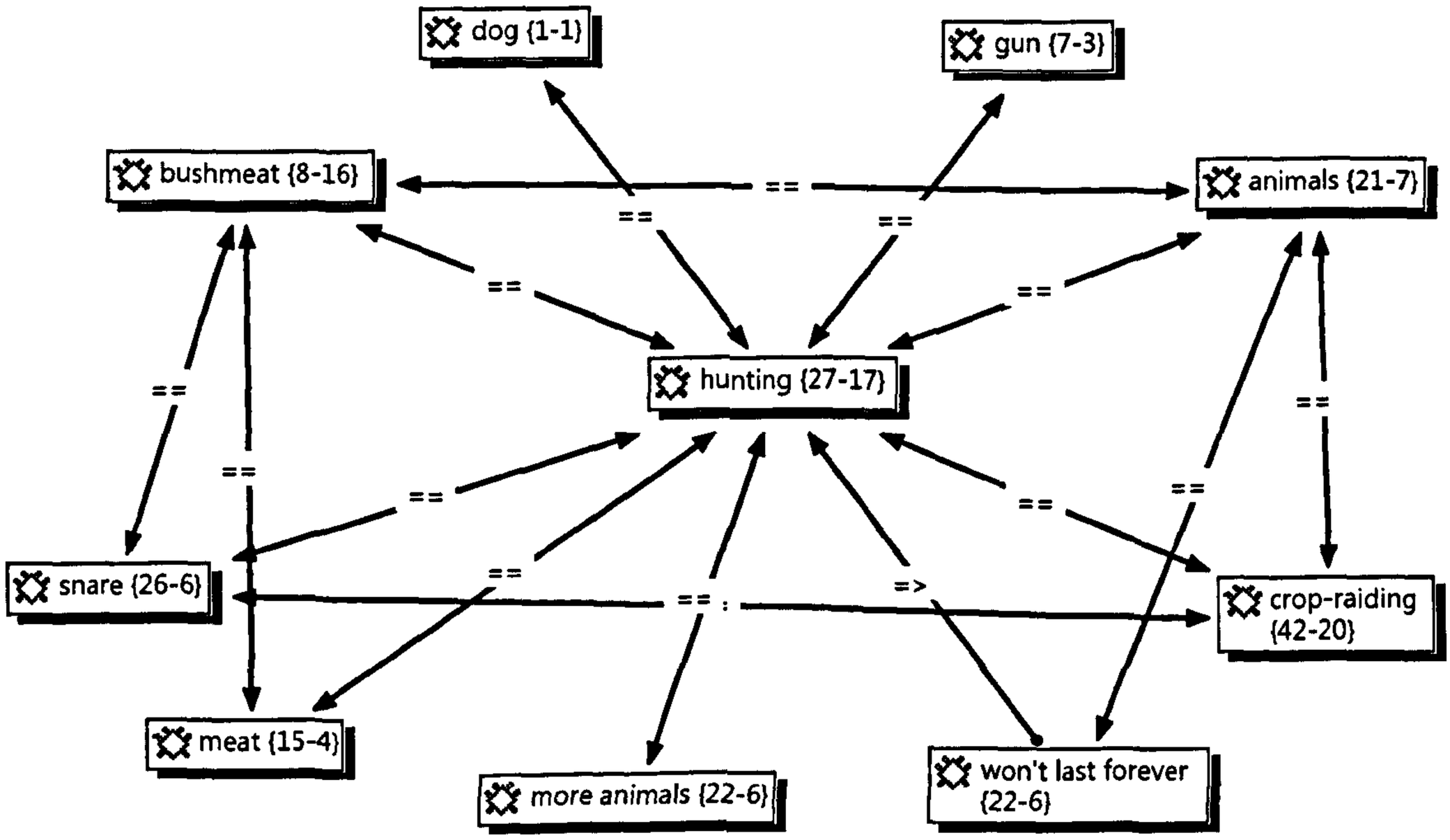

Figure 7.11: "Hunting" network according to men's perceptions.

Hunting was the traditionally means to obtain meat (figure 7.11). During our conversations, men showed some reluctance to talk about hunting, though a few admitted that they did hunt (n=4) or that there were other men hunting in the village (n=7). Only two men mentioned both possibilities. Hunting was not a full-time economic activity as farming was more important. However, hunting was potentially more profitable, especially when hunters got the change to trade meat in urban markets. Most men stated that they were no longer hunting since the establishment of the National Park, but that they used to hunt in the past. Snares were more widely used than guns (42.5%), since men declared that such hunting was done to control crop-raiding. Some men (14.9%) stated that hunting would be why "animals will not last forever". But the majority believed that, due to the reserve foundation, the populations of wildlife have grown rapidly, potentially producing more conflict between humans and nonhumans.

7.3.4 Diets

As discussed above, rice is the staple food. Almost every individual we talked to mentioned a rice plantation – "bolanha" or "mpanpan" - as part of their most important

economic activities (figure 7.12). Men mentioned that cassava was a second choice when household heads cannot get rice. These two codes – "cassava" and "rice" – came up in the same sub-theme 36 times, suggesting that their association was very strong. In 33 (91.7%) of co-references between cassava and rice, rice was the food named as eaten most. Corn, beans, peanuts, mangos and bananas were also mentioned, but at a much lower frequency.

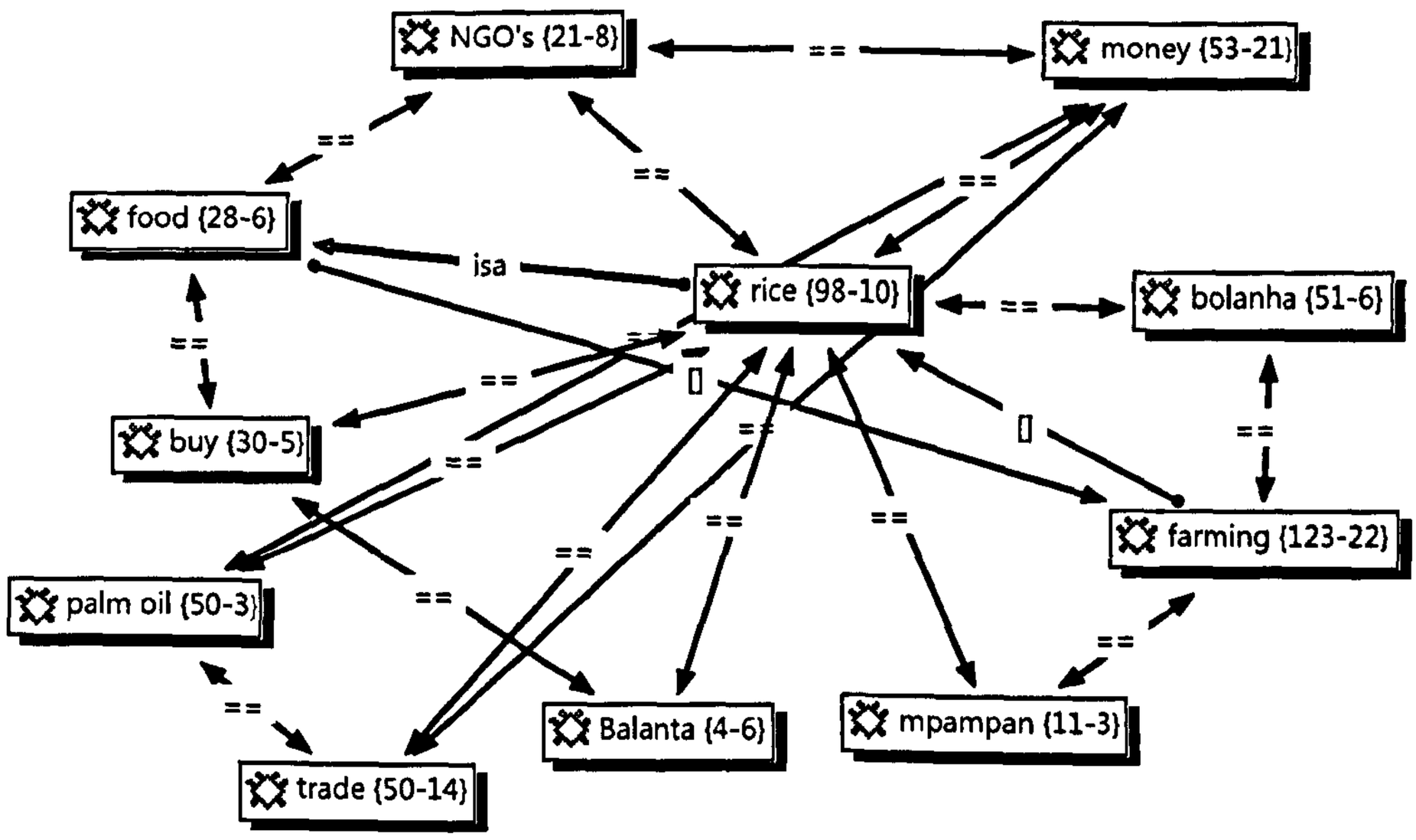

Figure 7.12: "Rice" network according to men's perceptions.

Livestock, especially cows and pigs, were rare although some chickens and goats were raised. Balanta people have domestic animals, but they do not slaughter them except for celebrations (weddings, births, funerals). When animals are slaughtered, the man keeps some for his family and the rest is sold in other villages. Pork is not traded outside the Balanta villages since the other ethnic groups are Muslim.

Bushmeat was openly mentioned only a few times (8), although during more informal conversations, men admitted that this kind of meat was available (figure 7.13). The consumption of gazelle, porcupine, bush-pig and duiker meat did not seem to be

problematic from the men's perspective, while baboon and other primate meat was more problematic probably due to their human-like appearance, which might explain why men rarely mentioned this openly. When asked what hunters used to do with the animals, most interviewees mentioned own consumption as the most likely use of the meat. Though, a few mentioned the bushmeat trade as a way to get money.

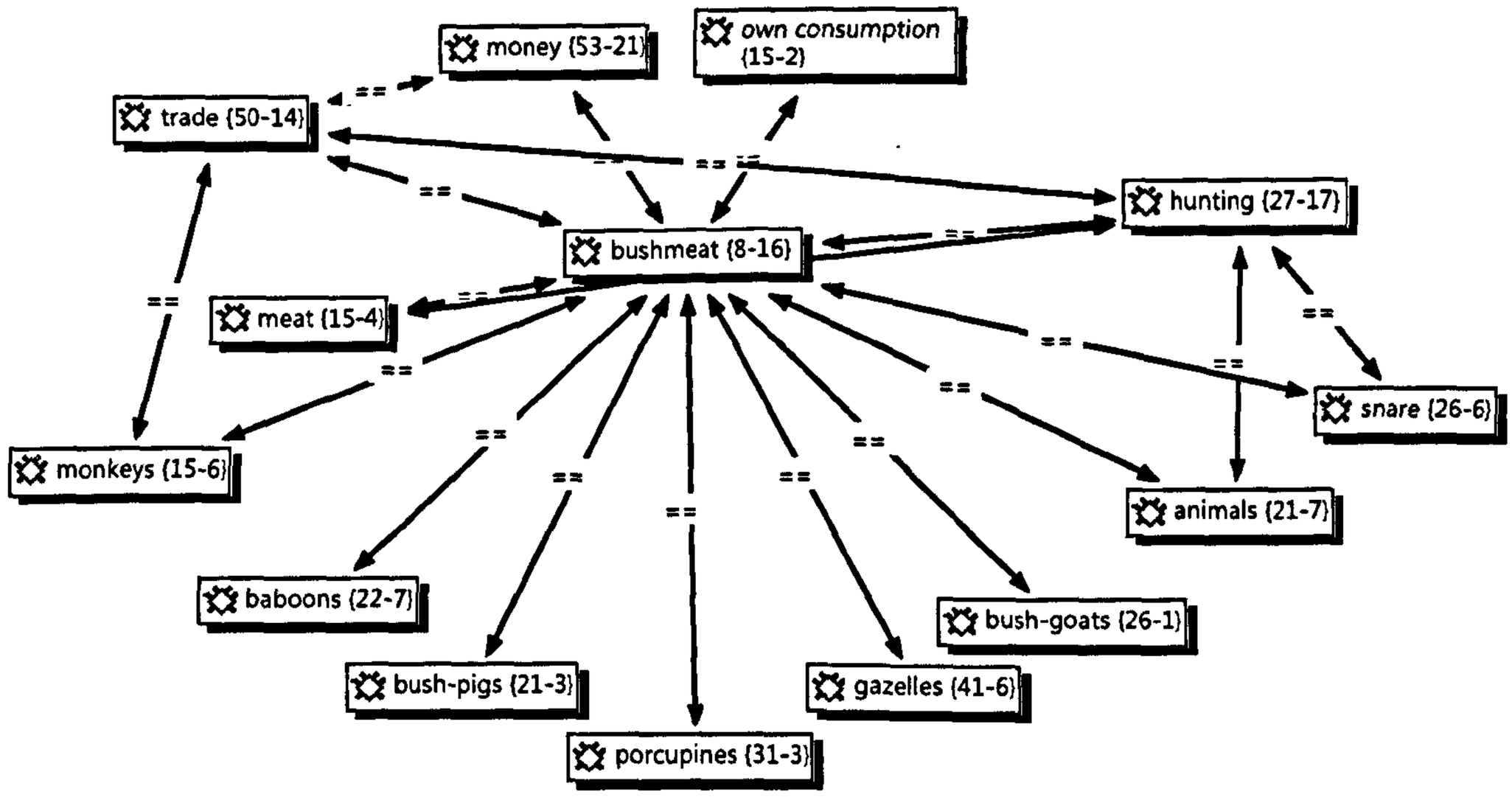

Figure 7.13: "Bushmeat" network according to men's perceptions.

Since snares were perceived as important mechanisms to protect farms, and are efficient at trapping animals, people may have been consuming more bushmeat than they were willing to reveal. The codes "snare" and "own consumption" emerged in the same phrase 11 times, specifically when men were asked about their hunting habits. Of the men who mentioned both codes simultaneously, only two were non-Muslims (Balanta), which was curious since Muslims are forbidden to eat bushmeat, unless they are pilgrims on their way to Mecca (Arberry, 1996).

7.3.5 Future expectations

When asked about the changes (neutral) that the National Park had brought to their lives, men mainly answered that they had not noticed any benefit, since the reserve had brought

more famine and restrictions in the use of ecosystem services. These men appeared to view change as something with a positive outcome; understanding this perceptual bias may be important in ensuring positive outcomes in the future. Regarding their views of the future, men stated that the reserve will bring more animals, more forest and a compensation plan, which will give them the chance to leave their farms. The idea of farmers being financially compensated by NGOs and / or "white people" in order to give up farming was referred to by almost a third (29.8%) of interviewees.

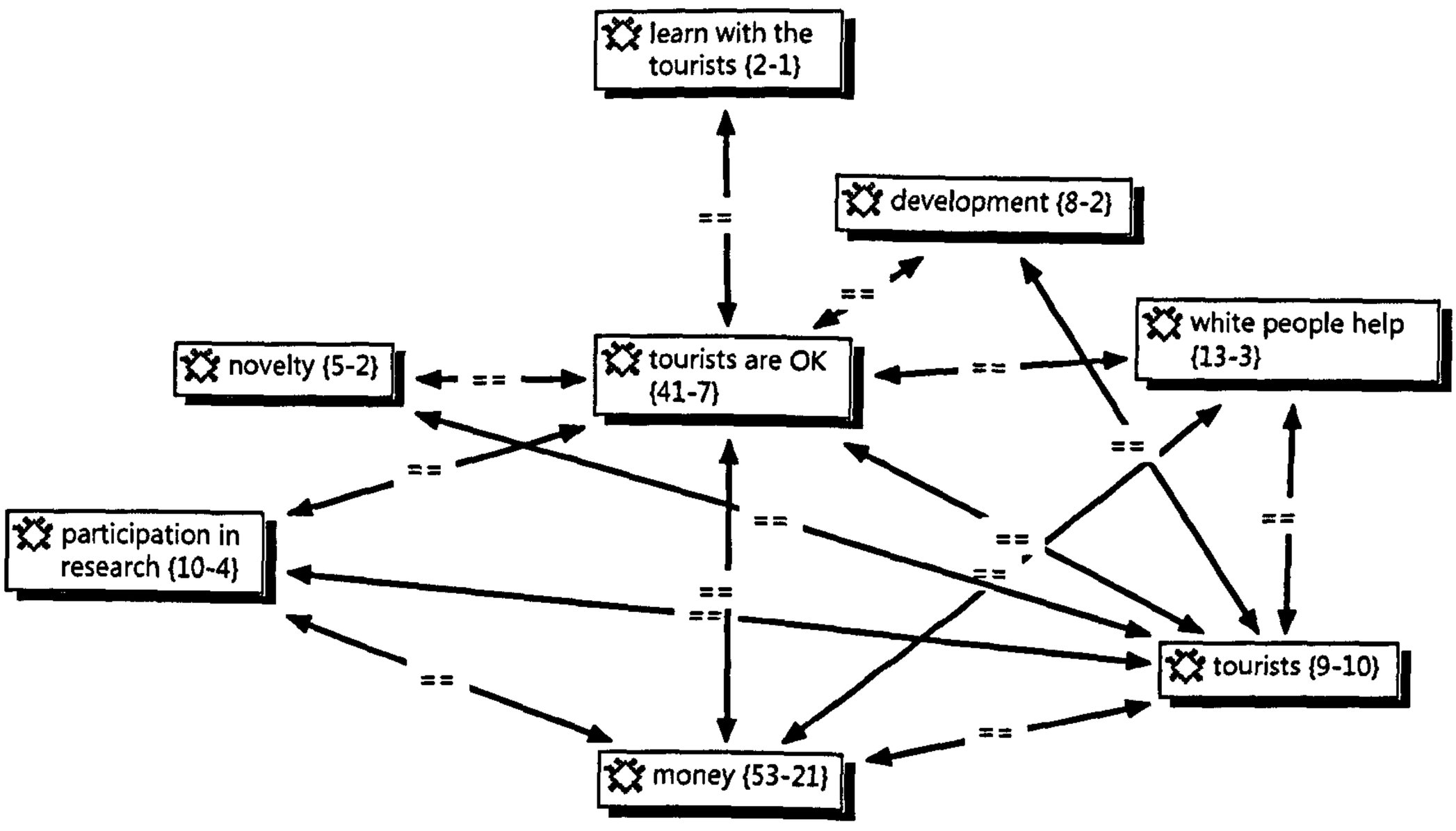

Figure 7.14: "Tourists are ok" network according to men's perceptions.

Only four individuals mentioned spontaneously tourists as part of the future for the National Park. However, when asked about their feelings toward an eco-tourism project, 87.2% of the respondents held mainly positive attitudes (figure 7.14). Experience with and conception of a "tourist" was limited. From their explanations, the concept included all the people – especially Europeans – that travel to and stay in the region for a short period of time, obviously including researchers. Thus, when men were asked why they felt positive/negative about tourists, they mentioned participation in research, development and learning as the most important features of having "guests" like me in their villages.

The objectors to tourism in the National Park (5) mentioned that visitors did not compensate villagers for their efforts in answering questions, and there was no perception of life improving as a result of the presence of Europeans.

7.4 Discussion

Famine was the most frequently mentioned constraints on these men lives and livelihoods. Malnutrition was a regular occurrence prior to the establishment of the National Park. The restrictions on livelihoods and economies associated with the protected area, combined with a reduction in the length of the rainy / growth season (possibly due to changes in the frequency of El Nino events) and an expanding human population have contributed to malnutrition, or at least its perception among men, becoming more prevalent. Education and health were referred by only a few interviewees as problematic and were associated with financial constraints. Regional or national politics were never mentioned out as a problem for livelihoods.

Some men revealed positive attitudes toward the National Park, stating that one of its most important features is its unique Guinean fauna. Of these unique fauna, chimpanzees were the species mentioned most after gazelles, and attitudes were negative due to their frequent crop-raiding behaviour. However, some men did agree that these primates can attract tourists and, as a consequence, bring potential financial emancipation to the villagers. Apparently, men tend to jump between the "farmers' discourse" and the "NGOs' discourse", and balance between both points of view does not seem easy to achieve. While men admit that raiding animals are a threat to villagers' survival and that the National Park acts as a constraint on their livelihood; they also "defend" the idea that the National Park and its fauna can bring profits to the people living inside the protected area. The idea of wildlife as another commodity – namely the more charismatic species, such as chimpanzees – might be a result of the messages frequently spread by the NGOs operating in that region that have been trying to implement an ecotourism project in this part of the country. Differences between women's and men's

perceptions of and attitudes towards the National Park and its fauna (see Chapter 6) might be associated with the way the NGOs usually dealt with gender imbalances. Women are usually kept aside, while men are typically invited to participate in meetings and decision-making processes (Mehta and Kellert, 1998; Lee, 2004; Chambers, 2007; Moser, 2007). As such, men are normally more exposed to this kind of dialogue and keener to repeat it when questioned about environment protection by researchers.

Respondents typically believed that the forest and its animals "will last forever," as both are "protected" by the National Park. However, the local villagers are doing nothing to guarantee ecosystem survival, and by extension ensuring their own wellbeing and livelihoods. In fact, they seem to believe that the National Park, as a protected area, will preserve the forest and its animals *per se*. The absence of a compensation plan or economic alternatives to dependence on forest resources dictates a continued dependence on these ecosystem services which appear to be under pressure from increasing population pressures.

Farming was the region's most important economic activity, as in the rest of Guinean territory (see Chapter 3). Men rely on farms– especially rice plantations – to feed their families and to trade fruit in order to produce some disposable income. This reliance on crops for subsistence and the production of cash surpluses explained why crop-raiding was seen in such a negative way. However, as previously said, chimpanzees are also believed to have the potential to bring progress and a better future to the villagers. This optimistic way of seeing the future might explain why men appeared to be more positive toward chimpanzees than were women (see Chapters 4 and 6). Men are expected to go inside the forest to hunt and to open fields in order to grow crops. Men are also sometimes responsible for looking after farms – especially vital cash-crops - to assure that crop-raiders do not steal their source of income. As a consequence, men might know more about the behaviour of chimpanzees then do women, who have a tendency to fear and flee from these primates (see Chapter 6).

Hunting was illegal, though men stated that they use snares to protect their farms from raiders. Apparently, using snares was perceived as a lesser infringement of anti-hunting legislation than was the use of guns. For conservation purposes, however, both are hazards to sustaining wildlife, especially for threatened or endemic species. The extensive usage of snares and nets to poach animals provides opportunities to have meat more often. Men did not openly mention the consumption of primate meat, though bushmeat seemed to be easier to obtain than was meat from livestock, which was rare, subject to religious restrictions and consumed for major celebrations only.

Men did not see the National Park as bringing benefits, although they appeared to have expectations that change would be positive. Men stated that the reserve was responsible for a deterioration in their welfare and livelihoods (e.g. greater malnutrition, increased crop-raiding, financial constraints due to loss of income). However, they remained optimistic regarding their and the Park's future, again probably due to their close relationship with the NGOs' work.

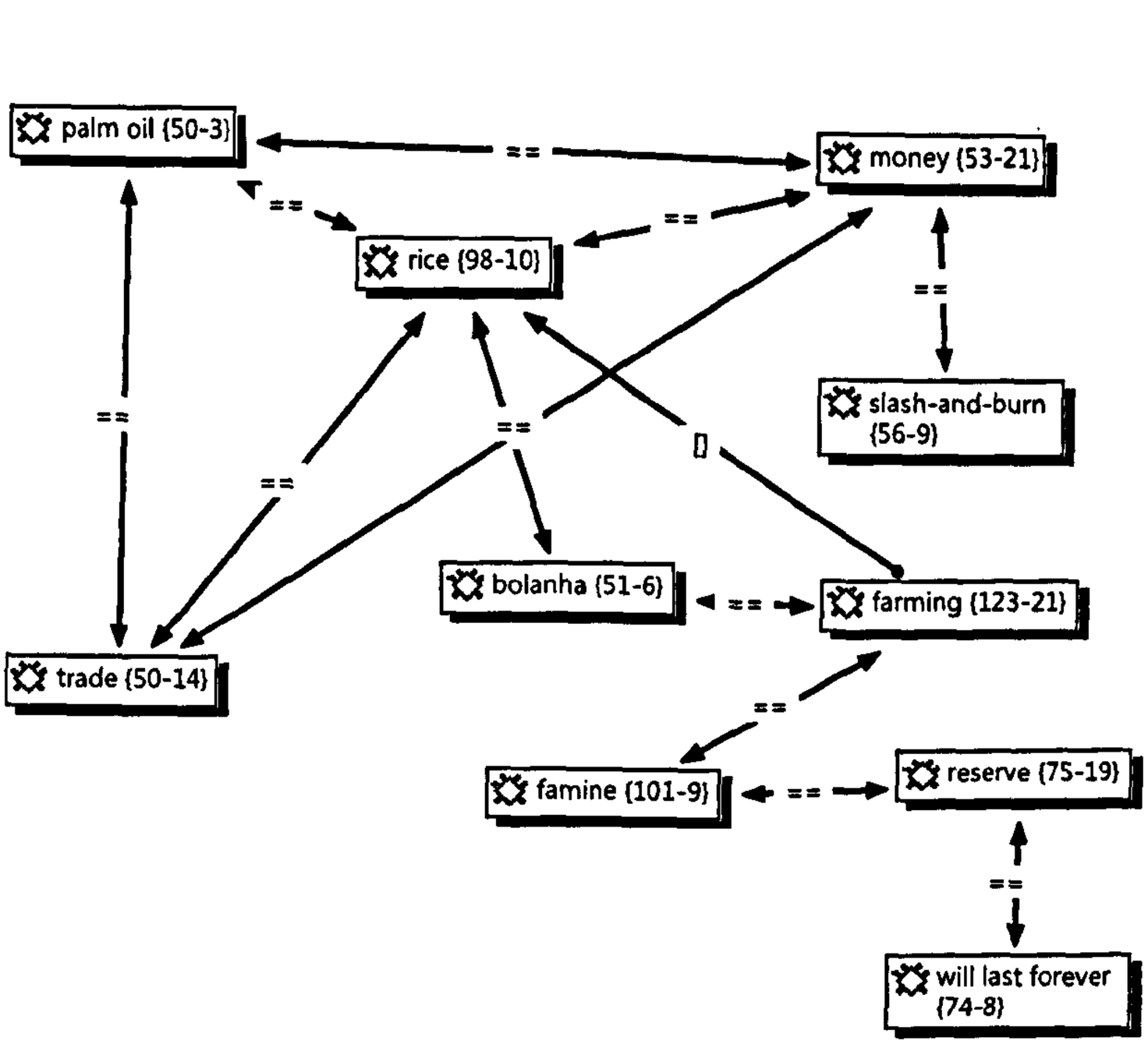

Figure 7.15: Ten most mentioned codes network from men's interviews.

7.5 Conclusions

While in Chapter 6, women self-reported as being totally unfavourable to the National Park and everything related with its establishment, during individual interviews men revealed themselves to be divided between the negative point of view and the positive views defended by the NGOs delegates. However, like women, men referred to the National Park as a problem regarding people's survival, since villagers were not allowed to grow their crops or to hunt inside the forest. The absence of a compensation plan was also pointed out as a serious constraint. However, men – probably due to their closer relationship with the NGOs' activities – held more optimistic opinions regarding the protected area and the animals living within it. During our conversations, men mentioned that the reserve and its fauna could bring progress and higher income to the villagers. Some animals – namely chimpanzees – were not perceived as intrinsically valuable individuals, but rather as animals able to be converted into profits. This perception might explain why women reported themselves to be substantially negative regarding wildlife – with the exception of gazelles – and while men were less rigid and more clear when asked to organize their sociozoologic scale (see Chapter 4). In addition, the ambivalence associated with chimpanzees illuminates the mixed-gender PCA results (see Chapter 5) that suggested that chimpanzees are not perceived as mainly "good" or mainly "bad", but mixed. Apparently, women are not responsible for chimpanzees' dubious sociozoologic status. Men are.

In summary:

- As predicted, and like women, men perceive their survival as dependent on the ecosystem services. Villagers relied on farming, hunting, fishing and other forest resources (e.g. timber, palm oil, water, etc.) to feed their families and obtain some disposable income in order to meet basic expenses, such as children's education, ensuring health and access to transport.

- Expectations regarding the future were not entirely pessimistic. It was true that men complained about the NGOs working in their region, but they believed that a compensation plan and economic alternatives would be implemented in the future. Eco-tourism was generally perceived as a positive mechanism for socio-economic or livelihood development Cantanhez region.
- At the present time, the establishment of the National Park was perceived of negatively, since it brought a new set of rules and limitations regarding the use and exploitation of its resources. Farming and hunting were no longer allowed within the protected area, which contains the resources upon which the villagers depend. The prohibition of poaching, according to the men, has resulted in expanding wildlife populations and exacerbated crop-raiding. Chimpanzees were mainly mentioned in the context of this problem. As previously mentioned, the men still believed that the future will bring progress and financial support.
- Despite all these daily livelihood constraints – malnutrition, crop-raiding, the National Park, financial limitations, etc. – men tended to be more positive than women, who were found to be negative and pessimistic about the protected area and its wildlife, especially chimpanzees.[34]

[34] See chapter 6 for further information.

CHAPTER 8 – SYNTHESIS

Plate 8.1. Children from Cadique Nalú (Cantanhez National Park).

This thesis aimed to assess Cantanhez National Park inhabitants' perceptions of the protected area and its wildlife, especially the endangered chimpanzee. At the present moment, no compensation plan or other management strategies are in use to mitigate human-wildlife conflict. In general, the establishment of the National Park brought a new set of rules and prohibitions, and as yet no tangible benefits to the villagers living inside its borders.

In general, this research project revealed some expected and some unexpected results in relation to the local people's perception of the animals that surround and interact with them, both positive and negative. In relation to the project aims to understand the basis of perceptions of wildlife and the protected area, the following major findings emerged:

i) The sociozoologic scale model built by Arluke and Sanders (1996), and adapted for this research, helped me to establish a model for my sample. As expected from the original model, animals positively perceived were those that do not compete or constitute

a hazard to humans. On the other hand, bad animals, such as hyaenas, were described as uncontrolled and competitors;

(ii) Primates were ranked lower than gazelles and higher than hyaenas in the sociozoologic scales mainly due to their human-like appearance (engendering positive perceptions) and to their crop-raiding behaviour (engendering negative perceptions). In general, primates were seen as responsible for the locals' livelihood constraints, both because they are protected by the National Park rules and because they steal or destroy food from farms during crop-raiding;

(iii) Villagers were dependent on the ecosystem services to feed their families and to earn some income so as to afford education and health care (Rose, 2002; Sicotte and Uwengeli, 2002). Agricultural activities were the basis of the village's economy. Therefore any challenges to these core activities from animals or conservation restrictions resulted in perceptions of risk and negatively;

(iv) Despite the negative attitudes and perceptions people expressed towards the National Park, locals believe that their future might be better. They expect their lives to become less difficult due to the implementation of an eco-tourism programme.

8.1 Implications of the major findings

The Guinean sociozoologic scale of Cantanhez, clearly divides the species into (i) "tame", considered good and (ii) "hazardous", considered bad (see Chapter 4; figure 8.1). In these two clusters of nonhumans, the tame are represented by gazelles, while the hazardous are represented by hyaenas. Gazelles never attack people or their farms; they are aesthetically appealing and highly edible. On the other hand, hyaenas attack people, especially children, they used to kill domestic animals, and they are unattractive and totally inedible.

In the midpoint of these well defined sociozoologic statuses for gazelles and hyaenas, we have primates. These nonhumans are neither good nor bad. Their human-like appearance and behaviour can contribute to positive attitudes towards them, though

their crop-raiding habits are sufficiently evident to make people to see them as pests. Chimpanzees – the conservation project's potential flagship species – lay exactly in this midpoint. Chimpanzees are considered humans' close relatives; however, they misbehave sufficiently enough to be perceived as a competitor for resources. They are described as astute thieves that know exactly when to raid and who they can confront if needed (i.e. women and children). Even though, since chimpanzees are seen as very similar to humans, their meat consumption is still a taboo. However, NGOs and Park authorities need to carefully consider if chimpanzees truly are a good flagship, since data suggest that attitudes towards this species are uniformly ambivalent.

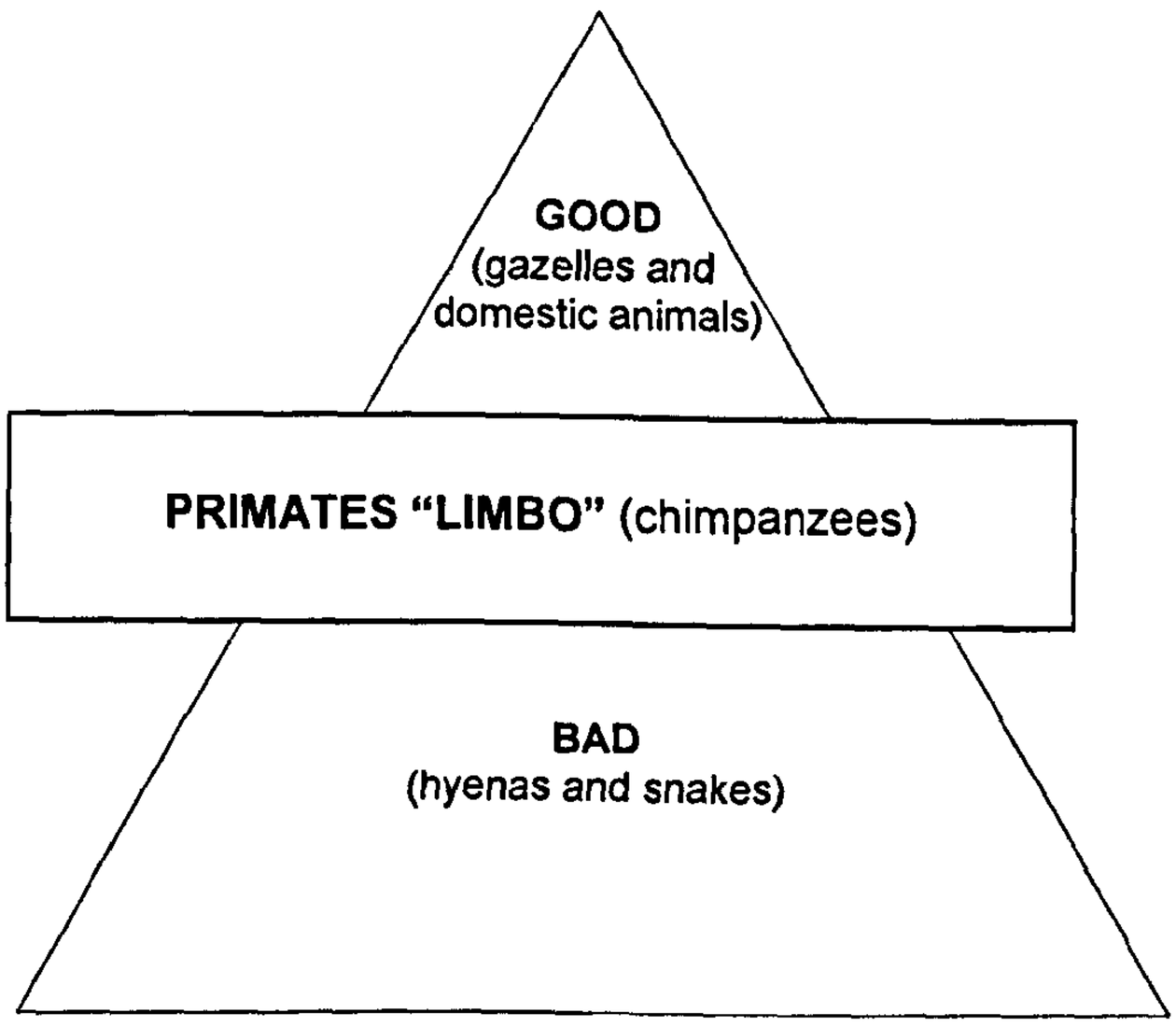

Figure 8.1: Cantanhez National Park sociozoologic scale adapted from Arluke and Sanders (1996) model. Bad animals lie at the bottom due to their low moral status and good animals at the top – closer to humans (also located at the top, but outside the model) – due to their submissive and predictable behaviour.

Secondly, gender and religion were revealed to be the two most important socio-demographic variables regarding the way respondents perceive and organize wildlife (Chapter 4).[35] As such, depending on gender and / or on religion, the model shown above can vary (figure 8.1). Women tended to feel more positively about domestic animals and

[35] Religion and ethnicity co-vary (see Chapter 5).

gazelles. These perceptions map onto the attributes that women believe are positive: harmless, pretty and edible. Since chimpanzees do not represent any of these characteristics, they are negatively perceived. As such, for women, chimpanzees would not reside in primate "limbo" category, but in the bad animals' layer. In addition, chimpanzees were described by women as dangerous animals that attack people while looking after farms. I could not corroborate this information, though there are rare episodes of chimpanzees attacking children and women in other parts of Africa (e.g. Reynolds, 2005; Hockings et al., 2010).

By contrast, men tend to perceive chimpanzees, and primates in general, more positively. This is not due to these species' intrinsic value, but is associated with the profit men can earn from hunting activities. In Bissau, for instance, primate meat is much appreciated and can be bought at a very high price in the market. It is also frequent to see men offering bushmeat to European people – mainly primates – in the road that goes from Cantanhez to the capital city. Chimpanzees are seen as profitable in a different sense. Although they are not edible, they are perceived as lucrative probably as a consequence of the researchers' interest in the species. Thus, according to the NGOs working in this area, the chimpanzees' survival in Cantanhez National Park potentially means "tourists" and "money". Men also appeared to be more positive about anthropomorphic characteristics than were women, specifically when it comes to choosing a nonhuman species as a substitute to their human condition. When questioned, men stated that they would choose to be a chimpanzee if they could no longer be human, while women preferred to be gazelles.

Differences due to religion were also found. Muslims (mainly Nalú people) and non-Muslims (Balanta people) have different sociozologic scales. Primates tended to be perceived as bad by Muslims, probably due to their raiding behaviour. Muslims are known for their fruit farms, including cashew plantations, and primates particularly raid these plantations. Non-Muslims appeared to be more tolerant regarding these species, possibly because they mainly grow rice in swamps, which was less attractive to primate raiders.

Although Muslims were shown to see primates negatively, they mainly would choose to be a chimpanzee if they could not be human. As such, they appeared to be more positively disposed to the anthropomorphic features of chimpanzees than were non-Muslims who were more eclectic in their choices. As for Christians and Jews, Muslims also believe that humans are superior to other living beings and, as such, are allowed to rule over them (Arberry, 1996; Arluke and Sanders, 1996; Serpell, 1996; Franklin, 1999; Nibert, 2002; Costa, 2004), probably that is why they feel more attached to anthropomorphic species.

I suggest that no homogeneous engagement with a conservation project should be expected in a diverse socio-demographic context like Tombali. The differences observed among the participants in my research, revealed that different strategies need to be considered in order to get locals involved in and positively engaged with the Cantanhez National Park's survival (Hill, 1998; Hambler, 2004).

Finally, my third major finding was related to the differences in how men and women perceive the National Park (Chapters 6 and 7). Assuming that gender is responsible for differences in the way some clusters of this population see the protected area and, particularly wildlife, can be risky. Some studies, across Africa, have defended the idea that there are many other variables contributing to the way men and women relate to conservation. Besides gender, age, status, lineage, access to land, power, education, wealth, among others influence attitudes and behaviours in scenarios like the one I studied (e.g. Gadd, 2005; Stringer et al., 2007). Despite these diverse influences, as discussed in Chapter 3, women living in developing countries like Guinea-Bissau are more vulnerable to extreme poverty than men (Ellis, 1999; Moser, 2007), mainly due to a lack of power, access to credit or benefits from conservation programmes (Mehta and Kellert, 1998; Lee, 2004; Chambers, 2007; Moser, 2007). African women tend to be less educated than men (United Nations Development Programme, 2006; see Chapter 3); they have lower social status; they seldom have access to or ownership of land; they are usually excluded from decision-making processes and, consequently, they are expected to play a submissive role in the community (Ellis, 1999; Moser, 2007). Men are, in general,

the ones in charge of finance, wealth and decisions. While it is possible that many other variables apart from gender contribute to the way people in Tombali perceive the National Park and its wildlife women appear to combine a number of those additional variables, all of which might be contributing to their negative attitudes towards conservation. During data collection, women never stated anything positive in relation to the protected area. The reserve establishment was seen as a major livelihood constraint, since it brought a new set of rules and prohibitions that were perceived as making their lives worse. All the risk factors identified in Chapter 3 were exacerbated by the presence of the protected area. The National Park, according to the women's testimonies, is responsible for their families' malnutrition due to a growing population of raiding animals. In addition, ever since the Park's establishment the villagers have been told that a compensation plan would reimburse people for their crop looses, but this has not yet happened. While women seemed to be concerned with their households' welfare on primarily a subsistence basis, men appeared to be more engaged with "capitalized" principles. They often mentioned money and profits from tourism as a future scenario and were revealed to have some awareness about the importance chimpanzees might have catalyzing growing the National Park economy. Males were also the only respondents that mentioned the unique Guinean fauna as a factor that could benefit the villagers from Cantanhez, in contrast to the women who perceive wildlife as a threat to people's wellbeing. As discussed above, different approaches are required to engage men and women with conservation practice (Hill, 1998), at least in this society.

8.2 Conservation psychology and conservation outcomes

Approaches from the disciplines of Psychology and Biology have long been intermingled in specific fields such as Ethology (e.g. Hinde, 1966; Jaynes, 1969; Rilling, 1993; Burghardt, 2009). For example, understanding primate behaviour, has had significant contributions from both fields (e.g. Byrne and Whiten, 1988; Zeller, 1991; Cheney and Seyfarth, 1992; Byrne and Whiten, 1997; Jaeggi, Burkart and Van Schaik, 2010). In the

field of environmental conservation, unfortunately melding the approaches from social sciences with those of ecology and biology is still in its infancy (but see Riley 2011). Although biologists agree that their research is not sufficient to fully prevent habitat destruction (Balmford and Cowling, 2006), an approach from the perspective of the psychology of conservation is not yet seen as necessary and, as a consequence, is far from being accepted as part of a multi-disciplinary task force.

Conservation, and particularly community-based conservation, can profit from greater cooperation with psychology. Environmental problems are mainly an outcome of human behaviour (Bonnes and Secchiaroli, 1995; Williams and Paterson, 1996; Bell and Greene 2001; Bones and Bonaiuto, 2002; Saunders, 2003; Clayton and Brook, 2005; Balmford and Cowling, 2006) and since behaviour is the focus of psychology, psychologists can usefully address environmental protection. Understanding the roots of unsustainable behaviour can be the key to better planning for effective conservation projects.

This research used basic psychological concepts (Chapter 1) and methods (Chapter 2) to assess the inhabitants' perceptions and attitudes towards the protected area at its wildlife, before the establishment of a formal management plan. As such, this research will provide important information on how NGOs and authorities in the region can organize the Park and its policies without violating villagers' expectations and beliefs and leading to low compliance and disenfranchisment. This kind of research is vital to the larger context of attempting to link local understanding to global actions: can we produce results that have significance for solving the immediate conservation problems as well as produce theoretical frameworks which can be applied to different regions with different problems. The use of the sociozoologic scale – a concept used mainly in sociology (Arluke and Sanders, 1996) – was applied here to understand if chimpanzees would represent a good flagship species for this National Park. The results of our study can be applied more widely. In most cases, decisions on flagships are based on the conservationists' points of view and not on the local inhabitants' feelings and attitudes

towards wildlife. A good flagship species is the one that is sufficiently charismatic to capture the public attention and attract funding to a region's conservation activities. For example in this region, gazelles better represent the positive dimension of wildlife and might make an excellent flagship (see, for example, the Arabian Oryx conservation project in Oman). If the elected species is competing with the locals for resources, conservationists should not expect people to gladly participate in conservation efforts. As a woman from our sample put it:

"Since the Park establishment that people feel that chimpanzees do everything they want with no punishment."

(Focus group 1, Iemberém)

Chimpanzee behaviour was associated with impunity, because they have the conservationist's (i.e. researchers, NGOs, governmental authorities, among others) protection. If people like me are protecting wildlife instead of the locals, why should they trust me and collaborate with my work? Research designed to understand these diverse perspectives and their social and cultural drivers needs to be incorporated more effectively into conservation and habitat management planning. The results of this thesis should help to emphasize both the limitations and methods for researching these social questions and to aid in the development strategies specifically to address the wider problems that can be identified.

Finally, the perspective of social sciences like sociology and anthropology is to see the human population as a whole. This "macro" way of seeing social, political, economic and cultural structures does not allow for an appreciation of how behaviour arises from individual perceptual idiosyncrasies. Since psychology is more focused on "micro" perspectives, more effective conservation efforts should be expected to result from a conservation psychology perspective, especially in this specific context, where biodiversity protection through locals' participation is urgent.

8.3 The future of conservation in Cantanhez

NGOs working in this region – e.g. *Acção para o Desenvolvimento* (AD) – have been trying to establish successful conservation programmes for quite a long time. Some initiatives to prevent people from destroying the remaining habitats, such as zoning (e.g. Terborgh and Peres, 2002), were attempted. Taking advantage of the fact that Nalú people traditionally divided the forest in areas that were totally protected and areas where some human intervention was allowed (Chapter 3; Temudo, 2009), AD people tried to create areas inside the Park that aimed for the same effect. However, this scheme to mitigate human impact did not work well, since local inhabitants did not appear to be willing to respect the NGOs decision about the use of these areas.

AD also started a limited ecotourism programme. While I was in the National Park in 2008, they built a set of "bungalows", waiting for tourists to arrive. However, ecotourism in this country is far from becoming a thriving economic activity, especially in Cantanhez. A tourist who would like to visit the Park would have to travel by car for at least 6 hours. There is no paved road for over half of the way (262 km). During the rainy season, floods and muddy pathways are the rule. Inside the Park there are no basic services such as a medical centre, electricity, water, sanitation and so on. Besides, chimpanzees – the flagship that tourists would be willing to photograph – are not habituated to human presence and live in the few dense patches of forest where visibility is low. In conclusion, ecotourism inside Cantanhez National Park – at least for now - is not capable of meeting tourists' expectations which are more easily met in many other countries across Africa.

AD has been telling villagers since 1990 that a compensation plan for crop losses will be in place "soon". According to the villagers' testimonies, that has not happened so far, which increases people's anxiety and lack of trust regarding the Park. Promising local inhabitants revenue that never comes, is not an effective tool to get community support (Ferraro and Kramer, 2002; Adams and Infield, 2003).

In conclusion, this protected area is a "paper park" (Terborgh and van Schaik, 2002), that apart from uncoordinated schemes to make it effective, is not accomplishing the aims that lay beneath its establishment. A few measures can be taken however:

(i) Law enforcement may be crucial and is urgent (Brockelman et al., 2002). Some laws already exist, though they are not efective due to a lack of policing. The Park has guards but they were recruited from inside its borders, which means that they are heavily exposed to local social pressures. In addition, their salary is low – if not inexistent – and no transportation or other services are provided for effective enforcement. Enforcement could better come from engagement with local inhabitants so as to obtain bottom-up compliance about resource use, forest protection and hunting restrictions. In the absence of such compliance, enforcement will fail.

(ii) Compensation schemes, if they are used at all, need to become real as soon as possible, at least while economic development from alternative livelihoods is not a certainty. If people depend on farming and other subsistence activities and crop-raiding is frequent, some form of reimbursement, insurance scheme or biodiversity stewardship payment to alleviate crop losses and to tolerate wildlife is important.

Compensation is problematic in that local inhabitants can become dependent on compensation and rules concerning compensation need to be fairly established and applied. Ideally, people also need to develop their own strategies to avoid crop-raiding (Osborn and Hill, 2005) – non-lethal methods are preferable – and thus to become independent from a compensation culture (Ferraro and Kramer, 2002; Nyhus et al., 2005; Thirgood, Woodroffe and Rabinowitz, 2005). The work of conservation organisations with a good understanding of raiders' behaviour and ecology is obviously fundamental to helping local people produce viable crop-raiding deterrence schemes (Hill, 2000; Lee, 2010; Strum, 2010). Linking the understanding of the people's activities and expectations with that of the raiders is the next step in this research.

(iii) Multiple simultaneous solutions are needed: raiding management techniques need to go with enforcement against illegal activities such as timber extraction, slash and

burn, or bushmeat hunting, NGOs and authorities need to work on new economic solutions to make local inhabitants less dependent on high risk farming and hunting. Eco-tourism might be a good solution, although it should be implemented simultaneously with other sustainable measures (Walpole and Thouless, 2005). However, other conservation programmes have found that economic development can be a threat to protected areas, since it attracts immigration and stimulates growth in unsustainable activities (Oates, 1999; Oates, 2002). As such, promoting alternative economic development outside the Park, in order to enable people to leave the reserve voluntarily, is crucial (Oates, 2002). Even so, infrastructure and competent employees, drawn from local populations, to receive tourists are still essential inside the protected area.

(iv) In the meantime, if NGOs are insistent on keeping chimpanzees as the reserve's flagship, much more work needs to be done in order to make people to feel more positively towards these primates. Changing attitudes is a difficult task (Oppenheim, 1986; Aiken, 2002; Albarracin, et al., 2005), but since we now understand the drivers of perceptions regarding this species, this goal should be easier to accomplish. We can suggest that if the level of conflict with chimpanzees can be managed, more positive perceptions should arise (Ferraro and Kramer, 2002; Nyhus et al., 2005; Thirgood, et al., 2005). Chimpanzees will be then seen as the reason why people will benefit from their presence, tourism revenues and other development funding.

(v) Finally, different programmes targeted separately at men and women should be implemented (Hill, 1998). Some women do not perceive conservation projects positively, especially when their livelihoods are at risk and their status in the society is low (Hill, 1998; Mehta and Kellert, 1998; Lee, 2004; Chambers, 2007; Moser, 2007). Women's empowerment programmes can help to ameliorate the situation (Flinton, 2003). Micro-credit, education, prenatal medical support, contraception, among other strategies, can be good allies in improving women's' lives, preventing explosive human population growth and eradicating extreme poverty. On the other hand, men appear to be more enthusiastic about conservation, but from an economic perspective. They know that chimpanzees can

be a source of income, which indicates that authorities and NGOs have to be especially cautious about creating unrealistic expectations. Messages associated with these primates that are broadcast in order to protect them more effectively, have to be carefully elaborated, since they can be misinterpreted and lead to unrealistic expectations (Chapter 7; Sicotte and Uwengeli, 2002). Environmental education programmes should go together with all other approaches and should be matched with the attitudes of the different clusters of the population (Hill, 1998; Hambler, 2004).

8.3.1 Guidelines for action

From the exploration of networks of attitudes, further specific considerations are as follows:

(i) Global and political economic or social contexts had little relevance for men's perceptions of their wellbeing and livelihoods. Attitudes for both men and women were rooted in local, village and individual family contexts. Conservation projects need to work at the level where people feel that it matters to them, where participants and their families' futures can be ensured.

(ii) New concepts and jargon (e.g. Tourist, Compensation) enter the lexicon of local inhabitants, and can indeed be used to foster positive conservation attitudes. However, common understanding of these terms needs to be reached before effective action or positive attitude change can be expected.

(iii) As a cautionary note, messages from conservation bodies can be incorporated into existing paradigms with unintended and negative outcomes: e.g. chimpanzees have a value as meat, a negative value as a crop pest and now can be considered to be gainfully exported to zoos as their value is seen as greater in a European context than in the local village context.

Chimpanzees in this region are extremely threatened due to human activities, both directed at them and at their habitats. This thesis has tried to uncover people's

perceptions of chimpanzees in order to understand their expectations about the future of this protected area. Improving local inhabitants' livelihood security needs to be addressed in conservation planning in order to sustain viable chimpanzee populations. If we do not take action to improve human development in this region, this important patch of forest will soon disappear. Achieving the equilibrium between conservation aims with sustainable development is now our major challenge.

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APPENDIX I – QUESTIONNAIRES

Social Perceptions about Nonhumans in Tombali (Guinea-Bissau, West Africa): a psychological contribution to the chimpanzee (*Pan troglodytes verus*) conservation

survey questionnaire

Survey nº: ____
Date: ___/___/___

I – Economic information:

1. Activities that are your household's main source of income: (WRITE DOWN THE THREE MOST IMPORTANT)

1st _____
2nd _____
3rd _____

2. Activities that are your household's main source of food: (WRITE DOWN THE THREE MOST IMPORTANT)

1st _____
2nd _____
3rd _____

3. Your most important activity: (TICK THE ONE WHERE THE SUBJECT SPEND MOST OF THEIR TIME)

a) Agriculture ___
b) Livestock ___
c) Fishing ___
d) Hunting ___
e) Commerce ___
f) Other? ___ Specify: _____

4. Which domestic animals do you (or your household) have? (WRITE DOWN THE THREE MOST IMPORTANT)

1st _____
2nd _____
3rd _____

5. Is your village part of the Cantanhez National Park?

a) Yes ___
b) No ___
c) Don't know ___

6. How do you feel about Cantanhez National Park?

a) Satisfied ___
b) Indifference ___
c) Unsatisfied ___
d) Don't know ___

6.1. Why? (CODE AFTERWARDS) _____
_____

II – Sociozoologic scale:

7. From all the animals living in the reserve, tell me:

7.1. The animal you most like to see: (CODE AFTERWARDS) _____

7.1.1. Why? (CODE AFTERWARDS) _____
_____

7.2. The animal you most hate to see: (CODE AFTERWARDS) _____

7.2.1. Why? (CODE AFTERWARDS) _____
_____

8. From the following animals, tell me: (SHOW PHOTOGRAPHS OF PRIMATES AND OTHER ANIMALS LIVING IN GUINEA-BISSAU, AND WRITE DOWN ONLY THE PHOTOS' ID NUMBERS)

8.1. 3 animals that are "good".	1st ___ 2nd ___ 3rd ___
8.2. 3 animals that are "bad".	1st ___ 2nd ___ 3rd ___
8.3. The 3 prettiest animals.	1st ___ 2nd ___ 3rd ___
8.4. The 3 ugliest animals.	1st ___ 2nd ___ 3rd ___
8.5. The 3 most intelligent.	1st ___ 2nd ___ 3rd ___
8.6. The 3 least intelligent.	1st ___ 2nd ___ 3rd ___
8.7. 3 edible animals. (HIDE THE DOMESTIC ANIMALS' PHOTOS.)	1st ___ 2nd ___ 3rd ___
8.8. 3 non-edible animals (animals that you would never eat, even if you were starving to death).	1st ___ 2nd ___ 3rd ___
8.9. The 3 animals that are similar to humans.	1st ___ 2nd ___ 3rd ___
8.10. The 3 animals that you see more often.	1st ___ 2nd ___ 3rd ___
8.11. The 3 animals that you see less often.	1st ___ 2nd ___ 3rd ___

9. If God would tell you that you could not be a human anymore, which of these animals would you choose to be? (ONLY PHOTOS OF NON-DOMESTIC ANIMALS) _____

10. Which of these animals you would not choose to be? _____

11. In your opinion, will the forest last forever?

a) Yes ___
b) No ___
c) Don't know ___ (SKIP TO QUESTION #12)

11.1. Why? (CODE AFTERWARDS) _____
_____

12. Do you think that the animals from the forest will last forever?

a) Yes ___
b) No ___
c) Don't know ___ (SKIP TO QUESTION #13)

12.1. Why? (CODE AFTERWARDS) _____
_____

III – Expectations about the future:

13. In your opinion, the establishment of an eco-tourism centre near your village would be:

a) Good ___
b) It would be the same ___
c) Bad ___
d) Don't know ___

13.1 Why? (CODE AFTERWARDS) _____
_____

IV – Personal data:

14. Gender:

a) Male ___
b) Female ___

15. Age (aprox.) ___

16. How many people does your household have?

a) Up to 5 ___
b) From 6 to 10 ___
c) From 11 to 15 ___
d) Over 15 ___

17. People living in your house are:

a) All family members ___
b) Family members and friends ___

18. How many children do you have?

a) None ___
b) Up to 5 ___
c) From 6 to 10 ___
d) From 11 to 15 ___
e) Over 15 ___

19. How many wives do you have? (IF THE SUBJECT IS A WOMAN: HOW MANY WIVES DOES YOUR HUNSBAND HAVE?)

a) None ___
b) One ___
c) Two ___
d) Over two ___ How many? _____

20. Did you attend school?

a) Yes ___
b) Attended a madrasah ___ (SKIP TO QUESTION #21)
c) Never attended school, but reads ___ (SKIP TO QUESTION #21)
d) Never attended school, but counts ___ (SKIP TO QUESTION #21)
e) No ___ (SKIP TO QUESTION #21)

20.1 How many years did you attend school?

a) Unfinished elementary school ___
b) Finished elementary school ___
c) Unfinished high school ___
d) Finished high school ___
e) University ___

21. How many people, living with you, attend(ed) school?

a) None ___
b) Up to 5 ___
c) From 6 to 10 ___
d) From 11 to 15 ___
e) Over 15 ___

22. Does your house have a tin roof?

a) Yes ___
b) No ___

23. Do you have a radio?

a) Yes ___
b) No ___

24. Do you have a hand lamp?

a) Yes ___
b) No ___

25. Do you have a bicycle?

a) Yes ___
b) No ___

26. Religion: (CODE AFTERWARDS) _____

26.1. Have you always been a follower of that religion?

a) Yes ___ (SKIP TO QUESTION #27)
b) No ___

26.1.1. When did you become a follower of that religion? (CODE AFTERWARDS) _____

27. Village: _____

28. For how long have you been living in this village?

a) Already born here ___ (SKIP TO QUESTION #29)
b) Living here since got married ___
c) Other? ___ Specify: _____

28.1 Where did you live before? (CODE AFTERWARDS) _____

29. Ethnic group: _____

Social Perceptions about Nonhumans in Tombali (Guinea-Bissau, West Africa): a psychological contribution to the chimpanzee (*Pan troglodytes verus*) conservation

males' interview

Interview nº: ____
Date: ___/___/___

I – Perceptions about the village:

1. Tell me about the things that worry you most.
LET THE SUBJECT ANSWER FREELY AND THEN GIVE HIM DIRECTIONS ABOUT THE FOLLOWING ITEMS:
(TICK THE ITEMS WHENEVER THE SUBJECT PROVIDES ENOUGH INFORMATION ABOUT EACH ONE OF THEM. RECORD THE ANSWERS.)

1.1 Tell me about your village's health problems. ☐

- What happens if you get ill? ☐

1.2 Tell me about your village's educational problems. ☐

1.3 Tell me about your village's political problems. ☐

II – Perceptions about the forest and the animals:

2. What do you know about the forest?
LET THE SUBJECT ANSWER FREELY AND THEN GIVE HIM DIRECTIONS ABOUT THE FOLLOWING ITEMS:
(TICK THE ITEMS WHENEVER THE SUBJECT GIVES ENOUGH INFORMATION ABOUT EACH ONE OF THEM. RECORD THE ANSWERS.)

2.1 Tell me about your feelings towards the reserve. ☐

- What do you know about the reserve? ☐
- What changes can it bring to your life? ☐
- Did it already bring changes? ☐
- Why? ☐

2.2 Tell me which forest resources used by your household (wood, charcoal, honey, palm oil, palm wine, medicinal plants, etc.). ☐

- Which of these resources is the most important? ☐
- Why? ☐

2.3 Does the forest bring you problems? ☐
(IF THE SUBJECT GIVES A "NO" ANSWER, SKIP TO QUESTION 2.4.)

- If so, what kind of problems? ☐

2.4 Bush survival: do you feel that the forest will last forever? ☐

- Why? ☐

- What people do in order to contribute to that? / What makes you believe that? ☐

3. Tell me about your feelings towards the animals that live in the forest.
LET THE SUBJECT ANSWER FREELY AND THEN GIVE HIM DIRECTIONS ABOUT THE FOLLOWING ITEMS:
(TICK THE ITEMS WHENEVER THE SUBJECT GIVES ENOUGH INFORMATION ABOUT EACH ONE OF THEM. RECORD THE ANSWERS.)

3.1 What do you feel about them? ☐

- Do they bring you problems? ☐
(IF THE SUBJECT GIVES A "NO" ANSWER, SKIP NEXT QUESTION.)

- If so, what kind of problems? ☐

- Do you feel that they will last forever? ☐

- Why? ☐

- What people do in order to contribute to that? / What makes you believe that? ☐

III – Economic information:

4. Tell me about the biggest problem with your livelihood.
LET THE SUBJECT ANSWER FREELY AND GIVE HIM DIRECTIONS ABOUT THE FOLLOWING CHECK LIST:
(TICK THE ITEMS WHENEVER THE SUBJECT GIVES ENOUGH INFORMATION ABOUT EACH ONE OF THEM. RECORD THE ANSWERS.)

4.1 What is your major activity? ☐

4.2 Major source of food. ☐

4.3 Major source of money. ☐

4.4 Apart from food, what are your major expenses? ☐

IV – Hunting and diets:

5. Diets:
LET THE SUBJECT ANSWER FREELY AND GIVE HIM DIRECTIONS ABOUT THE FOLLOWING CHECK LIST:
(TICK THE ITEMS WHENEVER THE SUBJECT GIVES ENOUGH INFORMATION ABOUT EACH ONE OF THEM. RECORD THE ANSWERS.)

- What do you eat most? ☐

- From all of those food supplies, which do you like to eat most? ☐
- Do you eat meat? (Which is your favourite? Is it difficult to get? How often can you eat it?)

☐

6. Hunting habits:
LET THE SUBJECT ANSWER FREELY AND GIVE HIM DIRECTIONS ABOUT THE FOLLOWING CHECK LIST:
(TICK THE ITEMS WHENEVER THE SUBJECT GIVES ENOUGH INFORMATION ABOUT EACH ONE OF THEM. RECORD THE ANSWERS.)

6.1 Do you hunt? ☐

6.2 How (effort, cost, bullets, nets, snares)? ☐

6.3 How often? ☐

6.4 Besides you, are there other hunters in your village? ☐

V – Expectations about the future:

LET THE SUBJECT ANSWER FREELY AND GIVE HIM DIRECTIONS ABOUT THE FOLLOWING CHECK LIST:
(TICK THE ITEMS WHENEVER THE SUBJECT GIVES ENOUGH INFORMATION ABOUT EACH ONE OF THEM. *RECORD THE ANSWERS.*)

7. What do you feel about the establishment of an eco-tourism centre near your village? ☐

   - Why? ☐

VI – Personal data:

(TICK THE ITEMS WHENEVER THE SUBJECT GIVES ENOUGH INFORMATION ABOUT EACH ONE OF THEM. *RECORD THE ANSWERS.*)

8. Gender:
   a) Male ☐
   b) Female ☐

9. Age (aprox.) ___

10. How many people live in your household? ___

11. People living in your house are:
   a) All family members ☐
   b) Family members and friends ☐

12. How many children do you have? ___

13. How many wives do you have? ___

14. How many years did you attend school? ☐

15. How many people, living with you, atten(ed) school? ___

16. Did any of them go to the city to study? ☐
   - Why did they decide to go? ☐
   - Do you think that they might come back? ☐
   - Why? ☐

17. Does your house have a tin roof?
   a) Yes ☐
   b) No ☐

18. Do you have a radio?
   a) Yes ☐
   b) No ☐

19. Do you have a hand lamp?
   a) Yes ☐
   b) No ☐

20. Do you have batteries?

a) Yes ☐

b) No ☐

21. Do you have a bicycle?

a) Yes ☐

b) No ☐

22. Do you have a watch?

a) Yes ☐

b) No ☐

23. Do you have a mosquito net?

a) Yes ☐

b) No ☐

24. Do you have a mobile phone?

a) Yes ☐

b) No ☐

25. Do you have Nike shoes?

a) Yes ☐

b) No ☐

26. Do you have a gun?

a) Yes ☐ What kind of gun? _____ Why do you have a gun? ☐

b) No ☐

27. What is your religion? _____

27.1 Have you always been a follower of that religion?

a) Yes ☐ (SKIP TO QUESTION #28)

b) No ☐

27.2 When did you become a follower of that religion? _____

28. Tabanca: _____

29. How long do you live in this tabanca?

a) Already born here ☐ (FINISH INTERVIEW)

b) Living here since got married ☐

c) Other? ☐ Specify: _____

29.1 Where did you live before? _____

30. Ethnical group: _____

Social Perceptions about Nonhumans in Tombali (Guinea-Bissau, West Africa): a psychological contribution to the chimpanzee (*Pan troglodytes verus*) conservation

Focus groups script

Focus group nº: ____
Date: ___/___/___

I – Perceptions about the tabanca (village):

1. Tell me about the things that worry you most.
LET THE SUBJECTS ANSWER FREELY AND THEN GIVE THEM DIRECTIONS ABOUT THE FOLLOWING ITEMS:
(TICK THE ITEMS WHENEVER THE SUBJECTS GIVE ENOUGH INFORMATION ABOUT EACH ONE OF THEM. RECORD THE ANSWERS.)

1.1 Tell me about your village's health problems. ☐

- What happens if you get ill? ☐

1.2 Tell me about your village's educational problems. ☐

II – Perceptions about the forest and the animals:

2. What do you know about the forest?
LET THE SUBJECTS ANSWER FREELY AND THEN GIVE THEM DIRECTIONS ABOUT THE FOLLOWING ITEMS:
(TICK THE ITEMS WHENEVER THE SUBJECTS GIVE ENOUGH INFORMATION ABOUT EACH ONE OF THEM. RECORD THE ANSWERS.)

2.1 Tell me about your feelings towards the reserve. ☐

- What do you know about the reserve? ☐
- What changes can it bring to your life? ☐
- Did it already bring changes? ☐
- Why? ☐

2.2 Tell me which forest resources used by your household (wood, charcoal, honey, palm oil, palm wine, medicinal plants, etc.). ☐

- Which of these resources is the most important? ☐
- Why? ☐

2.3 Does the forest bring you problems? ☐
(IF THE SUBJECT GIVES A "NO" ANSWER, SKIP TO QUESTION 2.4.)

- If so, what kind of problems? ☐

2.4 Bush survival: do you feel that the forest will last forever? ☐

- Why? ☐

- What people do in order to contribute to that? / What makes you believe that? ☐

3. Tell me about your feelings towards the animals that live in the forest.
LET THE SUBJECT ANSWER FREELY AND THEN GIVE HIM DIRECTIONS ABOUT THE FOLLOWING ITEMS:
(TICK THE ITEMS WHENEVER THE SUBJECT GIVES ENOUGH INFORMATION ABOUT EACH ONE OF THEM. RECORD THE ANSWERS.)

3.1 What do you feel about them? ☐

- Do they bring you problems? ☐
(IF THE SUBJECT GIVES A "NO" ANSWER, SKIP NEXT QUESTION.)

- If so, what kind of problems? ☐

- Do you feel that they will last forever? ☐

- Why? ☐

- What people do in order to contribute to that? / What makes you believe that? ☐

III – Economic information:

4. Tell me about the biggest problem with your livelihood.
LET THE SUBJECT ANSWER FREELY AND GIVE HIM DIRECTIONS ABOUT THE FOLLOWING CHECK LIST:
(TICK THE ITEMS WHENEVER THE SUBJECT GIVES ENOUGH INFORMATION ABOUT EACH ONE OF THEM. RECORD THE ANSWERS.)

4.1 What is your major activity? ☐

4.2 Major source of food. ☐

4.3 Major source of money. ☐

4.4 Apart from food, what are your major expenses? ☐

IV – Hunting and diets:

5. Diets:
LET THE SUBJECT ANSWER FREELY AND GIVE HIM DIRECTIONS ABOUT THE FOLLOWING CHECK LIST:
(TICK THE ITEMS WHENEVER THE SUBJECT GIVES ENOUGH INFORMATION ABOUT EACH ONE OF THEM. RECORD THE ANSWERS.)

5.1 What do you eat most? ☐

5.2 From all of those food supplies, which do you like to eat most? ☐

5.3 Do you eat meat? (Which is your favourite? Is it difficult to get? How often can you eat it?) ☐

6. Hunting habits:
LET THE SUBJECTS ANSWER FREELY AND GIVE THEM DIRECTIONS ABOUT THE FOLLOWING CHECK LIST:
(TICK THE ITEMS WHENEVER THE SUBJECTS GIVE ENOUGH INFORMATION ABOUT EACH ONE OF THEM. RECORD THE ANSWERS.)

6.1 Are there hunters in your village? ☐

6.2 How often do they hunt? ☐

6.3 What animals do they hunt? ☐

6.4 What do they do with the animals? ☐

V – Expectations about the conservation programme:
LET THE SUBJECTS ANSWER FREELY AND GIVE THEM DIRECTIONS ABOUT THE FOLLOWING CHECK LIST:
(TICK THE ITEMS WHENEVER THE SUBJECTS GIVE ENOUGH INFORMATION ABOUT EACH ONE OF THEM. RECORD THE ANSWERS.)

7. What do you feel about me? ☐

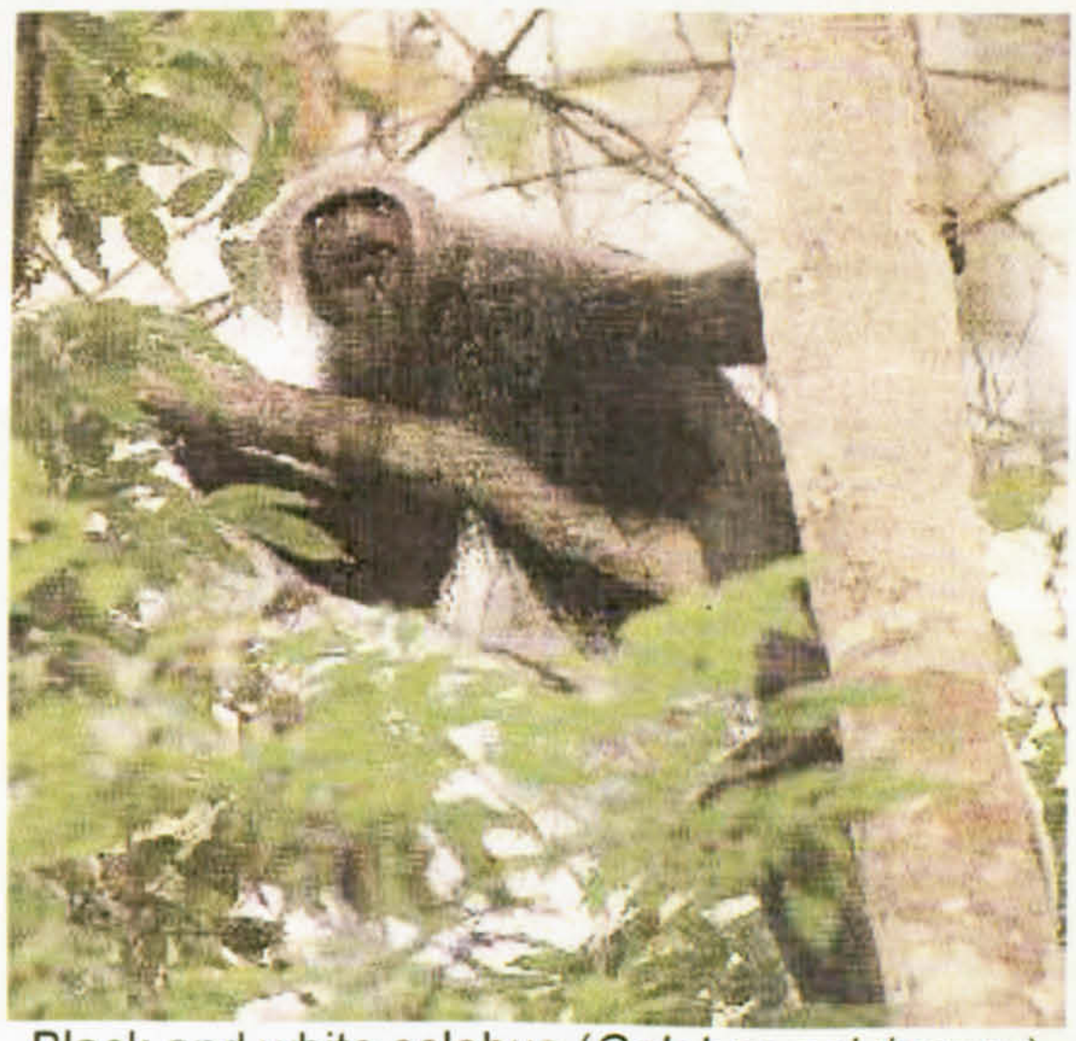
7.1 What do you feel about my work? Why? ☐

VI – Focus group data:
(TICK THE ITEMS WHENEVER THE SUBJECT GIVES ENOUGH INFORMATION ABOUT EACH ONE OF THEM. RECORD THE ANSWERS.)

8. Religion(s): _____
9. Village: _____
10. Ethnic group(s): _____
11. Number of women attending the meeting: _____

APPENDIX II - PHOTOS OF ANIMALS USED DURING DATA COLLECTION

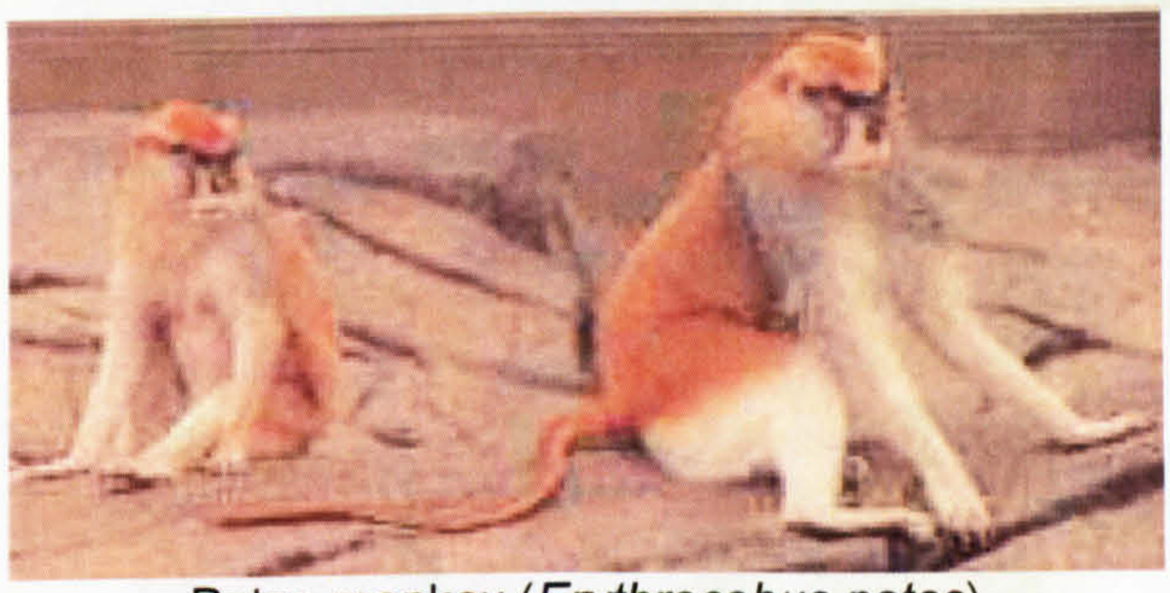
Chimpanzee (*Pan troglodytes verus*)



Black and white colobus (*Colobus polykomus*)

Mona monkey (*Cercopithecus (m.) campbelli*)

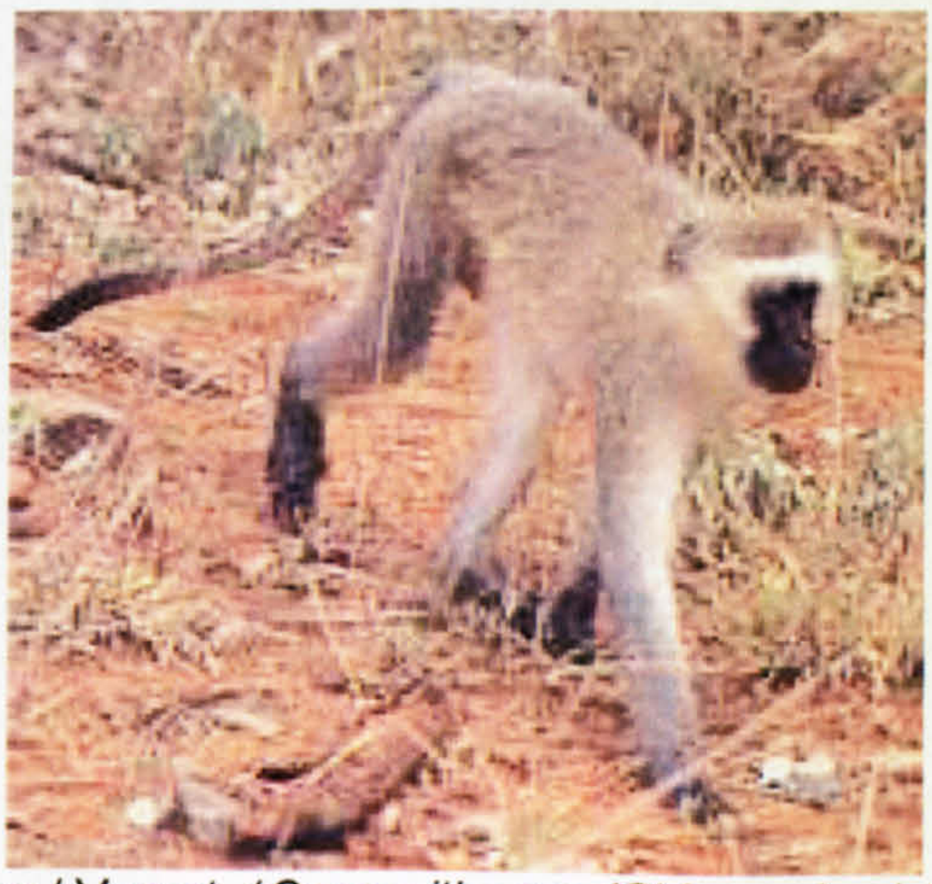
Baboon (*Papio (h.) papio*)



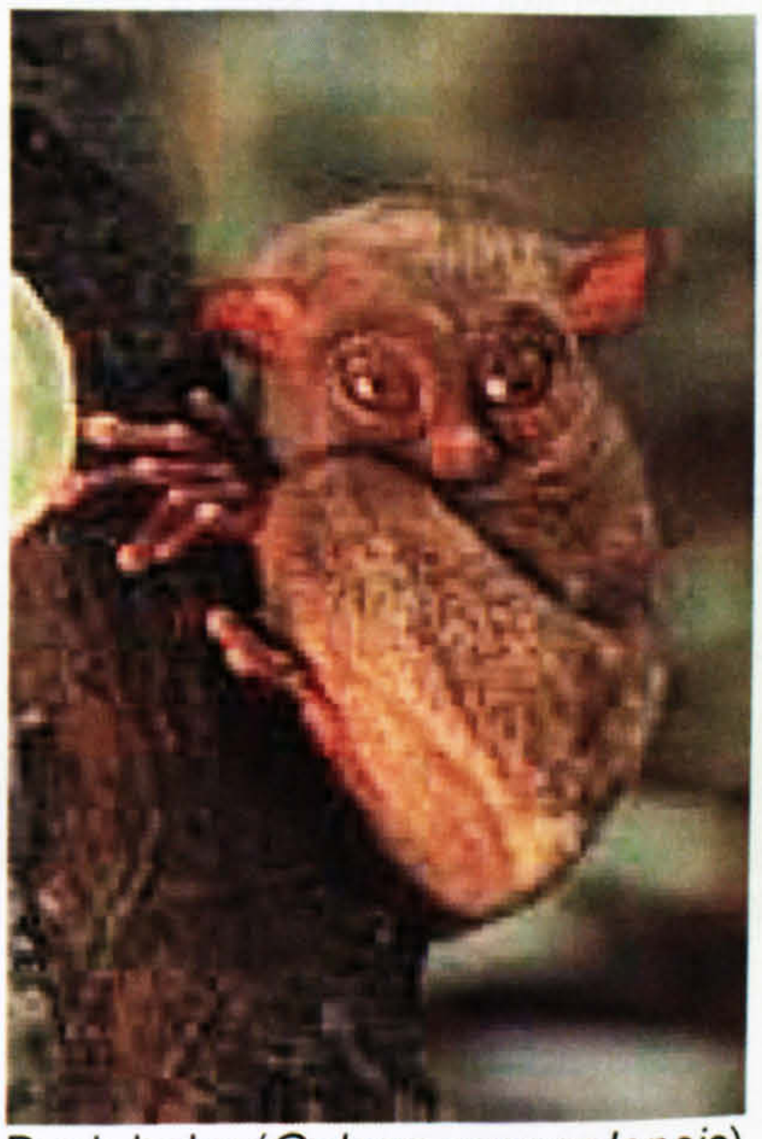
Patas monkey (*Erythrocebus patas*)

Red colobus (*Procolobus badius temminckii)*

Sooty mangabey (*Cercocebus atys*)



Grivet monkey / Vervet (*Cercopithecus (Chlorocebus) (a.) sabaeus*)



Bush baby (*Galago senegalensis*)

Putty-nosed monkey (*Cercopithecus nictitans*)

Lesser spot-nosed monkey (*Cercopithecus (c.) petaurista*)

Capuchin monkey (*Cebus capucinus*)

Abyssinian ground-hornbill (*Bucorvus abyssinicus*)

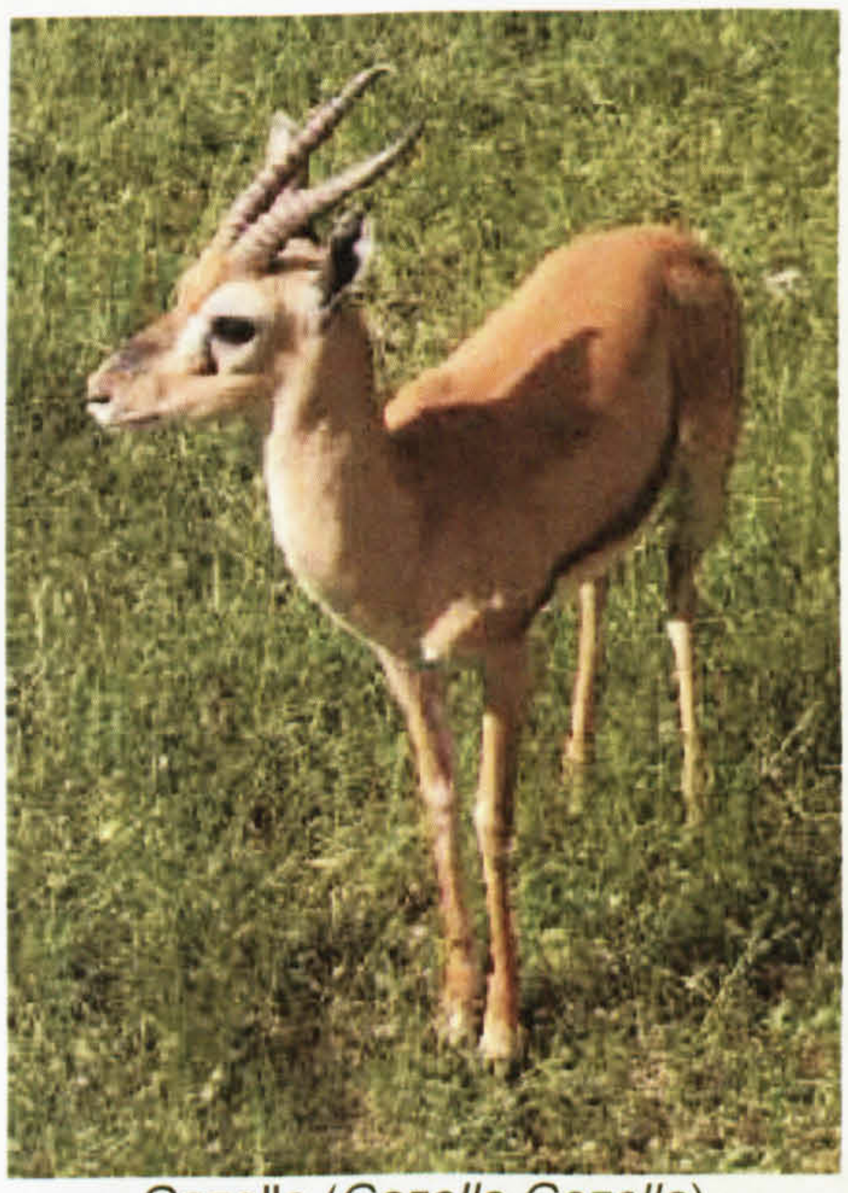
Mudskipper (*Periophthalmus argentilineatus*)

Turtle (*Kinixys belliana nogueyi*)

Butterfly (*Brephidium* species)

Purple glossy starling (*Lamprotornis purpureus*)

Roan antelope (*Kobus ellipsiprymus unctuosus*)



Gazelle (*Gazella Gazella*)

Snake (*Pyton sebae*)

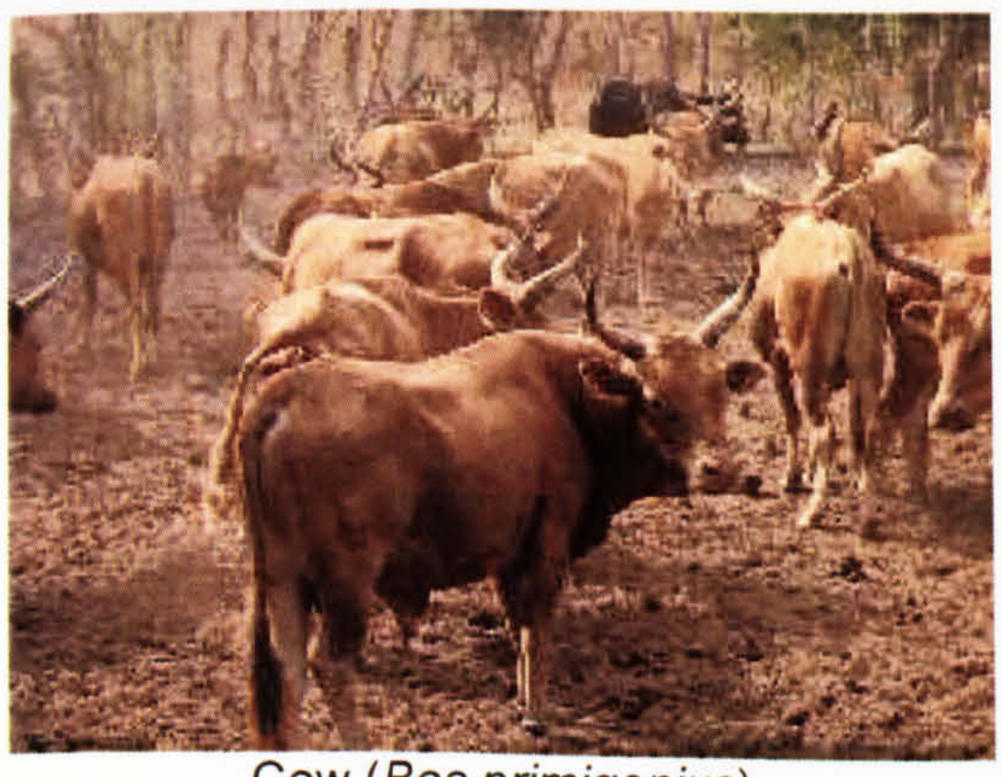
Pangolin (*Manis tetradactyla*)

Hyena (*Crocuta crocuta*)

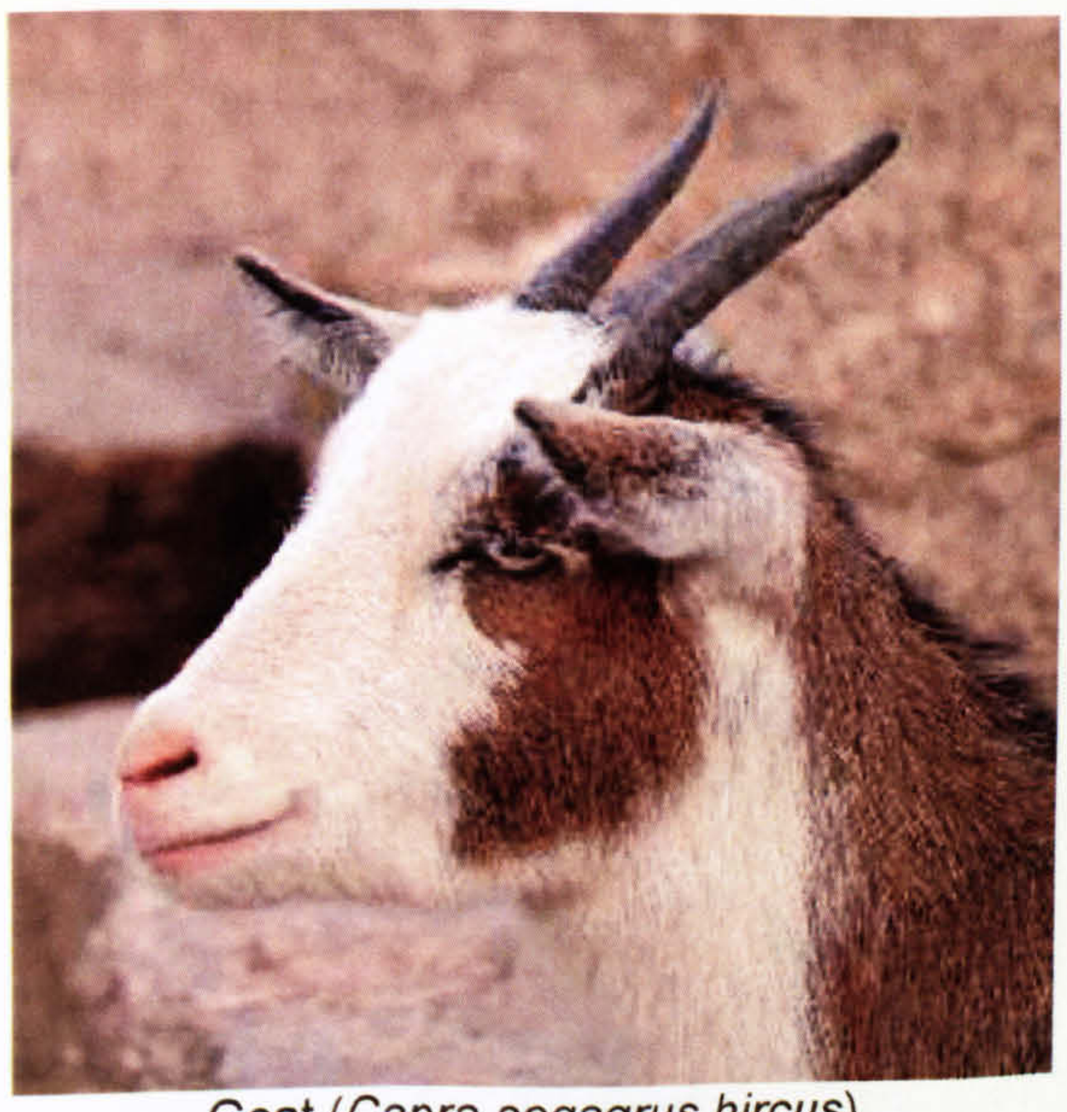
African honey bee (*Apis mellifera scutellata*)

Pig (*Sus scrofa scrofa*)

Chicken (*Gallus gallus domesticus*)



Cow (*Bos primigenius*)



Goat (*Capra aegagrus hircus*)