

Shape-shifting nature in
a contested landscape in
Guinea-Bissau

Joana Vaz de Sousa

Department of Social Sciences
Oxford Brookes University

Thesis Submitted in Partial Fulfilment of the
Requirements of the Award of Doctor of
Philosophy

September 2014

Abstract

Studying people and wild animals based only on their strict and present-day interactions is not enough to develop a comprehensive understanding of social constructions of animal species. People encounter other species (and other people) from within particular historical, social, ecological and economic settings. In 13 months of fieldwork, I adopted a multi-disciplinary perspective, using qualitative ethnographic tools alongside quantitative ecological and interviewing approaches to seek for an in-depth understanding that provides access to multiple views about nature and nature conservation. In southern Guinea-Bissau, space and its history, magic and religion, changes in the landscape and environment, local livelihoods and trade, as well as local relations of power for accessing resources, all shape the social and cosmological terrain of the interactions between people and other living and non-living things. On the one hand, magical territories, the role animal figures play in witchcraft, local knowledge and its management, all portray nature as part of society, both as an element and an actor in society. On the other hand, when nature conservation initiatives based on fines and fences are emphasised, the social appropriation of nature envisions people and nature as separate, even antagonistic entities that negotiate each other's existence. Land is the most important component of livelihoods as it is tightly connected to labour allocation and knowledge exchange. Therefore, by constraining people's access to land, nature conservation policies are largely seen as affecting local people's ability to secure their livelihoods. Consequently, constraints and benefits bestowed by conservation are negotiated locally through complex mechanisms of storytelling, witchcraft, meetings, and protests. These all play a role in challenging standing agreements, as well as expressing social tension and marking out morality. The chimpanzee, the flagship species of Cantanhez National Park, appears as a multi-faceted character capable of shape-shifting into various forms and signifiers that challenge existing power asymmetries, including those inherent within local nature conservation.

Key-words: nature-society, cosmology, livelihoods, risk, witchcraft, nature conservation

Acknowledgements

First, I am particularly grateful to my supervisors Prof. Catherine Hill and Dr. Andrew Ainslie for their support in this interdisciplinary venture. I am thankful for your availability for my emails and meetings, for being supportive and critical - I have learnt a great deal from you. I also acknowledge Ana Luísa Luz, Diana Alcântara and Eva Medida for your appeasing friendship. I embrace Jose Zaino for had made of my life a more beautiful one during these years. Manuel Bívar, for the hours and hours of conversations and laughter. Marina Temudo, for your support and conversations. I am thankful to Joost van Schijndel who received me in the Boé. In Bissau, I am thankful to Sara Guerreiro, Aliu Ture, Susana Gomes, David Afonso, Isabela, Jaime, Luana, Iaia Sambo, Ilda, Victor Puerta, Patrício, Pepas, Bendamim Indec. Samentha Goesthals, Kian and Can Çinar, thanks for all we have been sharing during this period. Pedro Branco, Diana Alcântara, Leonor Almeida, Alessandro Jedlowski, Ana Luísa Luz have assisted me with English editions to preliminary versions of the chapters, thank you all. Finally, I thank the proof-readers of this dissertation, Margaret Orlowsk, Yan Shaw and Jane Ward. My profound acknowledgement to my two mothers and fathers, São e Cláudia, Zé e Nuno.

My deepest appreciation for the field assistants of this research in the Boé Umaru and Amadu Sadjo Colubali and in Cantanhez Mamadu Cassamá, Djibi Indjai, Ansomane Dabo, Amara Djaló, Quecuto Djalo; as well as for the people who received me in their houses, Mariama Djaló, Auá Sané and Abu Cassamá, Mamadu Cassamá and Satã Cassamá; Djibi Indjai and Assato Camara; Iaia Camara, Fernando Dafa, Zé Dju and Maria, Saidu Kuiaté, Samba Camara, Bucari Cassama.

I am also thankful to the following institutions Cabasane Biteraune, Fundação para Ciência e Tecnologia (SFRH/BD /45109/2008), Rufford Small Grants, Primate of Great Britain, IBAP, Dari di Bo, Chimbo, Projecto Dari.

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List of Acronyms

AWF - African Wildlife Foundation

EU – European Union

IBAP – Institute for the Biodiversity and Protected Areas

INEP - National Institute of Studies and Research

IPCC - Intergovernmental Panel on Climate Change

IUCN - International Union for Conservation of Nature

NGO – Non-Governmental Organisation

NATO - North Atlantic Treaty Organization

PAIGC - African Party for the Independence of Guinea-Bissau and Cape Verde

UNEP - United Nations Environment Programme

UNESCO - United Nations Educational, Scientific and Cultural Organization

UREC - University Research Ethics Committee

WWF – World Wildlife Foundation

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1. A natural bind to society

People are part of nature and nature exists in people's bodies, behaviours and perceptions. At the same time, the meanings attributed to nature result from social processes that constantly re-create nature, both physically and conceptually. Nature conservation is only one outcome of a social construction of nature – one which has specific goals for our physical surroundings. The Cantanhez National Park, forthwith referred to as Cantanhez, is a peninsula that includes smaller forested peninsulas entrenched by sea canals. Travellers and tourists are attracted by the advertised northernmost patches of dense forests in West Africa that provide shelter for a population of chimpanzees, a wild animal that has become as famous to tourists as the peninsula they inhabit. This thesis analyses the practice of nature conservation in the Cantanhez National Park, in the southwest of Guinea-Bissau, by examining local people's views about nature, animals and nature conservation. This analysis involves the study of human-animal physical interactions and the social representations of wild animals as well as the physical and immaterial spaces shared between them and humans. All these provide a measure of conflict and coexistence in a place where nature conservation is only one among several ways of seeing, defining and valuing nature.

In Cantanhez, the green surroundings of a village are locally defined as bush. It is the closest word in Kriol¹ for the European understanding of 'nature', although there are considerable differences between them. The term 'bush' has multiple meanings and is context dependent. In Cantanhez, for local people, the bush includes forests, farms, fallows, savannahs, and several edge spaces. In the larger cities of Guinea-Bissau, all of Cantanhez National Park is referred to as 'bush', including the villages. Indeed, in the capital, the rest of the country is referred to as bush. Bush is a relative term used to define a place more covered with vegetation and/or more isolated than the one taken as

¹ Kriol is the *lingua franca* in Guinea-Bissau. See Chapter 2 for more information on its orthography and other local languages.

reference. In Cantanhez, bush is a flexible concept that may or may not encompass people, but often includes highly humanised spaces, like farms and fallows.

In a lifetime, one witnesses cycles of forest-farm transitions across the landscape and sees places where forest has overtaken abandoned villages and the bush has engulfed domestic trees. People experience and influence both short and long-term ecological transformations. The contrast between the wild and the domestic is indistinct, hazy: all beings, including people, live, exist and move between spaces that at a certain moment show more-or-less evidence of human presence. As if this is not enough to challenge the nature-society dichotomy, one element is even able to shape-shift into another, and both spirits and people can appear as bush-like elements. In the local people's narratives, everyone is more or less attached to the bush depending on the context one is portraying in a certain stance or narrative. In summary, bush, in Kriol *matu* (kl²), can simultaneously refer to a type of dense and dark forest, can characterise a condition (that of being from the bush), or it may correspond to a cosmological or magically feared element.

The bush is not only wilderness because it also encompasses farming and human activities; it is a place of encounter, confrontation and regeneration. This study uses 'bush' in the sense that this term refers to a social-ecological landscape that corresponds to a dynamic, complex and symbolic physical and social place that varies in size and quality. It examines how the local concept of bush collides with that of nature as it is understood within conservation science.

The national park has been divided into 'forests to farm' and 'forests to conserve' and has had hunting prohibitions implemented, all of which has led to the appearance and rearrangement of forms of political claim and action. The immediate local expressions of discontent are incorporated into narratives about wildlife, farms and forests. People's reports of wildlife are shaped in various ways: these can correspond to naturalistic descriptions of features and behaviours, or reveal magical interpretations connected to people's lives, or disclose political criticism about nature conservation. In essence, my goal is to examine the representations of tension and conflict in the local narratives about wildlife, forests and farms and interpret them within the context of conflicting people-people interactions. In addition, my research analyses the construction and reproduction of the local knowledge and political agency

² Abbreviation for Kriol. Kriol is the *lingua franca* in Guinea-Bissau. See Chapter 2 for more information on its orthography and other local languages.

of local institutions and stakeholders as a form of coping, challenging and melding with the agenda and the concepts of nature conservation. The research output is an ecologic, historic and socially embedded understanding of the bush and its confrontation and alignment with nature conservation.

The current study is interdisciplinary as certain sections of the research follow an ethnographic approach, while others result from ecological quantitative assessments. This first chapter frames the broader debate concerning interdisciplinarity in nature conservation today and discusses the social and the natural sciences in the nature-society boundary. I proceed by providing a historical overview of nature conservation strategies and goals over the last century and then discuss the policies and criticisms that have emerged in the last three decades (1980s-2010s) about the relationship between poverty (alleviation) and nature conservation. Next, I introduce the subject of people-wildlife interactions in forest-farming landscapes, in Guinea-Bissau and abroad, and explain how these studies have informed nature conservation and criticised paradigms. Finally, a short section presents the conceptual framework of my research approach and provides an overview of the chapters of this study.

For this research, interdisciplinarity brought complexity, detail and subjectivity into the body of analysis. This study argues in favour of bringing together the methods and approaches of the social and natural sciences into contexts of research, like that of nature conservation. In addition, the importance of individual interdisciplinary research softens the structure of the academic/professional self that is constructed during a linear academic/institutional acquaintance. The long-term experience of doing both ethnography and ecology confronted me with contradictions, conflicting paradigms and disciplinary controversies, and the exercise of trying to make sense of these required me to follow different disciplinary perspectives. Missing the complexity of local spaces and lacking the time or the will to question one's paradigms may result in oversimplification and generalisation, which renders the scholar unable to address the local problems in nature conservation.

1.1 The disaffection of natural and social sciences in nature conservation literature

Nature conservation is a multidisciplinary subject and although it remains too often trapped in ecology or biology, it has much to do with anthropology and

geography. Ecology is a broad field of knowledge that aims to explain the complexity within networks of exchange and processes of change in a physical space that includes non-living and living beings, including humans. However, multidisciplinary fields like human ecology or environmental anthropology are still more often associated with the social sciences than the environmental/ecological sciences and/or nature conservation.

Crawford Holling's 1973 paper, '*Resilience and stability of ecological systems*', marked a transition in theoretical ecology studies, which started to encompass change and human-influence as part of ecological processes. This marked the beginning of a different ecological paradigm that argued that "natural, undisturbed systems are likely to be continually in a transient state; they will be equally so under the influence of man" (Holling 1973:2). This recognition of an ever-evolving environment seems incompatible with nature conservation's rationale, which assumes that there is something that needs to be maintained with certain features and defended from human disturbance. John Robinson, working for the World Wildlife Foundation (WWF), says that "from the beginning, we recognised that Conservation Biology is a goal-oriented discipline and that the goal is defined by conservation values and not determined scientifically" (2006:660,661). Notions, methods and outcomes of ecology have been used as scientific supports for nature conservation organisations who work to "save the planet" (Whatmore and Thorne 2000). However, ecology as a discipline should not be reduced to its contextual alignments with nature conservation goals. The abbreviated version of one of the first definitions of ecology was that of Haeckel in 1866 who defined it as the "household of nature". Later, Friederichs portrayed it as the "science of the living beings as members of the whole nature" (1958:154). The contemporary definition of ecology is tightly connected to the concepts of 'system' and 'evolution'; it emphasises direct observation as a method and privileges the notion that "nature can be directly experienced" (Keller and Golley 2000:10). None of these definitions are drawn from nature conservation, and ecology should not be reduced to a branch of nature conservation.

1.1.1 Biology, anthropology and the nature-society division

Biologists value animal species as taxonomic and living elements relevant for their own sake. In conservation discourse, wild animals are portrayed as animal-

fellows that share several evolutionary features and social behaviours with humans. Together with attributes of rarity (Wikramanayake et al. 1998), the human-animal similarities are often used as discursive arguments for providing animals the rights of survival and protection through nature conservation initiatives. For example, primatologists are known for having a considerable emotional bond with the animals they study and want to protect (Sá 2006, Vitale 2010). Nature conservation programmes that are frequently translated into the media express these emotive attachments (see for example, the news about the reintroduction of an orphan gorilla into the wild in mongabay.com 2013). This humanisation of animals put forward by conservationists is then similar to an ontological view that challenges the nature-society division. The idea of proximity between humans and non-humans is, however, antithetical to the conventional nature conservation strategies of separating animals from people, wilderness from culture, and nature from society. The current paradigm holds that the best nature is the one that is safeguarded from human influence. In the words of Campbell, this turns the environment into a “sacrosanct domain of non-relationship” (2005:311). Ironically, in conventional nature conservation, arguments of proximity serve in the end to divide people and nature physically, as if a theoretical proximity would require their physical dissociation.

On the contrary, social anthropologists often criticise the dichotomy of nature and society as advocated by the natural sciences, and point out that this is not compatible with other people’s notions of the cosmos. Many studies provide thick descriptions of peoples that do not perceive nature and society as distinct components of reality (Douglas 1970, Descola 1994, Ellen 1996, West 2005). Ironically again, social anthropologists are the ones who highlight the distance between human societies and cultures and those of some animal species, an idea that biologists espouse within their field and brings humans and non-humans closer (McGrew 1992). As expressed by the social anthropologist Ingold (1990:201), “We like to picture ourselves as animals plus. And the plus factor turns out of course to be that common essence, the ‘capacity for culture’, whose diverse manifestations furnish anthropology with its subject matter” (:210). Or, as analysed by Weiss (1973:1389): “Tylor restricted culture to mankind. Ever since, there has been a pervasive understanding in anthropology (and elsewhere) that, whatever culture is, it is limited to the human species”. For many social anthropologists, humans and animals are distinct to such a degree that the terms used to define human societies should not be used to define the animal existence.

Recently, the social anthropologist Anna Tsing has criticised this view by asking “how did anyone ever come up with the idea that non-humans are not social?”, and added:

Anthropologists study things as gifts, as commodities, as signs, and as tools. But all of these are human projects for being with things. None allow things to have their own socialities (Tsing 2013:33).

Nevertheless, for social anthropologists, the difference between what it means to be human and non-human does not mean that they should be kept apart. Social anthropologists reiterate that people are part of nature, nature cannot be detached from its socialisation, and nature conservation is a social process that affects people’s lives. The boundary between nature and society “remains a contested interface” (Pálsson 1996) and several authors have contributed to this debate (Ellen 1982, Ingold 1992). It is no longer generalised as an opposition, and as Büscher and Igoe (2013:2) state, “humans construct the very natures that in turn influence their own (material and discursive) realities”. However, regarding this matter, there is much contradiction within and among disciplines and this makes interdisciplinary dialogues in nature conservation difficult, as both anthropology and biology are, in different ways, trapped in a dichotomy of nature and society. Conservation recognises a blurred boundary of the attributes of animals and humans, but seeks to keep them apart to protect them from one another. Social sciences reject animals as having social and cultural dimensions and set a borderline between animals and humans; however, they criticise the dichotomist division between nature and society advocated by nature conservation.

It should be considered whether the theoretical problems of the disciplines mirror dilemmas found on the ground, or whether the disciplines are mainly enclosed within established views and historically inherited theoretical lenses. Either way, nature conservation seems to require more engagement between the social and natural sciences.

1.1.2 Socio-ecological engagement

Several authors have encouraged a fruitful and desired participation among social sciences in nature conservation schemes (Knight 1999, Etkin 2002, Campbell 2005, Holt 2005, Büscher and Wolmer 2007). Furthermore, West and Brockington (2006:614) argue that the complexity of the social in protected areas should be given as

much attention as the complexity of the biological. These authors add that collaboration should start before protected areas are set.

However, as shown above, there is still a well-established discrepancy between the way anthropologists and ecologists look at nature and at nature conservation. Furthermore, Büscher and Wolmer (2007:7) say that both “social scientists and conservationists often regard each other as privileged and themselves as marginalised” when approaching nature conservation. Following this view, natural and social scientists feel exclusion, isolation and asymmetry surrounding nature conservation. It is likely that the dissonance arises when conservation programmes point to subsistence farmers as those responsible for the destruction of natural heritage and resources, which is of questionable fairness and accuracy and raises considerable ethical issues. This is a context in which both conservationists and anthropologists feel marginalised; as the former struggle to urgently protect animals from extinction, the latter seek to provide a voice to local (and often invisible) people losing rights to access resources. This is directly related to another axis of conceptual misalignment between these disciplines, namely that while conservationists often refer to local people as ‘ecosystem damagers’, anthropologists portray them as ‘ecosystem producers’. Indeed, several authors have highlighted the role of people in shaping the environment – “people do not just adapt to environments, they make them” (Croll and Parkin 1992:16). This was also shown in detail in the context of the forests of West Africa by the work of Fairhead and Leach (1996) and Appiah (2012).

An anthropologist’s goal is to understand the construction of knowledge and the power and pressures behind people’s decisions in relation to their cultural and physical environments (Croll and Parkin 1992:4). Their interest in conservation is based on understanding the ontology of conservationist action and its conceptual foundations (Lorimer 2007), rather than ensuring the survival of animal species. Ecologists highlight the risks for species’ survival and ecosystem sustainability, and often continue to place emphasis on these even when socioeconomic issues are also pinpointed (Estrada 2013). Brosius (2006) says that conservationists welcome data that is in favour of conservation, but do not show the same acceptance towards data that challenges baseline ideas of conservation programmes. West and Brockington (2006) observe that in some contexts nature conservation is a practice of virtualism, in which a place and its people are imagined and defined as they should be, and then their lives and surroundings are constrained accordingly. In these contexts, anthropologists and

social scientists are essential to diagnose and characterise local people's views of local conservation practice.

In spite of the above, there have been recent experiments in engagement between natural and social scientists in nature conservation. The Millennium Ecosystem Assessment is strongly rooted in the natural sciences and raises awareness of the loss of biodiversity worldwide (Duraiappah et al. 2005), but at the same time follows a socially situated analysis (Reid et al. 2005). This programme characterises the services of ecosystems for worldwide human well-being and argues that their degradation has affected the poor more intensively than other social classes. Anthropologists have been increasingly involved in international nature organisations like the International Union for the Conservation of Nature (IUCN) (West and Brockington 2006). Hardin and Remis (2006) described how they have engaged in a collaboration that incorporated biological and social anthropology in a study conducted in the Central African Republic. A combination of natural and social data brought together and critically discussed the risks for wild species survival and the perspectives of local people regarding forest use. McLennan and Hill (2013) also discuss the conservation of chimpanzees in Hoima, an unprotected area in Uganda, taking into account the ecological context of the species and the local rural production systems and land-use changes. These authors follow a social-ecological approach and as conservationists they discuss whether it is appropriate to conserve the population of chimpanzees considering the risk they represent for local people in that specific situation. Particularly in the context of primate conservation, more recent approaches have integrated the social sciences, contributing to the “blurring of boundaries” between disciplines (Riley 2013:412). Named ethnoprimateology, it became a useful approach in describing human and non-human primates in “ecological sympatry” (Riley 2013:414) and was reinforced by several authors (Fuentes and Hockings 2010, Sousa and Frazão-Moreira 2010). The behavioural biologist Phylis Lee agrees with the advantages of ethnoprimateology but raises the question, “Can we use the values of ethnoprimateology to be able to appraise actions and outcomes, and thus critique conservation programs without fear of losing our funding?” (Lee 2010:5). This question discloses the structure that limits critical action for conservation. It remains to be known whether the articulation between the natural and social sciences will survive within the nature conservation institutional framework.

As is shown next, understanding the transformation of nature conservation strategies and situating them historically is important for understanding nature conservation as a natural, social and political process. It started as an international endeavour and it has broadly remained as such. To translate and modify it into more refined strategies, which are locally meaningful and capable of temporal adaptation, can be considered one of the most important challenges for nature conservation strategies today. The next section overviews the historical implementation of protected areas.

1.2 Contextualising nature conservation

1.2.1 The London Conference

The first international conference for the conservation of African wildlife species was held in London in 1900 (London Convention 1900, MacKenzie 1997). This conference was very important to institutionalise nature conservation in Africa for the Europeans and to set up the first network of protected areas in the African continent. This endeavour was embedded in colonialism and in the political influence of countries like England on other countries such as Portugal, and on their respective colonies. Portugal received formal invitations for the conference from the English government in late 1899 (Great Britain Ministry 1989). The ensuing London Convention regarding the preservation of African wildlife was signed by, among others, the “King of Portugal and the Algarves” (London Convention 1900:86). The hunting legislation approved for the English colonies (Uganda, Sierra Leone, Ivory Coast, Gold Coast, among others) were sent to the Portuguese government, and supposedly the agenda of the convention would be applied to Portuguese Guinea, Angola and Mozambique (Diário do Governo 1901).

During this period, West Africa was not as important as East Africa for the international conservation priorities of that time (Houses of the Parliament 1906:6), as the first protected areas were mainly located in areas of savannah to preserve game animals (Oates 1999). European interests in nature conservation in Africa were focused mainly on ungulates and other large mammals. Elephant, lion, rhinoceros, buffalo, hippopotamus, giraffe, zebra, impala, and gazelle, among others, were considered important game species, producing important commodities, like ivory and leather (Game Preservation Conference 1900). Other species, such as chimpanzee, gorilla, and

colobus were also included in the concerns of the British government (Gran-Bretanha representer 1901, Mathew Mathan 1902).

In 1950, Carlos Simões wrote that the hunting legislation in Guinea-Bissau dismissed the conference guidelines (Ferreira 1973:225). Until the 1940s, even in the British protectorates in East Africa, the guidelines for the preservation of the wild species (see paragraph above) remained largely ignored by the colonial governments and it was only post-Second World War that a considerable number of African natural parks were created³ (Neumann 2002). As identified by Neumann (2002), this initiative was in reality rooted in the British aim of expanding the colonial economies. Once the local population was prevented from having access to bushmeat and natural resources, and was resettled/displaced to certain areas, the workforce availability increased, which was needed to promote the desired economic growth (Neumann 2002:39).

During the 1950s, the establishment of organisations such as United Nations Educational, Scientific and Cultural Organization (UNESCO), IUCN, WWF and African Wildlife Foundation (AWF) increasingly diverted the responsibility of African environmental management from colonial control to that of global governance. Since then, international organisations for conservation have become deeply involved in the technical assistance related to conservation in the African independent states, as well as in land management policies and in the identification of areas to be defined as parks (Neumann 2002:41).

1.2.2 The international endeavour to classify the landscape

The first strategies for conservation were based on the abrupt division between people and parks. People were not regarded as part of nature mainly because nature was almost a synonym for ‘wilderness’. In the USA, Canada and India during the 20th century, people were evicted or displaced from their lands for the sake of wildlife conservation (Spence 1996, Jacoby 2001:82, Binnema and Niemi 2006, Rangarajan and Shahabuddin 2006, Owino et al. 2012). Major displacements of human populations also occurred in certain African countries. For example, in Tanzania, farmers and pastoralists were not involved in the debate related to the conservation of the area

³ There are a few exceptions, like Kruger National Park (South Africa) that was declared in 1926 (Oates 1999:20).

where they lived and as a consequence they lost the rights over land access (Neumann 1992). The Maasai were displaced from the area that was afterwards transformed into the Serengeti National Park (Nelson and Makko 2005) and were subjected to constraints over both livestock grazing and settlement with the foundation of Amboseli National Park (see Roque de Pinho 2009). A vast number of similar cases in Africa have been described, including the Dja Biodiversity Reserve in Cameroon, the Dzanga-Ndoki in the Central African Republic, and in other protected areas in Equatorial Guinea, Gabon, Nigeria and Republic of Congo (see Schmidt-Soltau 2005). Nevertheless, not all authors agree on the impact that conservation strategies led by colonial governments had on local people. John Oates states:

It is often said that colonial governments took land away from local people for parks, but this simplifies what actually happened. In fact, it was usually a small number of concerned individuals who developed the arguments for conservation of places they thought were very special; these people and their associates applied pressure on reluctant governments to take action (1999:31).

Oates adds that although other kinds of conservation schemes could work, he finds the parks without people as the most likely to achieve nature conservation goals:

Seeing a range of East African parks for myself in the early 1970s strongly persuaded me of the efficacy of what is now sometimes called “conventional” or “exclusionary” conservation (Oates 1999:31)

Regardless of this reported efficacy in terms of biodiversity conservation, efforts for conservation have historically taken control of natural resources from local farmers, pastoralists and/or fishermen and give it to more exclusive elites (Carruthers 1993, Cleary 2005), which is still being reported today (Peluso 1993, Peluso and Lund 2011, Estrada 2013).

1.2.3 From ‘fines and fences’ to community-based conservation

Connections between poverty, inequality and ecological degradation have been evoked and portrayed as problems that could be transcended by sustainable development (Croll and Parkin 1992). As identified by Oates (1999) it was expensive for the independent African states to keep people out of protected areas. Therefore, a

possible linkage between nature conservation and development could offer important funding opportunities, and this prospect imposed a transition in the nature conservation discourse.

Since the Stockholm Conference, held in 1972, conservation goals have been more closely associated with those of development. In the Declaration of the United Nations Conference on the Human Environment, it was agreed that:

Economic and social development is essential for ensuring a favourable living and working environment for man and for creating conditions on earth that are necessary for the improvement of the quality of life. (Principle 8, UNEP 1972)

States should adopt an integrated and coordinated approach to their development planning so as to ensure that development is compatible with the need to protect and improve environment for the benefit of their population. (Principle 13, UNEP 1972)

Consequently, throughout the 1980s and 1990s, the concepts of “sustainable development”, and increasingly “community-based conservation”, became keywords in nature conservation narratives. It was also during the 1980s that the concept of ecological economics was incorporated into the conservation agenda and the concept of “nature as capital” was adopted as a condition for development (Folke 2006).

Community-based conservation, as a new central concept of conservation agency, dates from the World Strategy for Conservation in the beginning of the 1980s and also from the outcomes of the World Parks Congress in 1982. In 1981, the African Charter of Human and Peoples’ Rights reported:

All peoples shall freely dispose of their wealth and natural resources. This right shall be exercised in the exclusive interest of the people. In no case shall a people be deprived of it and the African states shall exercise the right to free disposal of their wealth and natural resources with a view to strengthening African unity and solidarity (Article 21, Gandhi and Gandhi 2006:417).

In order to adapt conservation strategies to a scenario of parks with people, the strategic focus of conservation shifted to geographic zonation and ecological corridors. Park zoning creates some areas reserved for wilderness and others where human use is allowed.

Often, conservation programmes adopt flagship charismatic species relevant for driving international and national funding and planning. Those who adopt this

strategy believe that the conservation of a species acts as an umbrella for the whole habitat and for other species sharing the same space. This approach has been described as limited as the umbrella effect does not expand to sympatric species with different ecological requirements (Roberge and Angelstam 2004).

Another strategy was that of defining biodiversity hotspots and protecting the highest number of endemic species at the least cost (Myers et al. 2000). Several methods for planning the location of conservation areas were based on different aspects of biodiversity, such as rarity and endemism (Grenyer et al. 2006, Isaac et al. 2007). More recently, some authors believe that conservation should consider the biodiversity value of anthropogenic environments (Estrada et al. 2012).

Given the new paradigm of aligning conservation and development, nature conservation paradigms were re-dressed into a more socially sounding and optimistic message. The baseline paradigm of modern conservation discourse is that both parts – local communities and nature conservation– benefit from conservation initiatives (so-called win-win scenarios). When living inside parks, local people are expected to profit from their land by ensuring the survival of animal species and conserving the forest areas; however, this has proven to be rather difficult.

In spite of the ecological rearrangements in nature conservation strategies, international agreements and conventions about local people's rights, studies continued to reveal privation, social injustice and impoverishment of populations living in areas where conservation programmes were developed. Additionally, some of these programs still result in displacement of people (Brockington and Igoe 2009). Several authors have discussed the association between poverty reduction and nature conservation (Hill 2002, Ancrenaz et al. 2007) and it seems that the mechanisms implemented by nature conservation have had different outcomes in different places (Leisher et al. 2010). It is claimed for example that Kibale National Park (Uganda) does not work as a poverty trap since it prevents the poor from becoming poorer, even though it is not able to rescue people from poverty (Naughton-Treves et al. 2011). Estrada (2013:42) states that “it needs to be clear that primate conservation can never be the solution to extreme poverty, but it can play a role”. Indeed, in certain contexts, conservation strategies can generate small benefits that contribute to poverty alleviation and help build up networks that contribute to prevention or alleviation of poverty (Mehta and Heinen 2001, Becker 2003, Ancrenaz et al. 2007, Ferse et al.

2010). In other places however, parks can work essentially as poverty traps. The reasons that lead to this lack of success vary, and are summarised below.

Taking the community as a separate entity that is not entangled in social, cultural and economic matrices constitutes the first contradiction to what would be expected by the concept of community-based conservation. Furthermore, as described by Adams and Hulme (2001) and Hill (2009), a community is not one thing but many, and a group of people may include individuals with very different priorities, desires and access to power. Local communities are permeable to appropriation by local elites, manipulation and power struggles. Secondly, the implementation of conservation projects locally has provoked the disempowerment of local governance at the same time as the control of nature resources by external bodies has been strengthened. Intervention has diminished the negotiating power of the communities and threatened the legitimacy of their leaders (Fay 2007), creating new points of institutional control outside of the community (Neumann 1992, Laudati 2010). Thirdly, Berkes (2004) and Shackleton (2010) highlight that the initiatives launched have to be constantly adapted to specific and changing circumstances. Local people are often expected to act in accordance with previous agreements, which have sometimes been settled long ago, which reveals lack of effective participation. Furthermore, several community-based initiatives have been described as myths that serve mainly to justify the activities of non-governmental organizations (NGOs) or state-sanctioned conservation projects (Brockington 2004). Finally, policing and patrolling are present in various contexts of nature conservation, and several studies have shown that this strategy brings few benefits to the local population (Knight 1999, Sitati et al. 2003, Sodikoff 2009). In some situations this policing involves violence perpetrated by parks' trained staff which is justified in the name of a global good (Forsyth and Walker 2008). Some authors have reported the community's sense of "worthlessness" based on the idea that wildlife is perceived as more important for governments and officials than local people (Hill 2005, Ancrenaz et al. 2007). Violence during patrolling has also been described and criticised by Laudati (2010) and Infield & Namara (2001), and Fairhead et al. (2012) denounce the alignment of military and paramilitary agencies with business entrepreneurs or conservation professionals.

Recognising the land rights of the communities participating in conservation is essential (Gillingham and Lee 1999, Adams and Hulme 2001), otherwise it may have "profoundly alienating effects" (Fairhead et al. 2012:237), and people regularly feel

they have been dispossessed (Neumann 1992, Rangarajan and Shahabuddin 2006, Webber 2006). Land property and access have become a crucial aspect of nature conservation under debate. The uncertainty over land access may lead communities to exploit resources rapidly as a way to undermine the interests in the area they claim as theirs (McLennan and Hill 2013). It is worth highlighting that the recognition of rights should not be understood as the bureaucratization of land access, which may undermine the flexibility of current land regimes and thus curtail the ability of local people to change their production/livelihood strategies. Recognising community areas and respective land management regimes could happen more often.

West et al. (2006) provide an estimate that there are 105,000 protected areas in the world and the terrestrial protected areas cover 11% of global land area. Several contemporary authors, such as West et al. (2006), Igoe (2004), Brockington (2004), and Peluso (1993) have reflected on, discussed and written about the political, social, material and symbolic effects and implications of protected areas and nature conservation programmes. In the 1990s, Alcorn (1993:426) who works for IUCN, outlined the flaws of community conservation by writing that, “Until we recognize the authority of indigenous peoples as equals at the discussion table, we cannot join in partnerships with them”. Working together with local people would mean dissecting concepts, paradigms and methods, discussing nature-society and discussing the bush. It would also require approaching difficult topics like those of property, access and reciprocity, and from these structure common strategies. Tsing (2005) summarises the environmental impacts described by natural scientists as “vocabularies of power”, often used to support the idea that local communities are environmentally destructive and need to reshape their practices. Sanderson and Redford (2004:146) state however that, as conservationists, “we have neither the legitimacy nor the power to redress the distributive inequalities nor the damages of development in our work”, which is a global issue and not a problem of conservation action. This particular idea challenges the possibility of pursuing community-based conservation and raises the question of how nature conservation can be locally based if crucial aspects like equality or fairness cannot be addressed locally. If that is the case, then nature conservation is driven by international agendas and the global economy, and the paradigm of community-based conservation has definitely fallen apart.

1.3 People, wildlife and boundaries

Coexistence is marked by sharing a space that is more or less able to lead to dispute over resources. The interactions between humans and animals may be of different types, from competition and commensalism to conflict, cooperation, coexistence and companionship (Radhakrishna 2013). Factors such as gender, agriculture, economies, and religious and cultural backgrounds have all been identified as influencing human perceptions of wildlife (Naughton-Treves 1997, Zinn and Andelt 1999, Hill 2005, Hockings 2007, Casanova et al. 2009, Costa 2010). People's perceptions, of and attitudes towards, crop-raiding species depends on both the benefits and costs of the interactions between wildlife and people (Hill 1998, Lee and Priston 2005). People's perception of their legal rights to control crop foragers also influences the perceptions and attitudes held towards these species (Newmark et al. 1993, Knight 1999, Hill 2004), with the perception of risk increasing when people feel they have no control over conflict management, especially when the perceived owner of wildlife, i.e. government agencies or NGOs, appear not to take responsibility for the actions of 'their' wildlife (Newmark et al. 1993, Hill 2004, Osborn and Hill 2005:73, Webber 2006). Consequently, and in the absence of any compensatory mechanisms, these people become hostile towards conservation programmes (Naughton-Treves 1998). Often there is a collective perception of vulnerability and risk (Fessenden-Raden et al. 1987) in that farmers who do not suffer from crop raiding also complain about it. Considering all of the above, and as explored in this study, the manners in which farmers use to portray wildlife shed light on how they situate themselves in relation to policies that aim to protect wild animals, particularly in cases of crop foraging species.

Farmers may overstate crop losses by certain species (Naughton-Treves 1998, Basili and Temple 1999, Siex and Struhsaker 1999, Graham 2006) as a consequence of social tension and symbolic threat (Knight 1999), or as a conscious exaggeration as a way of seeking compensation (Siex and Struhsaker 1999, Lee and Priston 2005). Narratives of episodes of human-wildlife interactions can criticise or support nature conservation, or simply ignore it. Physical interaction between people and animals can be interpreted and expressed in various ways and it essentially depends on social contexts.

1.3.1 From people-wildlife to people-people

The debates about environmental issues and their social implications have both practical and political implications (Scoones 1999), especially when the people affected by these policies are small-scale/resource-poor farmers who rely heavily on shifting agriculture to achieve food security, as is the case in southern Guinea-Bissau. As Croll and Parkin (1992:16) observe, “control and therefore power is thus central to discussions of the environment, and its relations to culture and human endeavour”. In various ways, many of the reported conflicts between people and animals have been recognised as centred upon conflicts between people (Knight 2000). Animals, like other elements mainly described as natural, are at the same time representations of several aspects of human condition and experience. This does not mean though that it is possible to determine the level or extent of objectivity/subjectivity when farmers refer to wildlife or forests. Instead, it means that it is important to situate local perceptions of wildlife in people’s analyses and perspectives of social contexts. Attempting to connect the narratives about wildlife, forests and nature conservation with the local tensions between institutions and stakeholders challenges the antithetical arguments around nature conservation. The next section introduces the subject of nature conservation and people-wildlife interactions in the forest-farming landscape of Guinea-Bissau, and situates the notions and debates set out above within the socio-ecological context under study.

1.4 Nature conservation within Guinea-Bissau

During my fieldwork and literature review on the broader debates about nature conservation, I found that Guinea-Bissau remains at the outskirts. This is probably influenced by the considerable political instability that the country has gone through, which has not provided a social environment that allows engaging in deep and insightful debate on these issues. Also, Cantanhez National Park was gazetted very recently and the strategies followed by nature conservation programmes appear steady and hardened, and there is considerable local tension among local people and many are dissatisfied. This research examines episodes of eviction, ‘fines and fences’ and

policing conservation, and although these have been widely contested in the literature, this discussion remains relevant in the context of Guinea-Bissau.

1.4.1 Conservation historically in the Cantanhez National Park

After the independence of Guinea-Bissau from Portugal in 1974, the first published research study about socio-ecological issues in Cantanhez was undertaken by Malaise and colleagues (1996, Verjans et al. 2000, 2010). This was followed by the studies of Temudo (1998, Temudo 1998) and Frazão-Moreira (1995, 1999), who both conducted research for their PhD dissertations in Cantanhez during the 1990s, and have published extensively thereafter. Their long-term ethnographic studies about agriculture, human ecology and ethnobotany were particularly important for my understanding of Cantanhez during my fieldwork. Regarding the critical analysis of nature conservation in Cantanhez, my research can be considered a follow-up of Temudo's work since I focus on the late 2000s to 2013. My study discusses some of her assertions and adds the people-animal interactions, estimation of crop loss and the social constructions of animal species, particularly that of witchcraft, which were not previously covered by Temudo.

More recently, several other researchers have studied different aspects of wildlife in Cantanhez. Casanova and Sousa (2005, 2006, 2007), Torres (2007) and Brugiere (2009) characterised the distribution of chimpanzees (*Pan troglodytes verus*) in Guinea-Bissau. Casanova and Sousa (2007) created the national action plan for the conservation of chimpanzees and colobus (*Procolobus badius* and *Colobus polykomos*). In Cantanhez, Costa (2010) studied people's perceptions of wildlife, Ferreira da Silva (2012, Kopp et al. 2014) carried out research about the genetics of Guinea baboons (*Papio papio*), Rodrigues (2012, 2013, 2013) studied the genetics and behaviour of colobus, Sá (2013) studied genetics and parasitology of chimpanzees, and Barata is currently writing up the outcome of his research on the ecology of chimpanzees. More recently, Hockings (2012, Hockings and Sousa 2013) examined the ecology of a group of chimpanzees living in close proximity to people. Other studies such as my master's thesis (Sousa 2007) and those by Costa (2007), Sousa (2009) and Varela (2009) have all reflected on different elements of nature conservation in Cantanhez. Other notes by Schwarz (2008) were also relevant to the

historical record of the peninsula. Reports from non-governmental organisations working in Cantanhez provided information about the development initiatives over the last two decades (AD 2002, AD 2003, AD 2004, AD 2005, AD 2006, AD 2007, AD 2009). The long-term research of Catarino (2004, 2006, 2008) provided a very useful botanic database relevant to my research. Similarly, I have consulted several colonial sources regarding natural resources. Work by authors such as Fernando Nunes, Júlio Ferreira, Orlando Ribeiro, António Carreira, Garcia de Carvalho and Teixeira da Mota provided relevant historical insights about how nature and Cantanhez were portrayed in the literature during the colonial period (until 1974).

During the colonial period, the forests of Cantanhez were described as exuberant (Carreira 1962:308) and classified as a hunting reserve (Teixeira da Mota 1954a:170). Since the first decades of the 1900s until today, scholars have written about the overexploitation of these forests. In 1915, Fonseca wrote:

The natives live with impunity destroying large tracts of forest (...). (...) it would be required to create a forest circumscription (...). In the meantime, it would be convenient to forbid the fires, and create (...) a small corps of native police, conveniently distributed in the territory that would impose fines on the transgressors, or use other means of repression considered more efficient (Fonseca 1915:6,7).

In 1951, Rosa warned, “the forests in Guinea-Bissau are not being exploited, they are being devastated!” He added that erosion was escalating and that “Africa is a continent that dies”. The author attributes this announced catastrophe both to the European exploitation of timber and to the clearing of land for farming by locals (Rosa 1951:632). Again in 1955, Nunes predicted that deforestation by the natives would lead to the disappearance of Cantanhez forests in a “few years” (1955:195), a prediction still heard today. The idea that the country was a densely and extensively forested area in the recent past is questioned in the work of Abrantes (2008). Several studies have reported high rates of deforestation in Guinea-Bissau (IUCN 1997, Johannesburg Summit 2002, Dodman et al. 2004, Gippoliti et al. 2004), but Temudo (2009, 2012) has challenged the environmental degradation narrative relating to Cantanhez and connected her ethnographic findings with a study on land use/cover (Cassamá 2006); she argues that:

Contrary to the Neomalthusian narrative of environmental degradation, the demographic growth that occurred in the last five decades [1950s-2000s] did not give rise to a reduction of the area covered by forest (my translation Temudo 2009:256).

In line with Temudo's analysis (see also Temudo and Abrantes 2014), another study has also reported that there was no variation of forest cover from 1974 to 1992 in Guinea-Bissau (Barracough and Ghimire 2000:28). Several scholars in other African contexts have challenged the idea of environmental degradation by local people (Fairhead and Leach 1995, Etkin 2002, Brockington 2004).

In 1941, the park Doutor Vieira Machado was founded in the area that corresponds to present-day Cantanhez National Park. At this time, all human activities were prohibited inside the park, including opening new roads, logging trees or bushes, hunting, fishing or building houses (even temporary constructions) and the Official Bulletin attested "any individual found in the park in six months' time from the present publication will be fined" (Official Bulletin 1941). In the words of Ferreira (1973), this gazetting was a consequence of the London Convention in 1933, however, "this step lacked steadiness, as until now it seems that the park Doutor Vieira Machado was a reserve created merely on paper" (:221).

Later, in 1980, Cantanhez was recognised as an area to protect (Bouju et al. 2001) and the first nature conservation programmes in Cantanhez after the independence of Guinea-Bissau started in 1990s (Campredon 1997, Silva 1997, Mendes and Serra 2002). In Guinea-Bissau, legislation regarding natural resource management was introduced or re-structured during the first decades of the 21st century. In 2004, the hunting legislation (Official Bulletin 2004) was updated because "the numbers of some great mammal and primate species are decreasing" (Official Bulletin 2004:130). Together with this, the forestry law (Official Bulletin 2011), the environmental legislation (Official Bulletin 2011), the amendment to the protected areas' legislation (Official Bulletin 2011) and the Cantanhez National Park legislation (Official Bulletin 2011) were also issued. The latter mentions one of the goals of this national park is to:

Ensure the preservation and conservation of the patches of sub-humid forests of high biodiversity, safeguarding the rare animal and floral species under threat of extinction, promoting ecotourism and valuing the economic activities able to improve the living conditions of the residents (article 2nd).

In 2011, the legislation for protected areas blamed "practices averse to sustainable management of natural resources" (my translation Official Bulletin 2011). At the same time, IBAP maintains that one of its goals is to support local NGOs and local communities in achieving sustainable development initiatives in protected areas,

namely through ecotourism, and giving privileged support to the weaker and the poorer (IBAP no date:5-6). In the early 2000s, a tourism project was launched in Cantanhez by a local NGO (Ecocantanhez 2010) and the chimpanzees that were already a flagship species for local conservation programmes, became firmly associated with the park, both for tourists and local people. This corresponds to the widespread attempt of allying conservation and development, which, as explained above, has been a difficult marriage. Mirroring the difficulties of this melding, the articles included in the legislation of protected areas in Guinea-Bissau enclose contradictory items surrounded in unclear assertions. A section quoted from the legislation (Official Bulletin 1998) on protected areas provides evidence of this:

It guarantees the right of access of the resident population to the sacred forests and other places of cultural and social importance located inside protected areas (Article 7).

It will be attempted both a rational and balanced management of the natural resources, and the fulfilment of the basic needs of local people. (...) In a phased and participative manner, as much as possible, it will be attempted to reconcile the traditional practices of land use and the urbanisation and territory planning (Article 20).

The ideas about “guarantees” and “rights of access” in the former article seem to be misaligned with the latter article by the reference to a “rational and balanced management” and to an attempt to reconcile traditional practices and territory management. Not only do the two articles express contradictory ideas but it is also unclear what is meant by “places of cultural and social importance”, “basic needs” or “traditional”. The most recent legislation for Cantanhez National Park, dated 2011, divides the park into “integral protection”, “transition areas”, and “durable development”, the third category corresponding to areas devoted to “economic development for the benefit of local people” (Article 4 Official Bulletin 2011). The landscape was rationalised, compartmentalised and divided into sections with some areas being exclusively for nature, while in the others human presence is tolerated at least to a certain degree. Although it remains unclear what “transition areas” are or how “durable development” is to be achieved, these concepts are situated within the idea that the zonation benefits both people and nature.

Swidden farming remains a ‘diabolical’ farming practice in the eyes of nature conservation, and the park zonation aims at restricting its use geographically. In a

recent debate organised by IBAP, IUCN and the EU to discuss the massive timber exploitation in Guinea-Bissau, one of the seven recommendations was to “organise a forum to debate the impact of swidden farming and encourage sustainable practices” (EU Guinea-Bissau no date). Other reports even recommend the “prohibition of slash-and-burn farming” in protected areas (Casanova and Sousa 2007:66). Although these suggestions have not been fulfilled completely, nature conservation legislation and zonation has changed the land access for local farmers in Cantanhez. However, the same effort has not been required from other sectors of society, such as timber business.

Forest logging in Guinea-Bissau’s rural areas acquired stronger visibility in the media after the coup of 12th April 2012 (Lusa 2013). However, the work of Abrantes (2008) in the Quinara region provides evidence that timber exploitation was occurring in Guinea-Bissau before the 2012 coup and was sympatric with nature conservation initiatives. An anonymous informant said that the Chinese company he was working for exported timber from Guinea-Bissau forests back in 2010 (anonymous informant, 2010). Although logging is not a central issue in my research, it is part of the region’s socioeconomy and therefore it is an element to consider when analysing local people’s views about the management of natural resources. This raises several questions that are relevant for this thesis and for the broader conservation debate, which analyses nature conservation in terms of its relationship with capitalism (Büscher and Igoe 2013). The political and economic elites are not subjected to the urgent goals of nature conservation as these are applied to small farmers. This raises the question as to who is being made responsible for nature degradation and overexploitation of resources and who is not. Furthermore, it should be ascertained who is being asked to limit their use of resources and who is not, and who is receiving the funding for enacting conservation. These questions seem to be at the core of the different versions of local narratives about nature conservation that I analyse in this study.

1.5 Conceptual framework

The very fact that this division [objectivity/subjectivity] constantly reappears in virtually the same form would suffice to indicate that the modes of knowledge which it distinguishes are equally indispensable to a science of the social world. (Bourdieu 1990:25)

Post-structuralist thinking aims to surpass simplistic dichotomies that summarise the complexity into reductionist, essentialised and dualist distinctions. Challenges to previously settled oppositions such as nature-society (Descola and Pálsson 1996, Ingold 2000) or objectivity-subjectivity (Bourdieu 1990) constantly reappears in the theoretical concerns of social analysis. Dichotomies are defined by reasoning and rationality and in certain research contexts these dichotomies do not appear or manifest clearly in front of one's eyes. My research is situated at this hazardous intersection where many boundaries seem blurred or overlapping and I actively sought a multifaceted understanding of the socioecological context I was studying.

Interdisciplinarity was the only conceptual ground for experiencing the natural, the social and the socio-natural in southern Guinea-Bissau. As recently suggested by MacLancy and Fuentes (2010), any kind of long term fieldwork incorporates contributions from several and different sources and various disciplines, and even fields so traditionally discrete as social and biological anthropology may rely on similarities regarding the length of the fieldwork, the importance of accustomisation, accommodation and observation. I based my analysis on people's narrative constructions and reports but also on the natural elements as definite, empirically knowable material beings that exist independently of social constructions and that are not only the products of people's perceptions. The physical existence of forests and animals was not treated as antithetical to their social constructions and I assumed a melded mosaic of both dimensions, where one, the other, or a blurred conjunction of both could, at various times, become either the foreground or the background in my analysis. Circulating through the materiality of my research sites and topic – forests, farms and animals, and transporting myself through these objects (of measurement) and subjects (of change) was important to my phenomenological experience of “being [a researcher] in the world” (Ingold 2000:173). This experience assisted me in understanding my interviewees when they evoked nature and the landscape.

Every piece of research, despite the objectivity it claims to have followed, should be a subject of debate, challenge and questioning (Latour 2005). Ecology as a discipline militates against subjectivity in the sense that it tests hypotheses that have a certain probability of being explicative and/or generalised, but it does not deliver the full complexity of the object under study. Ethnography is highly subjective and requires constant reflexivity and reflection, however it also accomplishes fine and objective descriptions that are highly informative about particular contexts (Clifford and Marcus 1986). Both methods have grounds for being claimed as objective or subjective and defended as more legitimate and/or accurate. Consequently, the most relevant expression of an analytical enclosure does not come from objectivism or subjectivism, but rather, in the words of Bourdieu (1990:29), from the researcher's "subjective relation to the social world and the objective (social) relation presupposed by this subjective relation", which creates a well-demarcated perspective of analysis. Following Bourdieu's account, my perspective and analysis relied on both the natural and social sciences and their respective qualitative and quantitative methods, through which I examined local people's views about, and experiences of, nature and nature conservation. I focused on the perspectives of those still seen as bit-part actors of nature conservation practice: the natives and their points of view (Crapanzano 1986). From here I built the relational entanglement of social anthropological and ecological insights so as to apprehend and comprehend the socio-ecological complexity that surrounded me.

In interrogating these different forms of knowledge, it became clear that what is to be excluded and produced as knowledge and who is designated as qualified to know involve acts of power (Foucault 1980). The production of local and scientific knowledges, or hybrid forms of knowledge, depends on the capacity and/or means of the actors that make use of them to defend them as legitimate, and this process is not equal, disinterested or disengaged. Knowledges differ in the methods employed for their reproduction and (re)construction, but what strictly distinguishes them are the means for self-legitimation (Sillitoe 2010) and the ability to change, enhance or silence other formulations of knowledge.

Discourses about nature conservation, like those of development (Pottier 2003), are enclosed in hierarchies and histories of power. Likewise, they are also situated within hybrid and globalised paradigms that use arguments from scientific and local knowledges that, when aligned with the ends, provide structure and reason for the

existence of nature conservation. This explains the outstanding and impressive similarities of nature conservation strategies and effects globally (Igoe 2004). Consequently, in spite of the broad literature about conflicting interests between proponents of nature conservation and local peoples, it remains of considerable pertinence to question the adequacy of global-scale, one-size-fits-all frameworks of nature conservation practice for complex, local contexts.

And as eloquently argued by Ostrom (2007, 2009), socio-ecological systems are indeed complex. Taking up the challenge to organise, classify and compare socio-ecological systems, Ostrom (2009) defines systems, subsystems and variables that depict relationships between people's capacity for self-organization and the various benefits of management, and the size and productivity of resource systems. Notwithstanding the usefulness of reducing the complexity into familiar and comparable frameworks of analysis, such pre-determined categories in which to fit complexity proved to be unwieldy and largely inappropriate for my research goals in southern Guinea-Bissau. Another concept frequently applied to socio-ecological systems that also proved problematic for my analysis is that of equilibrium, that is, the way "complex systems organize around one of several possible equilibrium states or attractors" (Berkes et al. 2003:5). In the context of human-wildlife interactions, it is remarkably difficult to define what equilibrium is. As a result, I did not focus on identifying variables, subsystems or equilibrium states, and although I recognise the importance of rendering, for the purposes of analysis, socio-ecological complexity in a simplified frame in order to debate it, I aimed rather at thinking about nature conservation as a socially situated reality the complexity of which has to be approached with all its blurredness and symbolic associations. I approached the socioecological system of Cantanhez as enmeshed in the morality of reciprocity, grievance and expropriation, which crosscut territory, livelihoods and magic.

Regimes of exchange and of mutual assistance ground the ways of doing economics in Cantanhez. Reciprocity allows for the surmounting of bad harvests, labour depletion, environmental hazards, and other risks. This refers to the socially embedded part of the economy (as expressed by Polanyi) which is, as described by Gudeman (2001:1), local, specific and "constituted through social relationships and contextually defined values". Alongside networks of mutual exchange, the economy in Cantanhez is also enmeshed in barter and trade. These economic realms are played concomitantly and are not mutually exclusive. Many crops, such as rice for example,

appear as both household staples and commodities; rice can be given away as a ritual gift to the spirits, offered to guests, exchanged within mutual help networks, or be sold to traders as a commodity. Revenue earned through market transactions can also be incorporated into reciprocal arrangements of redistribution that work in a logic opposed to that of accumulation. The coexistence of reciprocal obligations and possibilities of accumulation has never been simple; on the contrary, these two realms of the economy are always filled with tension (Gudeman 2001). Thus, in Guinea-Bissau, “people participate simultaneously in more than one economy, and often in more than one cultural community” (Bird-David 1997:465). Similar to this, the understanding of ‘nature’ in terms of ‘bush’ and its understanding in terms of ‘nature conservation’ constitute different cultural formulations. Accordingly, while economic concepts such as exchange, redistribution and reciprocity are present in the bush realm, they are not found within nature conservation, which is rooted in a Euro-American socioeconomic cosmology. Nature conservation will be analysed from within the locally constituted economic life of Cantanhez to discuss the clashes between the morality of reciprocity of the bush and the logics of nature conservation.

For my more detailed analysis, I drew from the theorisation of human-animal interactions in scenarios of coexistence and conflict as portrayed by Hill (2002, Hill 2005), and from the multifaceted meanings of animals, including that of witchcraft, as described by Richards (1996, 2000). Moreover, I draw upon the landscape concept of Leach and Fairhead (1995, 2000) in which small farmers are portrayed as producers of forests, but I also kept in mind Rival’s (2012) argument pinpointing the natural process encompassing components that are independent from human activities. In summary, my analysis is predicated upon the relationships of situated objects and subjects to understand social constructions of non-humans (spirits, animals, forests) placed in a “dynamic synergy of organism and environment” (Ingold 2000:16). Finally, while the “human subject is placed in relations of production and of signification, he is equally placed in power relations which are very complex” (Foucault 1982:778), and similarly, nature conservation is about wilderness and ecology but it is no less about meaning, production and distribution, knowledge and power. What I have done is to study the ecology of a socialised nature in which its elements can hardly, given the context and the terrain of struggle, be analysed separately or disembodied from their historical, religious and political contexts. Palsson (2013) argues that another perspective is needed to refashion disciplines and integrate the social and the biological perspectives.

Given both my academic training and the social complexity I encountered in the field, I became convinced that it is important to bridge these parallel track disciplines and worldviews and to pursue an interdisciplinary, almost phenomenological, approach to understanding the dilemmas and controversies of nature conservation goals and practice.

1.6 Overview of the thesis

People relate to other species in particular historical, social, ecological and economic settings. Space and its history, magic and religion, changes in the environment, local livelihoods and trade, as well as local relations of power to access resources, all feature in understanding the place of nature in people's perceptions. All these matter because they all determine the realms of interaction between people and the other living and non-living things that envelop them. Therefore, this piece of writing portrays historic, economic, ecological and religious components involved in the interactions between people and other species and in the contestation of Cantanhez as a socioecological system. As presented below, each chapter of this thesis deals with a separate aspect of these interactions, constructions and contestations.

1.6.1 An Outline of the chapters to follow

Chapter 2, *Study methods: ethnographic research and transects*, describes the methodological approaches followed in my fieldwork, provides some ecological and human geography details about my study area, and reflects critically on some of the drawbacks of my approach. It also presents a reflection on my position as a researcher in the particular settings of southern Guinea-Bissau, namely by discussing how these might have affected my relationship with, and the feedback from, local people. As a follow up, the chapter also describes how I tried to negotiate my position locally and personally.

Chapter 3, *Narratives produce contested spaces*, presents the role of different institutions and strategies that have been used to claim rights over resources and territory during the 20th century. During the 1990s, the formal autonomy of Cantanhez villages to manage their own resources and territory was challenged by agreements over their use, and afterwards in 2008 by the creation of the national park and ensuing

regulation. This chapter highlights how the national park is only one among other ways of attributing meanings to landscape elements. The historical narratives of local people contribute to situating present-day men/women, youths/elders, different ethnic groups and the local institutions' standings in the current struggles for rights over land. Elements of the 'fines and fences' strategy in Cantanhez National Park are given to illustrate cases of segregation and violence associated with the national park. Together with these, the chapter shows how storytelling, witchcraft, meetings and protests are enacted in order to claim one's rights to a social and physical space.

Rice (*Oriza sativa*) is the main staple food in Guinea-Bissau and is an integral ingredient of both meals and literature. Accordingly, rice is the central figure of Chapter 4, *Food, trade and forests*. The 'centrality of rice' informs the analysis drawn in all other chapters because it is the most relevant measure of local welfare. The findings are presented in the context of changes in production systems and the role of different crops in consumption, bartering and trade. Labour and land access are analysed in respect to reproduction of farming systems and their importance to the resilience of local livelihoods. The case of the cashew nut (*Anacardium occidentale*) is outlined as both an important cash-strategy and a land marker. People are tied to production and likewise local farmers are also tied to land access, without which livelihoods' resilience is broken. Consequently, constraints over the access to forests directly affect the ability of farmers to produce and access the most important staple food. The working paper included in Appendix 1, *Changing elderly and changing youth: knowledge exchange and labour allocation in a village of southern Guinea-Bissau*, is complementary to this chapter. It portrays the views of elders and youths about rice production.

Chapter 5, *Animals in farms*, reports on the estimated crop loss in upland farms, mangrove fields and orchards. The effects of environmental hazards, wildlife, birds and insects on harvests are investigated. I used quantitative methods, including transect walks and point sampling, to back up local reports of crop loss. The analysis examines people's views about living alongside wildlife in a farming context, and their explanations are often linked to other dimensions of wild animals, such as the connection of certain species with conservation, cosmological interpretations of species and moral judgements about animals' behaviours.

Chapter 6, *Conservation as risk*, describes the local strategies used to minimise crop loss. These comprise prevention, avoidance, blocking and lethal methods. Some

methods conflict with recent hunting legislation and conservation policy. The analysis considers the locally perceived risks about the park policy that bans the use of lethal methods to control animal crop foragers. After a historical discussion of the legislation, the analysis turns to the local perceptions of risk regarding nature conservation as a process that limits the access to farming land, prevents crop loss control, and excludes people from nature conservation benefits.

Chapter 7, *People, animals and 'animals'*, considers the ability that some spirits and people have of 'shape-shifting', i.e. the capacity to shape-shift into the figure of a being of another kind according to a certain agency or endeavour. The multi-faceted character of figures like the leopard, snake and chimpanzee are outlined. The chimpanzee is the flagship species for Cantanhez National Park so the case of the chimpanzee is explored in more depth. Aggressive behaviours of chimpanzees towards people are understood as a conflict among people that is expressed through witchcraft. The discussion encompasses the representations of chimpanzees as both a figure of witchcraft and of conservation. The chapter ends by arguing that nature conservation should reflect more on the local understandings of reciprocity, usurpation and grievance, than on the attributes of particular species.

The final chapter, *Shape-shifting nature*, unpacks the key elements of nature conservation as a social process. To articulate and bind the arguments together, the discussion addresses the themes of territory, livelihoods, crop loss, perceptions of risk and witchcraft and their relevance to nature conservation in southern Guinea-Bissau. This study documents local social tensions at various levels. There are sparks of ethnic tension when local disagreement over natural resources is aligned with broader political goals. There is social tension between youths and elders regarding land access and labour, and between conservation authorities, local people, and local people supporting conservation. All these sources of social tension are identified, portrayed and analysed. They are not all at play at the same time, but rather silenced and activated depending on factors such as labour availability, land access, accumulation, and consumption.

After nearly a century of nature conservation programmes, many initiatives rely on an international legitimacy based on programmes that often fail to understand and encompass the complexity of the local social systems that are politically affected by such initiatives. For the various reasons described in this study, nature is highly

political in West Africa, and the cosmology of western nature conservation is only another system of thought and action that currently coexists alongside local knowledge. Nature conservation policies are grounded in the division of people and nature and these collide within contexts where the existence of people in terms of livelihoods, territory, and religion cannot be detached from nature.

The management of natural resources is a practice centred on social interaction among people that shapes property, access and use. Wildlife and forests carry multiple meanings in people's narratives. However, as the main objects of nature conservation, they are frequently individualised and simplified in programmes that aim to conserve the rare and beautiful. Nevertheless, wildlife and forests intermingle with people's lives in various ways. They are included in local knowledge, play an important role in local livelihoods, integrate magic and communication with the immaterial world, and are evoked in the confrontation with nature conservation and in the contestation over Cantanhez as a socioecological landscape. Wildlife and forests are subjects of reproduction, change and contestation and are therefore far from being only objects of contemplation. Consequently, management policy should not be based on the conservation of taxonomic rarities or of beautiful beings, as this only reflects a very narrow and specific cosmological vision of wild others.

2. Study methods: transects and ethnographic research

2.1 Introduction

2.1.1 Research goals and methods overview

This study seeks a socio-ecological understanding of human-animal interactions and the social representations of both wild animals and the spaces shared between them and people. In the sense required for this thesis, these ‘interactions’ enclose both the physical and the symbolic encounters of farmers with wild animals and forests, which all portray the confrontation and/or alignment of my interviewees with nature conservation in Cantanhez National Park. To examine the socio-ecological landscape of Cantanhez, I follow five lines of analysis throughout the thesis:

1. investigate the historical meanings of Cantanhez as a contested landscape, namely the recent constraints on resource use (Chapter 3);
2. evaluate resilience in regard to local livelihoods, and study the effect of labour, climate and land access (Chapter 4);
3. characterise the physical interface of farmers and wildlife in farms (Chapter 5);
4. discuss the perceived risks of living in a national park and alongside wildlife (Chapter 6);
5. elaborate on the connections between witchcraft and nature conservation in Cantanhez (Chapter 7).

My research in Cantanhez lasted 13 months, from November 2009 to January 2010 (3 months), September 2010 to May 2011 (nine months) and February 2013 (one month). The periods of fieldwork covered the growth and harvesting of crops, which correspond to periods of interactions between people and wildlife in farms. I used the period in-between for reading relevant literature, transcribing the interviews, and to start developing my analyses.

In this study, I adopted a mixed-methods approach, including quantitative monitoring of crop losses and reports of crop loss, ethnographic work and archival research. For example, I estimated crop loss in farms, visited archives and libraries, followed local historical narratives, collected life stories, used photography as a means for communication with participants, participated at meetings, ceremonies and several

everyday activities, and held structured and semi-structured interviews and informal talks. Below, the physical and social features of my study area are presented. Next, I provide details of the study methods and describe how they fulfil the goals of this research. The chapter finishes with a reflexive discussion of how I situate myself as a researcher.

2.2 Study site

2.2.1 Geography of a land-mosaic

The south of Guinea-Bissau includes the most isolated landscapes of the country. A hilly and dry landscape in the southeast in the Boé sector (Gabu region) gives rise to a flat topography of forests and mangroves in the coastal areas of the region of Tombali. Cantanhez is located in one of three coastal peninsulas of the Tombali region.

The Cantanhez peninsula corresponds to the Bedanda sector that is bordered in the north and in the west by the Cumbijã River, in the southwest by the Atlantic Ocean, and in the southeast by the Cacine River (Figure 1). Cantanhez is surrounded by mangrove, with several sea canals and a combination of agricultural fields, forests in various degrees of regeneration, and savannahs (Figures 2 to 6). Cantanhez is currently part of a national park with the same name – Cantanhez National Park.

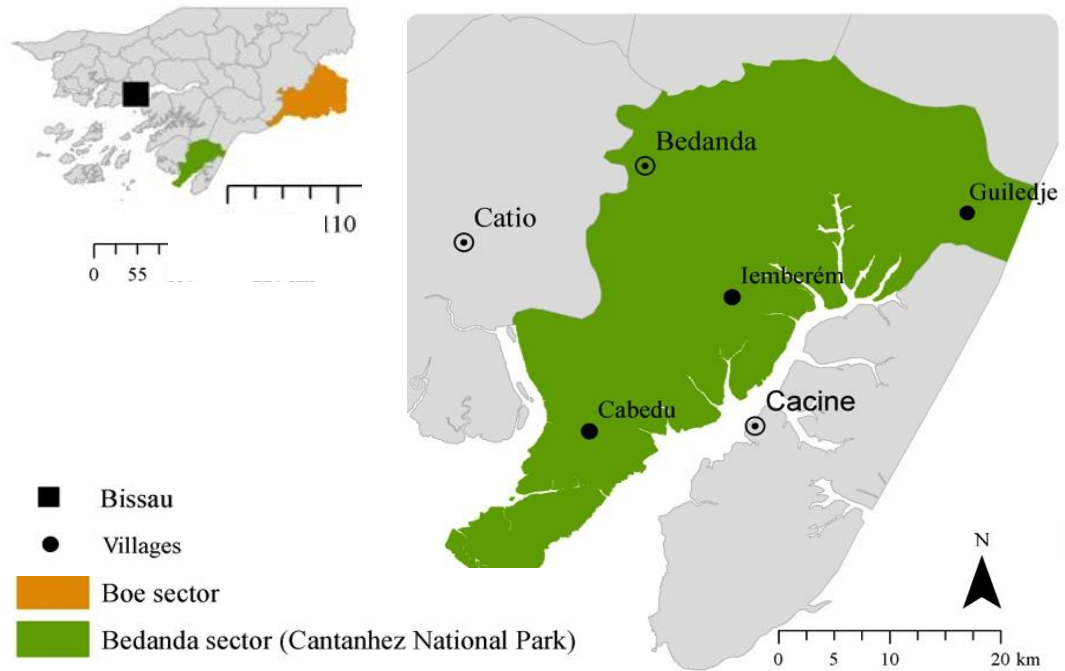


Figure 1- Study area, Cantanhez National Park in the southwest of Guinea-Bissau. The Boé region is also marked on the map because there are a few references to this area within this dissertation.



Figure 2- A forest-mangrove edge.



Figure 3- Rice farming in the mangrove soils.



Figure 4- A dense forest.



Figure 5 - Rice farming in forest soil.



Figure 6- A forest-savannah edge.



Figure 7 - A potato farm in the savannah.

The southwest of the country receives the highest rainfall in the country. In Caboxangue, a village in Cantanhez, the average annual rainfall was 1901.4 mm for 2000-2008 (Appendix 2, DGMN no date), which corresponds to a higher annual average than the northern and eastern parts of the country (Embaló 2008). In Cacine, another village in the Tombali region, the annual average temperature is 22.5-30.2°C, whereas in the continental part of the country the average annual variation is 20.4-33.4°C (Guerra 1947). On account of these statistics, Embaló (2008) distinguishes a coastal climatic zone with higher rainfall and smaller variations in temperature, such as in Cantanhez, as distinct from a Sudanese zone where it is drier and with a wider temperature range, as occurs towards the east of the country. Similarly, Guimarães (1959:334) provides a distinction between a “coastal” or “subguinean” zone and a “tropical continental” zone, respectively. These differences create specific habitats, and opportunities for fauna, flora and farming.

Beyond the regional differences in Guinea-Bissau, there are also geographic differences of note within the Cantanhez peninsula. The southernmost area is surrounded by sea canals that extend inland and are bordered by mangrove (Figure 2). The availability of mangrove in this area offers opportunities for the development of mangrove rice farming (Figure 3), one of the most important farming techniques in the region for growing its main staple food – rice. The southern part of Cantanhez also has well-defined forested patches usually bordered by oil-palms (Figures 2 and 3). By contrast, the northernmost part of Cantanhez is dominated by savannah woodlands and savannahs (Figure 6), where forests are sparser than in the south of the peninsula. Mangrove is absent and the density of oil-palms is lower. Forest composition between the north and the south is also different (André Barata personal communication 2012). In Cantanhez, both in the southern and northern areas, there is no obvious frontier between villages/farming areas and the forest/park, as described for other protected areas (Naughton-Treves 1997). Instead, farm areas intermingle with forest areas in a temporally and spatially dynamic fashion that is only possible in shifting agriculture.

Farms, orchards and backyards are regularly visited by wildlife. Chimpanzee pant-hoots were frequently heard from villages, and it was common to see chimpanzee nests very close to villages. Wild animals and people regularly use the same paths and there are hardly any exclusive places for people or wildlife. The classification of Cantanhez as a national park has attributed new socio-ecological meanings to the

landscape that collide and/or meld with particular aspects of standing components and meanings of that same space.

The ethnographic part of this research took place in three villages, two Nalu villages in southern Cantanhez, namely Cabam and Camcoiã, and a Fula village in the north of Cantanhez, called Macubé. Below is a very short description of each of these villages:

Cabam is a Nalu village in southern Cantanhez. It has approximately 120 inhabitants, including adults and children organised in thirteen households. This was an important village for the African Party for the Independence of Guinea-Bissau and Cape Verde (PAIGC) independence fighters during the liberation struggle (1963-1974). People practice a mixed system of upland and mangrove rice farming. Some forested land in this territory does not have individual owners and works as a land pool for shifting agriculture. A forested area was set aside as a reserve for nature conservation. People in Cabam started following Islam three to four generations ago but have not abandoned their animist/spiritist religious beliefs and rituals.

Camcoiã is a Nalu village in southern Cantanhez with five households and 69 inhabitants, including adults and children. Another Balanta household living in the territory of Camcoiã are the only mangrove rice producers. Other people in Camcoiã rely on upland farming. There is a reserved forest for nature conservation where people do not farm. People follow Islam and are not very attached to the animist/spiritist ceremonies that used to be important in the recent past.

Macubé is a Fula village in northern Cantanhez. Approximately 216 people live here and are organised in 46 households. In this village, there are ten households of recent migrants from Guinea-Conakry, while several youths from Macubé have left the village to study and work abroad. In the recent past Macubé was larger than it is today. An important Islamic preacher and teacher lived there and had many dozens of students. During the liberation war of Guinea-Bissau (1963-1974), there was a Portuguese barracks in Macubé. Towards the end of the war, all the people of Macubé left the area. Nowadays, people only practice upland farming in forests and fallows. All forested land is individually owned. People believe in and fear the bush spirits, but they mostly follow Islam-based rituals.

Complementary information was collected in another Fula village, Mfunca, in the north of Cantanhez, and in two Balanta villages in the south of Cantanhez, called Cablau and Bdjanf. Twenty-one in-depth interviews (see below) with key informants were conducted in other villages, such as Catunaimi, Cassin and Caba, among others.

Cantanhez is a complex and patchy landscape therefore specific units of analysis have been chosen. The ecological sampling unit used was the farm/field that was defined as a land plot dominated by a same crop type and used by a same person. Independent farms owned by the same person were distinguished in case these were dominated by different crop types and/or spatially detached from one another. To study the social landscape in the context of production and trade, both ‘households’ and ‘individuals’ were considered, because they represent different levels of decision-making. Households are not static and their size and composition change through time as its members migrate, found or integrate new households. This corresponds to the so-called household development cycle in which households are formed, consolidate and eventually disintegrate (Murray 1987). For data collection purposes, a household was understood as a social unit of production and management of staples, commodities and income for the specific period of my fieldwork (more details about the definition of household in Cantanhez in section 3.2.3.2 of Chapter 3). The next section provides a brief presentation of the biodiversity of Cantanhez.

2.2.2 Plant species and wild animals

Phytogeographically, Guinea-Bissau is included in the Guineo-Congolese/Sudanese Transition Regional Zone (White 1981, 1983 cited in Catarino et al. 2008), and is influenced by the Guineo-Congolese Regional Centre of Endemism. Catarino (2004) describes Cantanhez dense forests as dominated by *Hunteria umbellata*, *Malacantha alnifolia* and *Strombosia pustulata* (:231). Woodland savannas are described as either dominated by *P. erinaceus* and *Parkia biglobosa* or dominated by *Daniellia oliveri*, *Combretum nigricans var. elliotii* and *P. erinaceus* in association with other trees and shrubs (Catarino 2004:281). Given the flat topography of Guinea-Bissau, the mangroves can be found up to hundreds of kilometers from the open sea. This ecosystem is mainly comprised of *Avicennia germinans*, *Conocarpus erectus*, *Laguncularia racemosa*, *Rhizophora mangle* and *Rhizophora racemoza* (Catarino et al. 2001).

In Cantanhez, several wild species of importance for nature conservation are recognised to depend on forests. Deforestation, hunting and the pet trade have led several scholars to raise awareness concerning the survival of primate populations in Guinea-Bissau (Casanova and Sousa 2007, Ferreira da Silva 2012, Rodrigues 2012, Sá

2013). The West African chimpanzee and the West African red colobus are described by IUCN as “under threat”, the black and white colobus is described as “vulnerable”, and the Guinea baboon is described as “near threatened” (IUCN RedList 2013). Other primate species found in Cantanhez include the Campbell monkey (*Cercopithecus campbelli*), the green monkey (*Chlorocebus sabaues*), the western lesser bushbaby (*Galago senegalensis*) (Gippoliti and Dell’Omo 1996, Karibuhoye 2004), and most recently the dwarf galago (*Galagoides demidovii*) (André Barata personal communication 2009). Many bat and bird species have been recorded in Cantanhez (Rainho and Franco 2001), as well as large species, including forest elephants⁴ (*Loxodonta africana*), African buffalo (*Syncerus caffer*), leopard (*Panthera pardus*), and crocodiles (*Crocodylus cataphractus* and *C. niloticus*). The elephant and buffalo receive some attention from tourism and conservation initiatives, but not as much as the chimpanzee.

Several studies have investigated people and great ape interactions (Dunnett et al. 1970, Sept and Brooks 1994, Hill 1997, Naughton-Treves 1997, Humle 2003, Webber 2006, Duvall 2008, McLennan 2008, Hockings 2009). In Guinea-Bissau, chimpanzees live in close contact with people and therefore there is a need to understand on one hand the behaviour and ecology of chimpanzees (Naughton-Treves 1998, Hockings et al. 2009, McLennan and Hill 2010) and on the other hand, the way people perceive and act towards them (Richards 1995, Hill 2000, Kohler 2005, Hill and Webber 2010, McLennan 2010, Nyanganji et al. 2010).

People in Cantanhez do not eat chimpanzees because they consider them as similar to humans (Gippoliti et al. 2004, Karibuhoye 2004, Sousa 2007, Costa 2010). Costa described local people seeing the chimpanzee and gazelle as “good animals”, especially the gazelle which was also described as pretty, while snakes, pangolins and hyenas were described as “bad animals” (2010:86). Additionally, chimpanzees are also perceived as intelligent, inedible and ugly and, as reported by Costa (2010:88), they are seen as a “caricature of our species”. Chimpanzees are preferred over baboons in the pet trade, because “baboons are considered ‘stupid’ and ‘restless’ pets that ‘can break everything in the house’” (Ferreira da Silva 2012). Costa describes local people

⁴ In the early 20th century, hunting regulations described that elephants “go about all the southern part of the country” (Official Bulletin 1948). Recently, evidence of forest elephants has been confirmed in the Balana river in Cantanhez (Saidu Kuate and Mamadu Cassama, personal communication 2011). Brugiére et al. (2006) estimate a minimum of 4-10 individuals living in Guinea-Bissau.

characterising the baboon as a “bad animal” for competing with humans for resources (2010:112). Sá et al. (2012, 2013) described various mammal species being traded in the capital, including chimpanzee body parts, particularly skins, that are reported to have healing properties.

2.2.3 The people

Currently, Guinea-Bissau has a population density of 46 inhabitants/km², which is slightly lower than the average estimate for West Africa of 50 inhabitants/km² (Population Reference Bureau 2010). Guinea-Bissau covers an area of 36,125 km², and the Bedanda sector (or Cantanhez National Park) stretches over 1,142 km² (INEC 2005), corresponding to 3.2% of the country. Since the beginning of the 20th century (see Chapter 3) until the current era, the population of this sector has increased (Table 1).

Table 1- Population census for Guinea-Bissau and the Bedanda sectors (inhabitants/km²) for 1928-2009.

Year	Bedanda (inhabitants/km²)	Guinea-Bissau (inhabitants/km²)
1928 ⁽¹⁾	-	325,125 (9.0)
1946 ⁽²⁾	10,000 (8.8)	-
1950 ⁽³⁾	11,283 (9.9)	502,457 (13.9)
1979 ⁽⁴⁾	15,157 (13.3)	767,739 (21.3)
1991 ⁽⁵⁾	19,491 (17.1)	979,209 (27.1)
2009 ⁽⁶⁾	28,301 (24.8)	1,548,159 (42.9)

⁽¹⁾ (Indjai 1994); ⁽²⁾ (Carvalho 1949); ⁽³⁾ (Província da Guine 1950); ⁽⁴⁾ (DCR 1982); ⁽⁵⁾ (INEC 1991); ⁽⁶⁾ (INE 2009).

Cantanhez is known as belonging to the Nalu homeland and the Nalu are recognised as the area’s first settlers. Nowadays, Balanta, Fula, Nalu and Sussu peoples, among others such as Djacanca, Bijugu and Pepel, inhabit the area of Cantanhez. In 1949, the Nalu people were deemed to represent 9.1% of the population, which in this period was largely Balanta, who totalled nearly 72% (Carreira 1962:311).

Currently the Nalu people continue to be an ethnic minority when compared to the Balanta or the Fula. One's ethnic group becomes relevant in certain contexts, particularly those involving rights of access and property over resources.

2.2.3.1 Choosing a name for a contested space

Naming a territory is an instrument of the social construction of a space as it provides grounds for ownership, and builds both landscape and people's identities. In addition, certain imaginaries and political stances can be strengthened whenever names are recalled. Names of rivers, trees, forests, islands, and old villages are all important elements of story-telling, especially when regarding the foundations of territories and rights over land (see also Kahn 1990, Escobar 2001, Offen 2003). After consulting the literature, and with data from several initial interviews, it became clear that my study area was named in different ways by different people, and that in this context attributing names encompassed political claims. Consequently, I was also drawn into that arena since I had to make a decision about how I would refer it.

As explained above, the Fula people (kl, Fulbe as they call themselves) live in the north of the peninsula, while the Nalu people (kl; or Nale, as they call themselves) mainly occupy the southern part of the peninsula. For the Nalu, their homeland is called Cubucaré (kl, or Cacubé in Nalu) and it encompasses the area occupied by the Fula who have invaded their territory (see Chapter 3). For the Nalu, the Fula also live in Cubucaré. Fula people told me a different story though. For them, Cubucaré only designates the area where the Nalu currently live while the northern part of the peninsula, where the Fula people live is called Guiledje chiefdom, and is not part of Cubucaré. In 2008, these areas were named Cantanhez National Park by the state and NGOs. Additionally, for local administration purposes this peninsula is referred to as Bedanda sector, part of the Tombali region. Being required to choose a name, I decided to use the term 'Cantanhez' mainly because it is often used by both the Nalu and Fula nowadays. However, I refer to Cubucaré⁵ and Guiledje⁶ whenever the reference relates to what Nalu perceive as their homeland and to what Fula perceive as their chiefdom,

⁵ Cacubé means 'place of Cubé'. Cubé was a Nalu leader from the southern part of the peninsula.

⁶ 'Guiledje' is derivated from 'guilé' (Pu); corresponds to *Xylopiya aethiopica* (See Catarino 2004:32).

respectively. The term ‘national park’ is only used when the issue discussed is associated with that particular dimension of the territory.

2.2.3.2 Dealing with local identities

The previous paragraphs referred to ethnic groups as a relevant element of identity. However, this is context-dependent and people group themselves by other lines of identity in other contexts. I have tried to follow the identity my interviewees used to situate themselves and others in a given context. The deconstruction and contextualisation of the identities portrayed in the interviewees’ reports, such as ethnic groups, gender, age categories, lineage, and nationality, among others, make it clear that these are not always given importance by a same group of people but are rather linked to circumstantial transitive episodes in people’s narratives. Tania Li, in her work in Indonesia, says that to address the emergence of a collective agency one has to consider “the multiple positions that people occupy, and the diverse power they encounter” (Li 2007:22). My interviewees had multiple identities that could be silenced or highlighted and that grouped people in particular ways at particular times.

A distinction is often made between children, youths (*mininu*, kl) and elders (*garandi*, kl)⁷. A youth is a person who has been initiated (explained in Chapter 3) but is not a head of a household and does not often participate in decisions at the village level. On the contrary, an elder holds an important position at village and territory level, attends meetings where important issues are discussed and decided, and is usually knowledgeable about the local, oral, history. The same distinction is adopted by women in their circles of power, such as in the secret ceremonies, village meetings and local women’s associations.

In the field I did not position myself as a researcher studying the Balanta, the Nalu or the Fula societies, nor women or men in particular. I positioned myself as a researcher interested in farmers in a socioecological forest-farm landscape, and indeed this is at the core of my research. In Chapter 3, I mainly followed the lines of thought of Nalu people for two reasons. First, this space is perceived as the Nalu homeland and Nalu chiefs and elders were important for setting conservation programmes, and second, these people have integrated past power struggles into their narratives that

⁷ More detailed information on age categories was described for the Nalu by Frazão-Moreira (1999) and for the Balanta by Bivar and Temudo (2014).

contribute to the sense they make of their territory and of themselves as an ethnic minority in their homeland. Throughout Chapter 3 and in all other chapters, quotations have been selected and episodes transcribed if it seems they shed light on the issues under study. In these, I situate my informants in accordance with the identity feature they use to situate themselves in a particular narrative, and the analyses are drawn from there.

I mainly used Guinea Kriol to communicate with local people. Kriol was the second or third language used by informants. I learnt Kriol in Guinea-Bissau during previous research in the area in 2007 (more details below). I did not require a language translator although I asked for advice a few times to improve my Kriol skills, namely regarding the accuracy of word meanings. The abbreviations ‘kl’, ‘nl’ and ‘pu’ are used to mark terms in Guinean Creole (or Kriol), Nalu (or Nalé) and Fula (or Puular) that I used throughout the thesis. For writing words in Kriol I use the orthography of Montenegro (2009) as explained in her book *Kriol ten: termos e expressões*. I also tried to learn some Nalé and Puular, but my understanding of these languages, although slightly better in Puular, only allowed an understanding of very short and simple sentences or a few words in other people’s conversations.

2.2.3.3 Multi-sited research

This research was based on villages that practice upland farming, a strategy that depends heavily on the forest. Cabam divides farming efforts into upland and mangrove rice cultivation. In Camcoiã there is mangrove but people only practice upland farming. The villages of Cabam and Camcoiã have forests that have been reserved for conservation since the 1990s. In Macubé people rely exclusively on upland farming, the policy of reserving forests is more recent than in the other villages and the prohibited forest areas remain unsettled. Interviews also took place with Balanta households that do not depend on upland farming for rice production and mostly invest in mangrove rice farming. I sought to embrace diversity in livelihoods and evaluate their collision with nature conservation strategies. In this sense, a “single research site was insufficient for understanding local phenomena” (Cook et al. 2009:47) mainly because different villages rely on different farming systems, have a distinct surrounding environment and a different record of forest conservation. The contrast of a multi-sited ethnography allowed me to better understand connections people established with their surroundings.

Falzon (2009:2) states that “the essence of multi-sited research is to follow people, connections, associations, and relations across space (because they are substantially continuous but spatially non-continuous)”. The ideas of similarity and dissimilarity were present throughout the research and the exercise of being in different sites forced me to constantly consider the information within particular contexts, and at the same time situate the many ‘stories’ in the broader framework. The study of local people and nature conservation goals is by its own nature a study of a global-to-local framework. As outlined by Marcus (1995:99), “A cultural formation in the world system is also an ethnography of the system”. The intention of the multi-sited character of my research is not to compare villages rather it is an attempt to understand and include variability to inform the complexity of the social and ecological landscape.

2.3 Undertaking fieldwork

2.3.1 The pilot study

The pilot study took place in Cantanhez from November 2009 to January 2010 (three months) to experiment and elect the most effective strategies to follow. For example, a pilot study was required to choose appropriate research sites, identify research assistants (see below) and try data collection methods, namely strategies for assessing crop loss in farms and testing interview scripts. The pilot study also enabled identification of necessary institutional contacts locally, both in the capital and in Cantanhez, and allowed me to deepen my contacts and relationships with local people.

In Bissau, I met with people from IBAP to whom I explained my research goals, answered their questions and heard about IBAP’s policy for research in the protected areas of Guinea-Bissau. In Tombali region I met with the region governor in Catió and with the head of the agriculture department. In Bedanda, Cantanhez, I met with the administrator. The community authorities, all men, include the chieftain (in charge of the territory/kingdom), village chiefs (head of the village) and village elders (council of heads of household). I first met with the chieftain and then the village chief and elders of each village where I was planning to work. I presented myself, explained my project aims, clarified what I intended with the study, my institutional affiliations (I highlighted that I was not working for an NGO or any other development or conservation organisation or project), and asked for authorisation to work and/or live (in the case of community authorities) in the village for the period of my study. These authorisations were all provided. There was a relevant episode regarding the

authorization in one of the villages, as I explain in a following section. In every meeting, people were encouraged to pose questions and ask for explanations.

I always checked that people were willing to be interviewed and to have me visiting their farms. In each of the three villages I lived and ate with local families. In all three villages people stressed that money cannot be given for food or housing so I decided to buy groceries and to give a sum of money approximately every two months to use as a form of payment for my upkeep, rather than to have strict agreement of payment. In spite of the informality, I calculated a measure of food spending and added another amount as an acknowledgement for the housing, and delivered it as a gift. In addition, I regularly brought small gifts from Bissau and tried to be available to assist with household needs, to which people would often reciprocate with additional gifts.

2.3.2 The main fieldwork phase

Data collected during the pilot study was analysed to produce an agricultural calendar, a list of crops present in farms and backyards, and to refine the study methods. I revised the content of structured interviews (see Appendix 3) and other complementary approaches as explained below. Similarly, the ecological study methods were tested and changed according to the conditions of local farms.

Subsequently the main fieldwork phase took place from September 2010 to May 2011 (nine months). A further visit to the field was necessary during February 2013 (one month) to follow-up on the construction of a mangrove rice dike (see Chapter 4). During the main fieldwork, I moved between the three villages and stayed for one to two weeks in each village at a time.

Seven young men were hired as research assistances for this study: two in Macubé, one in Camcoiã, two in Cabam, one in Cabslau and one in Nfcunda. They helped estimate crop losses and map the landscape. As I could not speak the first languages of my interviewees, I required a translator when people did not speak Kriol or did not feel comfortable expressing their views in Kriol. This was necessary for one interview in Cabam, four interviews in Cabslau, eight in Mcunda, and three in Macubé. Being able to communicate with the large majority of people without requiring a translator favoured intimate conversations and one-to-one sharing of ideas and opinions. Of the field assistants, four relied on farming and trading as their main sources of income, as is the case for the majority of people in Cantanhez; one was a

farmer and a tourist guide; another was a sculptor; and the other suffered from a chronic health problem that did not allow him to undertake physically demanding work such as farming.

2.3.3 Participant observation, informal talks and interviews

2.3.3.1 Interviews

I conducted 92 semi-structured interviews that included a structured component. Eight of the interviewees were invited to meet again to explore certain aspects in more depth. I interviewed people from 50 households (Table 2 provides a breakdown of households interviewed per village). In Macubé, it was not possible to find people from 16 households as these consisted of Guinea-Conakry migrants who were in a very vulnerable situation at that time (see Chapter 4), and people whom I could not find during the dry season or who were not available. Similar interviews were conducted in Mcunda and Cabslau because it was considered useful to access reports from extreme types of landscapes. Mfunda is a large village located at a very important trading area with several shops, gasoline sellers, mechanics, tailors, smiths, and traders. Cabslau is a smaller village close to a dense forest and although people practice some upland farming, they depend largely on mangrove rice farming.

Table 2- Semi-structured/Structured interviews conducted in Cantanhez.

	Villages under study						Complementary interviews			
	Cabam		Camcoiã		Macubé		Mcunda		Cabslau	
Nr households in the village	13		5		46		-		-	
Nr interviewed households	13		5		32		(9)		(5)	
Nr of interviews	23		17		37		9		5	
♀	6	23	5	17	4	37	0	9	3	5
♂	17		12		33		9		2	
Balanta	0	23	1	17	1	37	0	9	5	5
Fula	0		0		36		9		0	
Nalu	23		16		0		0		0	

People were not paid in cash for information or agreeing to being interviewed. Instead, participants were given kola nuts and tobacco leaves at the end of the

interview. This is common practice in the region, showing consideration, respect and care. Also, very often cigarettes and fruit juice were shared during the interview, as would happen in other informal encounters.

I recorded a total of 57 interviews with different people that I transcribed myself. Each interview lasted in average 55 minutes (17 to 161 minutes). Fewer formal interviews were conducted with women (Table 2) since in general they seemed uncomfortable. Frequently they were busy taking care of house tasks or personal affairs. Moreover, their responses seemed shorter and evasive in formal interviewing contexts, such as sitting away from people, holding an interview script, a notebook, and a pen or a recorder, than when the subject was approached informally. Therefore, women were mainly approached in other contexts such as for informal gatherings and during their housework, and women were only invited for an interview when it seemed appropriated or desired.

Interviews comprised two sections. The first followed a structured outline to gather quantitative information about individual and household production, trade and crop loss (Appendix 3). I used prompts such as ‘why?’ or ‘how?’ to encourage detailed responses. This section allowed an overview of the individual/household production, the role of each crop in the local economy and the factors affecting production. The final questions provided explanations about how farmers prioritise risk factors. As advocated by Douglas and Wildavsky (1983:14), this is a relevant component to address in risk analysis. All these were issues that farmers liked talking about and they also worked very well to build confidence and informality. The second part of the interview explored (i) the meanings of crop foraging species, croplands and landscape features; (ii) changes in production, trade, labour, and land availability; (iii) natural resource management and perceptions of local conservation initiatives; (iv) contexts, outcomes and social representations of human-wildlife interaction. By the end the interview, I also frequently referred to recent episodes or current local issues.

The interactions with the interviewees varied considerably. With some people the interviews were not a very productive setting for conversation, while with others the interviews were fluent and became a talk about issues they thought would interest me, or that interested them. People would visit me with crops, seeds, containers, documents and photographs that illustrated a previous conversation we had held. Therefore, as described by Holstein and Gubrium (1997), several moments of

interviews were unplanned free flowing interactions based on an active social interaction, rather than exclusively built on an intention of extracting information.

How questions were formulated changed considerably during the course of this research. This strategy is typical of the grounded theory method, which according to Denzin and Lincoln is an approach that “accounts for variation; it is flexible because researchers can modify their emerging and established analyses as conditions change or further data are gathered” (2003:252). As the informants disclosed relevant information, new directions of research were added and other approaches removed.

I conducted 45 in-depth interviews to deepen my understanding of sensitive issues, especially natural resource management tensions between local people, NGOs and the park, elders/chiefs’ decisions, magic and witchcraft, and the foundation of villages and territories. Key informants included leaders of associations⁸, elders recognised as knowledgeable about the oral history, people recognised as magically skilled, members of founding lineages, chieftains and village chiefs, healers and preachers, hunters, and people involved in protests, among others. To learn more about certain issues the interviewees often said that I should speak to particular people, who often lived in other villages. Therefore, I visited several other villages to follow up on connections given by previous interviewees. This strategy worked very well and it seemed that people liked to be recommended and recognised as having expertise in certain issues.

During the interviews I kept questions as simple, short, and unambiguous as possible, avoiding negation and leading messages. ‘Content paraphrases’ or repetition of statements were used to clarify understanding and encourage further development of a certain subject. The interviews were conducted in farmers’ fields, homes or in a quiet environment where other people were unlikely to interrupt or disturb the course of the interview.

2.3.3.2 Participant observation and informal conversations

In spite of the importance of in-depth interviews for gaining access to relevant information, much of the material bringing new inputs to the analysis was accessed during informal conversations and participant observation. Trust is built as people

⁸ There were different kinds of associations: women’s associations and natural management committees that usually worked as an interface with NGOs and the park, and youth associations that usually organised football matches, parties, or paid work.

become closer and this was mostly an outcome of everyday “negotiation, reciprocity and exchange” (Jorgensen 1989:69). Doing ethnographic fieldwork, and producing an ethnography, implies “writing about” (Silverman 2006:67) and from the very beginning of the fieldwork I took notes, described situations and wrote down thoughts about my experience and interpretation of events, reports and episodes.

Conversations constructed *in situ*, are bound to a certain spatial and temporal context, and constitute an outcome of an interaction between the participants (Holstein and Gubrium 1997). Furthermore, an interview is not only an encounter but a place where meaning is constructed (Holstein and Gubrium 1995). Therefore, as interviews are an artificial and socially constructed environment, participant observation was of considerable importance to understanding interviewees’ assertions in different contexts. This was not possible for all people interviewed for the structured/semi-structured interviews because the relationships, and amount of interaction I had with different people varied.

The value of focus groups is well recognised and it has been employed researchers working in similar issues (Webber 2006, Costa 2010); however, it involves considerable effort from farmers (Krueger and Casey 2000). Taking this into consideration, plus the fact that in Guinea-Bissau this is a commonly used method by development and conservation projects, I avoided using them in order to stand back from these contexts (see a section below), and to avoid making farmers abandon their activities to accomplish the goals of this study. Nevertheless, spontaneous gatherings during resting and leisure times around fireplaces generated opportunities for more informal focus groups. These encounters were characterised by a more dynamic exchange of opinions than the one-to-one context of interviews, and were very useful to understanding the extent of consensus and disagreement around certain issues (Morgan 1996). Furthermore, it made possible a triangulation of information or an understanding as to why someone expressed a certain view in a certain place.

I also attended local meetings to which I was invited or received permission to attend. These included village meetings, meetings of the Union of the Management Committees of Cantanhez (created as a platform for discussing issues that concerned conservation and the park, see Chapter 3), and meetings of youth associations. I also had the opportunity to attend several collective work days and ceremonies. The ceremonies included three weddings (Cabam, Camcoiã and Macubé), two baptisms (Cabam and Macubé), funeral ceremonies for two important elders (Cabam and Cadli),

the funeral of a young woman (Cabam) and of a newborn (Cabam). I was present at the ceremonies of empowerment of two chieftains (Cadli), as one died soon after being empowered. I attended an offering of cooked rice with goat meat shared with the village to thank God (*simola*, kl; Camcoiã). I tried to follow as much as possible the bush initiation of the Nalu (Cabam) that lasted for two months, and the respective visits of *mbantchum* to the village (the magical being of the men's secret society, see Chapter 3 and 7). I was present at the party that celebrated circumcision of young boys (Camcoiã) and the circumcision of girls (Macubé). I also heard the bush devil (cancurã, kl) installing a spell in mango trees (Camcoiã). Additionally, I participated in farming activities such as ploughing, guarding, harvesting, and dike maintenance. I went fishing with men in canoes, accompanied women to the local market, helped with the household daily tasks (cooking, cleaning, carrying water), accompanied hunters to check traps in farms and helped with preparations for storing crops.

The motorcycle I bought also allowed for unexpected moments of sociability with local people. In essence, without the motorcycle, multi-sited research would have been difficult. The motorcycle was the most suitable means of transportation for this study: I easily went from one village to the next and I was able to transport other people. The possibility of giving lifts to people allowed me to hold unexpected conversations, to learn about kinship ties across villages and to deepen relationships that probably would not have happened otherwise.

2.3.3.3 Oral history and participative mapping

In Cantanhez, many of the current arguments about access to natural resources involve historic and present day antagonisms. Consequently, my interviewees often recalled the past when analysing the present. Many of the local narratives referred to local settlement history, the Portuguese colonial period, the independence war (1963-1974), as well as their post-independence experiences, their elders, and other local people who took part in different parts of the conflicting contexts. Thus, the research became enmeshed into a historical approach that seemed unavoidable. Therefore, I conducted interviews about the oral history of Cantanhez and consulted historical material. To understand the past and its framings I also used written sources and followed some archive research in the Overseas Archive (Lisbon, Arquivo Histórico Ultramarino) and in the Historical Archive of the Bocage Museum (Lisbon).

Furthermore, I consulted secondary historical literature available online, in the library of the INEP (National Institute of Studies and Research), other smaller libraries and archives in Bissau, and in several libraries in Lisbon and United Kingdom. In spite of the importance of these, my research focuses on the way local people constructed their past and how these served to analyse the present.

Landscapes were mapped and described and, simultaneously, records of oral history were taken. It was necessary to try to characterise the vicinity of the villages both temporally and spatially. This ‘walking while talking’ became a “practice of understanding” (Lee and Ingold 2006:83) that provided effective access to the information that was embodied in the physical space. Also, whenever possible, the founding history of the villages was recorded. Instead of dates, Guinea-Bissau historical references were used to track the history of each village, such as the colonial period (before 1963), the independence war (1963-1974), the Luis Cabral government (1974-1980), the first mandate of Nino Vieira (1980-1997), the transition from one-party to multi-party elections (1990), the civil war (1998-99), the Kumba Yala mandate (2000-2003), and the second mandate of Nino Vieira (2003-2005). Relative terms such as “before”, “during” and “after” were integrated with these historical references to allow the temporal reconstruction of the villages’ histories or other temporally relevant information (production, trade, religion, wildlife, ecosystems). In most recent years, generally from 2008-2009, the reference to specific years allowed for finer detail as people could generally date the events.

Geographic information was collected using a GPS device (Garmin Etrex Legend HCx using the WGS 1984 datum). *Google Earth* software was used to distinguish major landscape features and ArcGis version 10.0 software was used to develop the geographic database. Data collected by GPS were downloaded to Garmin Mapsource Trip and Waypoint Manager version 2.

2.3.3.4 Photography: digital views and memories

During 2011, two Nalu men of 30-35 years old living in two different villages of Cantanhez National Park were provided with digital cameras to document Cantanhez through their own eyes. They were not paid for this activity but the cameras were given to them. I taught them to use the cameras and they had one month to get used to them and take pictures of whatever they wanted. I then asked them to

photograph Cantanhez National Park, specifically what Cantanhez National Park meant for them – I specifically used these words to define the space. They selected the photographs and provided me with a description of each image that I recorded together with the photograph. It was made clear that these pictures were for use in the current research, and that no other publication would be made without their permission. Their identity is kept anonymous. The photos are shown in the Appendix 5. In addition to this, I took my own photographs, which show my perspectives of the same space. I added a description to each photograph (see Appendixes 11 to 28).

2.3.4 Transects and point samplings

To assess crop loss, standard natural science sampling strategies were used, including transects and point sampling. Somewhat surprisingly, these frameworks were no less ethnographic than any other everyday-life setting. It is likely that the difference was that some farmers became participant observers of my research. Some farmers were interested in crop loss assessment and keen to participate and explain their views on damage, which transformed transect samplings into interesting ethnographic encounters.

During the pilot study, methods for estimating crop damage were tested, and I trained myself in crop damage identification for the majority of upland crops and mangrove rice. In the following year, during the main phase of my fieldwork, I followed a complete agricultural year (Figure 8) and crop damage was estimated in the early stages of fruit maturation until ripeness and harvest. Sampling replications took place whenever the maturing cycle of the crops allowed. Although considerable damage may occur during sowing (such as birds eating seeds), this phase was not included within the study. Furthermore, the post-harvest losses, which Oliveira et al. (1996:32) described as important, were not sampled either. Notwithstanding, these were still addressed by farmers during interviews.

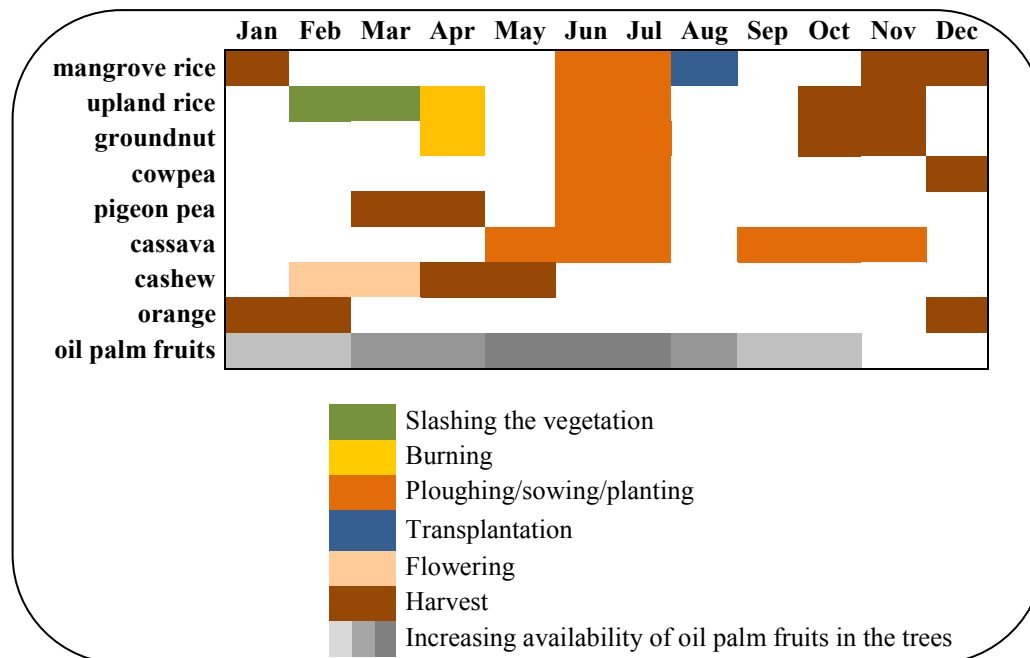


Figure 8- Farming calendar for the main crops grown in Cantanhez.

Each farm under study was characterised by (i) its location and user(s); (ii) the crop types present; (iii) the origin of the soil (forest, mangrove or savannah), and (iv) the adjacent ecosystems/land use. For each crop, the average planting densities were evaluated (stalks or trees per m²), which provided an estimate of the potential of harvest for some crops. Nonetheless, as was previously noted by Webber (2006:56), this is difficult to fulfil for tree crops, such as citrus, kola (*Cola nitida*) or cashew.

2.3.4.1 Recording crop loss and identifying crop foragers

Although several crop damage studies placed the sampling transects randomly around the entire cropland area (Hill 2000, Priston 2005), in this study damage was measured using stratified distribution of transects, with the transects arbitrarily placed in each stratum. A similar sampling design has been adopted by other studies (Sen and Chakrabarty 1964, Tzilkowski et al. 2002). The *strata* considered were farm edge and farm central area. The central areas were expected to be less vulnerable to crop loss because where the farm is guarded it is riskier for wild animals to feed on central crops than those growing by the edge of other habitats.

To identify damage several animal signs were investigated: tracks, dung, dental impressions in plants, signs of digging, and other physical remains or available signs (Naughton-Treves 1998). If neither dental impressions nor spoors could be identified and/or there was disagreement between me, the field assistants, and the farm owner, then the cause of damage was classified as undetermined.

Measuring crop damage is far from an easy task (Priston 2005, Webber 2006). There are two distinct types of crop loss, one taken accidentally and another in which the plant is used for feeding. Bush pig-inflicted damage was easily identified, considering the size and scale of the damage and the conspicuous footprints. Primate footprints can be seen in the soil; primates can also leave distinctive bite marks. Damage by cane rat (*Thryonomys swinderianus*) is easily distinguished from other rodent damage due to its bite marks and droppings. However, it was not possible to distinguish between small rodents, between certain primate species, or between bush pig species. Damage caused by insects was also detected, but identifying the species responsible was not required for this study. Moreover, I could not detect damage by northern lesser galago (*Galago senegalensis*) or by the recently identified dwarf galago (*Galagoides demidovii*; André Barata personal communication 2009).

A damage event was defined as “any area of continuous crop loss attributable to one species” (Webber 2006:55) and one plant was considered “a single-stemmed crop at ground level” (Priston 2005). A damage event was characterised according to the following: (i) species or source of damage; (ii) plant part damaged; (iii) area or number of units damaged/missing (leaves, fruits, stalks); (iv) location (recorded with a GPS device); and (vi) local-scale position in relation to the farm limits (inner or edge locations).

Different crops demanded different sampling strategies for crop loss estimation. Mangrove rice farming is a monoculture established in parallel rows in flooded fields (Figure 9), whereas upland rice is sown in association with other crops. Consequently, estimating damage in mangrove rice fields involves walking in water within rows of rice plants, while in upland rice it is difficult to walk between the rice stems. The particular methodological procedures for damage assessment in upland and mangrove farms is described below.

Locally, tying cloths or plant material to certain places (like branches, tree trunks or sticks) means that a magic spell was installed in that place. Consequently, markings used to identify transects and delineate particular trees had to be chosen

carefully⁹. For example, oil palm leaves, red coloured or iron objects were not used for marking as these can have ritual meaning. In addition, farmers advised, informed and authorised my marking procedure.

2.3.4.2 Measuring crop loss in mangrove rice farms

In each mangrove rice field, I followed two different types of transects, one for counting rice panicles damaged (*a* and *b* strips in Figure 9), and the other for measuring rice production (*a'* and *b'* strips in Figure 9). Granett et al. (1974) reported that for corn plantations the selection of ears in a line perpendicularly across corn rows is a more effective method than sampling consecutive ears in a row. I applied the same principle as Granett et al. to estimate rice loss in mangrove rice fields and the transects for measuring rice damage were placed perpendicular to the arrangement of rice rows. Two transects each 1 m wide with the same length as the rice field were distributed in the centre and by the edge of the farm. One of the two possible edges was chosen randomly.

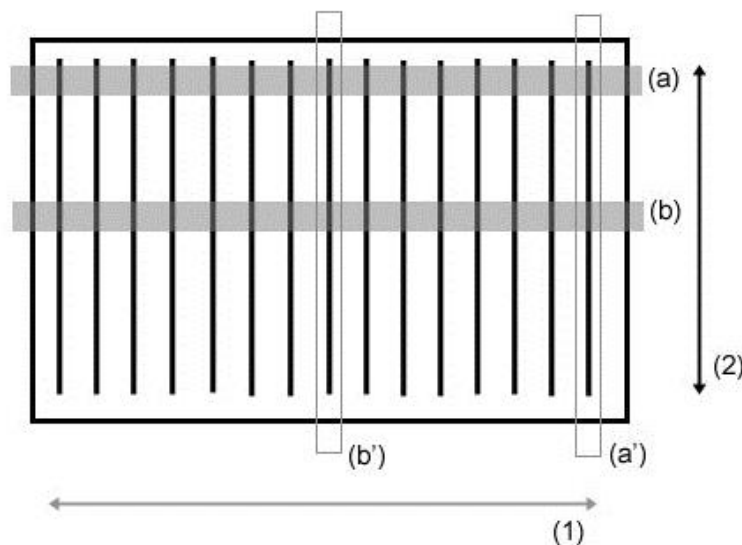


Figure 9- Sampling design in a mangrove rice field: (a) edge transect; (b) central transect; (a') counting the number of plants in an edge ridge; (b') counting the number of plants in a central ridge; (1) counting the number of ridges; and (2) length of the ridge.

⁹ Marina Temudo who has worked in Guinea-Bissau since the 1990s provided advice on this matter.

Because productivity is expected to be higher in the central rows, both central and edge ridges were characterised in terms of the number of rice plants and number of panicles per plant, so that an average potential productivity was assessed. The number of rice panicles per rice plant was estimated by counting the number of panicles in a minimum of four rice plants per transect.

2.3.4.3 Measuring crop loss in the upland farms

Estimating damage in upland rice fields can be problematic because the researcher may inflict damage on the stems which are planted very close together. Since it is difficult to walk between the rice plants without damaging them, I sampled the central areas of the field by randomly placing the 30x1 m transects along the small paths used by farmers to move inside the farm (Figure 10). Edge transects were accessed through the boundary ecosystem. Other crops growing together with rice, such as cassava (*Manihot esculenta*), maize (*Zea mays*), sorghum (*Sorghum bicolor*), millet (*Pennisetum typhoides*), cowpea (*Vigna unguiculata*), sugar cane (*Saccharum* sp.) and tomato (*Lycopersicon esculentum*), were investigated for signs of damage within the same transects.

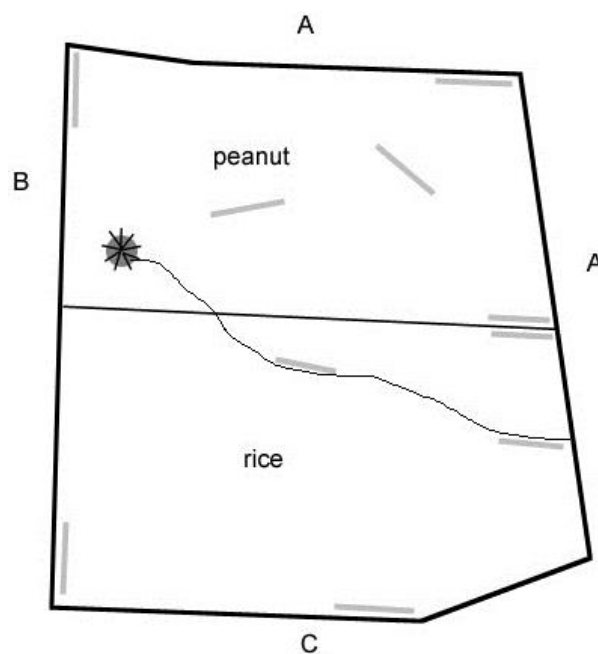


Figure 10- Sampling design in a groundnut and upland rice farms. Transects are shown in grey, the black line illustrates the path, the shelter is defined by the star feature and A, B and C refer to different types of habitats.

The following data were recorded for each transect: (i) number of rice plants with damaged ears (counting); (ii) number of damaged rice panicles per plant (counting); (iii) percentage of grains missing in the damaged ears per plant (visual estimation on percentages); and (iv) the factor responsible for each damage event. In each transect, potential production was estimated by counting the number of rice plants in 1 m² and the number of rice panicles per plant in four plants chosen randomly from within the plot.

2.3.4.4 Measuring crop loss in orchards

In southern Guinea-Bissau, it is common for fruit trees to grow in orchards or people's compounds, usually together with other tree crops and wild trees. I estimated crop loss in orange trees (*Citrus* sp.), banana (*Musa* sp.) and cashew. Qualitative notes were made from direct observation about losses on lime (*Citrus* sp.), grapefruit, papaya (*Carica papaya*), oil palm (*Elaeis guineensis*), and Angola palm (palmera di granja, kl).

Damage in orchards was assessed by marking fruit trees with a specific code and monitoring the damaged fruits on the ground around each tree. For insect damage only the area below each tree canopy was considered, while for mammal-inflicted damage, the surroundings of the tree were investigated for signs of foraging on fruit. In small orchards, all trees were mapped, geo-referenced, marked and monitored. For large orchards, such as cashew orchards, the trees along the orchard limits and trees in the inner areas were included in line transects and monitored for evidence of animal damage.

2.4. Data analysis

In accordance with the explanations about the study methods given above, the data analysis also followed two distinct approaches. The quantitative information from structured interviews and ecological sampling was analysed using statistical testing and packages such as SPSS version 19.0, and the qualitative information was organised and categorised in Nvivo version 10. Classifying the data in themes and nodes allowed for the first phase of data analysis undertaken away from the field. In addition, the process

of writing was in itself a process of analysis as it required revision of field notes, cross-referencing of information, comparing reports, and identifying contradictions, singularities, consensual perspectives and connections. Writing meant contextualising and expressing the complexity of the components I found relevant to illustrate the socio-ecology of Cantanhez and its political implications.

A “thick description” is, as pointed out by Geertz (1963, 1973, notion drawn from Gilbert Ryle), and highlighted by other scholars, “unquestionably one of ethnography’s richest offerings” (Falzon 2009:4). Chapters 3 and 7 of this thesis provide a qualitative analysis and are the written expression of an ethnographic approach. By contrast, Chapter 5 is mainly quantitative and encompasses many of the statistical testing and quantitative analyses followed in this research study. Chapters 4 and 6 result from both quantitative and qualitative analysis of data gathered during interviews. Data gathered through the structured interviews provides simple information, which by its own nature was important to allow quantitative insight. However, much of this information would have remained obscure without the ethnographic insights.

For the quantitative analyses, the Shapiro-Wilk test was used to assess the normality of data sets. The Mann-Whitney and Kruskal-Wallis tests were used to test the difference of non-parametric data for two and multiple samples, respectively. I used Pearson’s chi-square test to assess the relationship between gender, age categories or village with the pattern of responses. Significance was set at $p < 0.05$.

2.5 Reflecting on myself as researcher and individual in the field

2.5.1 A biologist willing to look at nature from a people’s perspective

Biologists tend to simplify people’s relations with their surroundings to resource use (West 2005, Tsing 2013), which means that we have not been trained to see beyond the utilitarian perspectives of the landscape and its elements. Throughout the duration of the fieldwork, ideas such as this of Gupta and Ferguson (1997:1) were encouraging: “the single most significant factor determining whether a piece of research is accepted as anthropological is the extent to which it depends on experience

in the field”. I was aware that an intense fieldwork experience would be needed to move towards “thick description” (Geertz 1973). Notwithstanding the encouragement I could get from the quotation above, I also had to detach myself from previous framings associated with my biological training so that I could proceed to try to achieve the foreseen thickness.

Associated with my biological training, I participated as a biologist in a chimpanzee conservation project in Cantanhez. In 2007, I spent five months in Cantanhez and four months in Lagoas de Cufada Natural Park estimating chimpanzee densities using nest counts, and conducting interviews about local knowledge and perceptions of chimpanzees. Concurrently, I tested different means for communicating with local people about chimpanzee conservation (Sousa 2007). One goal of the project was controlling primate hunting. To this end, the project leaders followed a set of actions towards animal and forest conservation, which included destroying any traps they found in the forest, holding meetings with community guards on how they should proceed to control hunting, explaining the advantages of chimpanzees and chimpanzees’ tourism, and their status as a globally threatened species.

Locally I was perceived as a student and not as a project leader, although I was regarded as one of the “chimpanzees’ people”, meaning a person involved in the conservation of chimpanzees. From the beginning of 2007 when I first visited Guinea-Bissau until the beginning of 2009 when I started the pilot study for the current research, local people realised that some ‘shape-shifting’ occurred regarding my position as an individual. In fact, the feeling that people commented on in 2009 had actually occurred inside me, I was more interested in their views and less interested in chimpanzees’ behaviours. After working for a conservation project and writing up my previous research, it was clear to me that I had had access to an incomplete story.

For the first months of my doctoral fieldwork, I avoided asking directly about snares or hunting, and only after I was more confident that I was no longer one of the ‘chimpanzees’ people’, did I start to approach these issues. My unease came from my worry about local people’s views, and less because of any type of confrontation from their part. The only episode of note was actually helpful for understanding the concerns of people in this village. Shortly after my arrival in the village in 2009, several elders called me to have a meeting with them. Somebody had seen me in another village buying products from a shop owned by an employee of a local NGO. They informed me that the tourists coming through the NGO could not go in the forest because people

the forest guides were on strike (see Chapter 3). They asked me whether or not I was a “friend” of that NGO (I did not even know the shop belonged to an NGO employee), and they informed me that they did not want anyone who was involved with the NGO working in their village. This episode was important for me to understand what was actually worrying people in the village. I clarified for them that I was an individual student and that I had no link to any project or NGO, thus re-establishing my individual space in Cantanhez. I highlighted that I would accept whatever their decision would be. After a few minutes of private discussion, they called me back in and announced that they welcomed my stay in their village.

2.5.2 A ‘white’ researcher willing to look at ‘black’ people

A black-white duality was very often present in my interlocutors’ discourses and it seems that two distinct meanings were attached to this reference. The most evident and hardest to handle was the local views of what being ‘a white’ entails, as people portrayed how I lived, how I thought, how much money and power I had based on their narrow view of ‘whites’, which was probably based on previous experiences, namely the dominant media portrayals and what they had been told by others. I was, from the very first moment, burdened by a series of pre-conceptions about who I was supposed to be. The local social constructions of ‘a white’ person struck me as a very thin definition that did not accommodate much diversity. I was very often told, “*whites* do not know what tiredness is, and you came here to experience it”. I was very happy upon the first evidence that I was starting to be regarded as an individual person, which ‘although *white*’, bore many characteristics that did not match the previous conception of who I was. This process of re-construction of my identity was very important for being perceived as a singular individual. I cannot identify what group, age category or gender, managed this transition first. Taking as an example my experience in one of the villages, I would say that I was first in touch with elder men, then started to have closer contact with younger men, followed by younger women and finally elder women. I started to be very close to a young single man who was my field assistant and we held long and insightful conversations. Since I was spending more time talking to him than to elder men, I was transported into the sphere of youth in the village and provided opportunities at young people’s gatherings, to which I was frequently invited.

As I was achieving an individual identity in more or less clear lines, each one of the people who were regularly around me also became singular. Friendship, trust, dismay, and dislike took place among ‘singulars’, which is recognised by some as “naturalization of cultural difference” (Gupta and Ferguson 1997:9). Several of my local informants became confidantes – people with whom I shared my doubts about my research – and we discussed the causes, nature, and way of reporting understandings of particular events we had experienced together or individually. Gudeman and Rivera (1995:243) write that “ideas emerge and are fashioned in conversations”, which produces common outputs. These conversations challenged my views, as a European woman, and perhaps it also challenged their views about their own society and about me.

As described above, several local people’s explanations relied on a ‘blacks’ and ‘whites’ dichotomy. Locally, white people are perceived to have magical power, they are seers, in a sense that they are inherently able to see, talk and make agreements with the spirits. The local narrative accuses whites of having stolen local powerful and good spirits and taken them in bottles to the “whites’ homeland”. This is one of the explanations from local people for the perceived development of Western societies, which is an accurate political analysis expressed in a metaphor about what happened during the colonial period. Occasionally, during carefree conversations, I struggled to convince my interlocutors that I have never seen an *irã* (kl, a bush spirit). In the end, I am not sure whether any of them believed me, or whether any of them actually believed that I could see the spirits. As a measure of safety, I only started to walk around alone in the woods surrounding the village when I received permission to do so and I was told where I should not go alone. There was mobile phone network coverage in the mangrove area and I always informed someone that I was going there in order to avoid any kind of suspicion. After having a conversation about spirits with one of the people with whom I became closer, and after trying to convince him that I had never seen a bush spirit, he disclosed this view:

I know that bush spirits exist because I have seen them twice. Only afterwards I realised that the people I saw were bush spirits, they behaved in a different way, they were alone in the bush, I have never seen those faces before, and they did not reply to me when I greeted them. I do believe in bush spirits but I do not believe in *pauterus* (the seers).

I was surprised and asked why he did not believe in seers, and he replied, “You know, because they say I am a seer and I am not, if they were seers they would know that I am not”. It was a rare report that the magically mediated status of seers was threatened by disbelief. This kind of conversation provided me with some evidence that I had gained access to some deeply founded perspectives, and that my inherited identity as a stealer of spirits had probably been modified.

2.5.3 A woman willing to (also) be a woman

Deborah Amory says that her “understanding of African life is fundamentally shaped by my identity as a young white American woman” (Amory 1997:103). Being in my late twenties, my experience as a woman and the fact I was not Guinean conditioned my understanding of local life, as Amory describes. Although this seems much like a simple philosophical dead end, being conscious of these limitations opens many opportunities for reflection. During fieldwork, choices had to be made regarding the everyday sphere of interactions. Initially I was mainly regarded as a ‘man’ and as a ‘guest’. I used to eat together with men and was served food by women. I was given water in a bowl by women and asked if I wanted them to wash my dirty clothes. It would have been acceptable to be treated as a guest, and to a certain extent as a ‘man’, until the end of my fieldwork. However, at the same time as it perpetuated the idea of “lazy whites”, it imprisoned me in the cultural sphere of being a guest, and, especially, a man. Therefore, it was not without some resistance, funny comments and surprise that shortly after my arrival I took on my role as a local woman. I started carrying my own water jugs on my head, helping out with cooking and dish washing, sweeping up, asking for a wooden board to wash my clothes standing up, and helping wash the small children. I did not stop eating with men, but I did not exclusively eat with them. This change in attitude allowed me to have access to the backyards, which are a different sphere of sociability. After a few weeks, Ami [pseudonym] would call me loudly “Joana, come help me carrying water home!” This was amazing and very welcome as I was no longer a “man” for her and it was nice to hear people saying that I was not a guest anymore. Although I did remain a guest, it was encouraging that this boundary was slightly threatened. Indeed, there were many negative comments regarding my achievements as a “woman”, but I was definitely happier about also being considered some kind of woman. Furthermore, other good things came along with my shape-

shifting, and on particular occasions it helped me to engage in very amusing moments with other women. Going to the market, ploughing and watering the gardens, sleeping together when we attended ceremonies in other villages; all these moments created circumstances to chat about more intimate subjects, as women.

2.6 Ethical and transparency concerns

The current research project was evaluated by the University Research Ethics Committee (UREC) of Oxford Brookes University and received the Chair's Approval on the 21st October 2009. Below I summarise the main topics of ethical relevance.

As described by other studies that have assessed crop loss (Naughton-Treves 1997), one of the main ethical concerns associated with my research was that people expected that it might bring compensation for their crop loss. Consequently, the purpose of this study was fully explained to participants and it was stressed to participants, local chiefs and the local administration that no compensatory measures would come along with this project. Likewise, the aims of my stay in Guinea-Bissau were explained carefully to the local communities, emphasising that there were no compensatory measures involved and that I had no link with any conservation NGO or conservation project working in Guinea-Bissau.

Considerable efforts were made not to disturb farmers during their daily activities and this was accomplished by living in the same villages and arranging interviews around the participants' schedules. Interviews were carried out while accompanying people in their daily activities and I tried to choose the most appropriate moments to discuss the most sensitive issues. Their farms were a very suitable, comfortable and private place to conduct an interview. It was made clear to all informants that they could postpone or interrupt the interviews whenever they liked. Especially in Cantanhez National Park, where farmers have been exposed previously to other research projects and may be getting tired of researchers, it was essential to respect the daily rhythms and the calendar of agricultural tasks.

As explained in section 2.3.4.3, the methods adopted for damage estimation were modified to ensure that data collection would not themselves damage the crops. Fulfilling this goal was given priority over adopting the most appropriate sampling design.

With regards to consent forms, the degree of literacy among local people is extremely low. This is particularly evident in people above 20 years old and therefore it was inappropriate to present individuals with a participant information sheet or to ask them to sign a consent form, since it could cause fear or unease. Every farmer and interviewee was fully informed verbally about the study and interview procedure, including the fact that all statements would remain anonymous. In the first interview participants' names were replaced by a code. Village names were also coded since the main aim of this research was to understand how farmers cope with harvest losses and deal with nature conservation goals and regulations. Village names were coded and therefore no geographical references or maps are shown in this thesis which would facilitate their identification. I have changed all the names of my interviewees and the research locations. I followed a 'protocol' for protecting my informants in which a list of real names was placed against the respective codes in a hard copy kept secure in a locked box/file. Furthermore, village anonymity works as an added measure to ensure inhabitants cannot be identified by individuals or agencies reading reports or publications arising from the research, which is relevant when respondents might be engaged in various resource usage activities that are currently illegal. In subsequent publications, conference papers and lectures, I will strictly ensure anonymity.

All potential participants were given the opportunity to discuss the project with me before deciding whether they wished to participate in the interview study. Informed consent was obtained by verbally explaining the terms of my research, the contents of the interview and highlighting that (i) people were under no obligation to participate, (ii) if they agreed to participate they were able to withdraw at any stage, (iii) all the information would remain confidential.

Two of my informants allowed me to use their photographs in the dissertation but their identities were not revealed and the photographs will not be used hereafter without their permission. The photographs taken by the participants have not been used for any purpose without their consent except for the aims of this study. After the study, the participants kept the cameras as agreed. They were free to sell or use the cameras as they wished and the same is applicable to the photographs taken by them.

During the pilot study, I relied on field notes taken during interviews. During the main fieldwork period, several interviews were recorded in different contexts, but only with the participant's consent. Prior to the interview the participants were informed about: (i) the purpose of recording (I needed to record the interview only

because it made data analysis much easier and efficient); (ii) participant names were not recorded; and (iii) interviews would not be accessed by anyone except myself. Recording only took place if the participants agreed to it. On a few occasions people asked for the recorder to be turned off before they talked about particular issues. In these cases, notes were taken during the interview.

My field notes were kept in different languages, mainly in Kriol and Portuguese. I kept several notes in Kriol because these encompass the nuances of local expressions. The notebooks were stored in a hidden place in my backpack. Notes from my readings were mainly taken in English.

Although I have no link with any conservation group/agency working in Guinea-Bissau, I gave copies of interim reports of preliminary results to NGOs and official state agencies so they could keep informed about my research insights into people and wildlife issues. In this way, I aim for information to be diffused to the Union of Management Committees, local NGOs in the Cantanhez National Park and the Institute of Biodiversity and Protected Areas. Each report was and will be delivered personally since the mail service in Guinea-Bissau is not reliable. In this way, all government and non-governmental organisations working in conservation and agricultural issues in Cantanhez National Park were informed about the preliminary outputs of my study (Appendix 4). Copies of the final version of this thesis will also be sent to the Union of the Management Committees of Cantanhez and to local village chiefs and chieftains.

3. Narratives produce contested spaces

“While narratives about the past may actually be about the past, they are almost certainly about the present and the future.” (Lund 2013:15)

3.1 Introduction

3.1.1 Recounting the past

The peninsula of Cantanhez belongs to the Nalu homeland and today is broadly known as Cantanhez National Park. In this study, it is referred to as Cantanhez, as a term in broad use today by different local peoples (see Chapter 2). For the Nalu people, it is also named as Cubucaré in Kriol or as Cacubé in Nalu. This region has been a disputed space throughout the 20th century. During interviews and in several social gatherings, local people, particularly elders, attributed great importance to certain aspects of their recounted past. As such, during the fieldwork, I became more and more convinced that a historical approach would be unavoidable if I wanted to follow themes of the stories I was being told. This became clear when the historical narratives of the interviewees revealed relevant information about how local institutions reportedly coped with what was perceived as an abuse of power. If a recounting of the past is narrated in a certain way, it is actually being shaped by the speaker’s sense of the present (Connerton 1989). Thus, this chapter provides a historical approach to the 20th century and includes both written and oral recounts of the past relevant to understanding local institutions and access to resources, knowledge and political power.

Elders often started a conversation with “you know, before...”, then established temporal comparisons and constructed a version of the present, using the past as a “symbolic resource” (Appadurai 1981:201). This recalled past has to be sustained by the authority of a consensual understanding of the bare bones of a place’s history (Appadurai 1981). For Cantanhez these are the Fula people’s invasion, Portuguese colonialism, Balanta people’s arrival, the independence struggle, and nature conservation programmes (Figure 11). These major periods have promoted

conflict and/or knowledge sharing, and led to the mobilisation and positioning of local political players and storytellers. Only recently, a group of Balanta youths challenged an element of this skeletal framework, as described later in this chapter. In spite of this episode, the previous elements may be considered the current (almost) consensual structure of the past, from which different versions are drawn and contested.

Image removed for copyright reasons

Figure 11- Timeline of the main regional and national events influencing the social landscape of Cantanhez (timeline drawn from my informants narratives and Rodrigues 1948, Bowman 1986, Galli and Jones 1987, Lemos and Ramires 2008, Temudo 2009, Ecocantanhez 2010, Ecocantanhez 2013)

As argued by constructivist theorists, the notion of territory goes beyond physical objects, as territory is “(re)created in and through the human discourse” (Forsberg 2003:7), and therefore used to appoint rights and duties. *Nfoth*, which also means “ground” and “soil”(Frazão-Moreira 2009:109), does not have the stigmatised and exclusionary meaning that is often understood by the term “territory”, and the reader should understand it in Nalu terms. *Nfoth*, mainly refers to the concept of “spirits province”, a term used by Crowley in relation to the Manjaco society in the north of Guinea-Bissau which she defines as a:

Territory of ritual field usually consisting of several villages (...) bound together by common male initiation rituals and common rights to sacred, central, public spirits shrines that are identified with the province as a whole (Crowley 1990:215-217).

As Temudo (2008:259) suggests, “in Guinea-Bissau, politics and cosmology are connected in inextricable ways and should not be conceived as two separate fields of action”. At this point it is necessary to explain the extent to which the recounted past and present local cosmologies matter for the people’s perceptions of nature conservation initiatives, which is the central theme of this research. Whenever a new institutional order takes over or is imposed, such as when a national park scheme is set up, local political players rearrange their position to accommodate, negotiate, or reject the new setting. Knowing about how people today recall past strategies for negotiating physical and political spaces can elucidate local constructions of present contestations.

The nature conservation scheme, although grounded in international goals and embedded in a moral authority for doing “good”, is not immune to the various local people’s views and judgments. Furthermore, local people can keep these perspectives hidden or undefined, allowing a controversial process to continue and then use the “weapons of the weak” to undermine it (concept by Scott 1985). Understanding the means reportedly used in past contestations in a framework of different and overlapped identities, is valuable for understanding nature conservation contestation today.

3.2 Results

3.1.1 Singular and common identities

In Cantanhez, present-day cosmologies have been shaped temporally through the influence of different peoples’ diasporas. Conflict and war, as well as mutually convenient encounters, allowed for the appropriation of others’ knowledge, diffusion of beliefs and creation of shared identities. At the same time that some features are socially recognised as beliefs and practices of a certain ethnic group, gender or age category, others are reported to have been appropriated from other peoples. There are several examples: mangrove rice farming is recognised as a Balanta influence (see Chapter 4), the *fanadu di cancurã* (kl, male circumcision followed at home) is locally described as originally Sussu or Mandinga, songs in Mandinga are sung in one of the most important Nalu initiations in the bush (*ntchaper*, nl); the kinship division in three matrilineal lineages called *malobal*, *massem*, *mabuadje* for some Nalu is common to

the Beafada¹⁰ (see Abrantes 2011). Filho (2003:14) depicted the mythological serpent¹¹ and blacksmiths as common elements to the cosmologies of Guinean peoples, which were also included in my informants' narratives (see Chapter 7). Moreover, in Guinea-Bissau, shamanism and magic beliefs are adhered to by both Islamic and Christian people. In a like manner, the Fula people were the entrepreneurs of the Islamisation of coastal peoples and at the same time maintain several animist beliefs. In short, different peoples share the same “cosmological paradigm” (Crowley 1990), which is evidence of cultural diffusion and a certain fluidity of identities (Skinner 1963, Cohen 1978). As a result, in Cantanhez the singularities and commonalities among groups of people, as well as their transformations and interactions, are all central to the understanding of social processes (see Fardon 1991, Richards 1996 for other West African contexts).

3.1.2 Beyond people: the supernatural actors

The Nalu people, recognised as the first settlers of Cantanhez, are perceived by other local peoples to have great magical power. Through the shrines, the founding lineages are able to connect with the spirits that inhabit their homeland. In earlier times and today, Nalu people have been challenged in different ways at territorial and political levels, but they report to have always been in control of the shrines.

The cosmological system of Cantanhez is inhabited by a variety of bush spirits¹², different in power, appearance, temperament and religion. Montenegro (2009:47), defines a spirit as “an individual or collective sacred spirit that is from the forest or the village, and is an object of cult, consultation and provides protection and punishment”.

There are different types of spirits in Nalu cosmology and these have equivalent terms in other languages for other ethnic groups. Although it is hard to know whether these refer exactly to the same bush spirit, it seems that people largely refer to spirits with similar features. The spirits are able to influence people's lives in a variety of ways, such as affecting justice, fortune, health, wealth, access to resources

¹⁰ The Beafada homeland borders the Nalu homeland in the north. According to the interviewees, this clan system is more important for the Nalu of Tombali than it is in Cantanhez.

¹¹ The term ‘serpent’ (serpenti, kl) refers to the mythic snake carrying symbolic value and does not bear scientific or taxonomic meaning. I use the term ‘snake’ referring to the modern snakes that belong to the suborder of the reptiles named Serpentes (Linnaeus, 1758).

¹² The term ‘spirits’ (irã, kl) corresponds to *nenem* in Nalu (nl), *djina* in Puular (pu), *uli* in Balanta (ba).

and good harvests. These magical elements and their symbolic meanings intermingle with political power and provide a hint about the diffuseness of the political structure. This chapter proceeds by presenting the magical characters and social mechanisms that compile the discursive mainstay that synthesize the Nalu homeland as a territorial concept.

3.2.2.1 Spirits and “bitterness”

“And there are enormous snakes, like the mast of a 100-ton ship”
(Description of the Guinea coast from the 16th century in Hair 1976)

All spirits are identified by individual names (Muslim spirits have Islamic names) and can be referred to by their social role, personality and/or temperament. Regular bush spirits look like people, they can be black or white, male or female, Muslim or not, youths or elders, and they can be “good” or “bad”. All spirits can assume the forms they wish, i.e., all can shape-shift into something else (see Chapter 7).

Spirits usually live in natural springs, rivers, small islands, areas of flooded savannah, big trees, or forested areas, which sometimes are very close to fruit trees and villages, or as described by Lundy (2009), in oil-palm groves. The places where the ceremonies for the spirits are performed are often places to fear, and are usually associated with prohibitions, including who may enter there. These places are named *kaleta* in Nalu (*kau malgós*, kl), which best translates to English as “bitter places”¹³. This bitterness represents the implacability of punishment administered by the spirits and founding lineages against abusive behaviours. These places can be of limited access to a certain *nfoth* (territory), matrilineal family, gender or age groups. *Catinke* are the bitter places in the forest accessible to all people who “have rights there” (matrilineal lineage); *catchaper* are the bitter places of the initiated Nalu men; while *cassin'kep* are the bitter places of the initiated Nalu women. The greatest shrines are associated with large trees (such as *Ceiba pentandra*) and stones.

Some spirits look after the village and usually live at the opposite extremes of the path/road that crosses it. Their role is to defend the village from witchcraft and *djanfa* (evil eye). Marks are left at the entrances of the village – for instance, a red

¹³ This term is also used by authors working in other contexts of West Africa. See Lentz 2013.

cloth tied to a stick announced that the presence of a counter-evil spell, *mandjidura*¹⁴, would be used against whoever attempts to harm the village. *Mandjidura* can also be used to prevent robbery, punish a thief, or control access to a resource (see section 3.2.7.1 below).

Domestic animals and livestock (dogs¹⁵, chickens, goats, and cattle) are periodically sacrificed at the shrines to guarantee the welfare of the living and to praise the spirits. There is a symbolic reciprocal system of offerings between spirits and people. The spirits provide access to their resources, such as land, wild animals and rains, while the humans provide the spirits with ritually slaughtered domestic animals and alcoholic libations. This reciprocity with the supernatural was described by Ingold for the case of hunters and pastoralists, in which both the non-human guardians of the wild animals, and people in control of domestic herds “must periodically slaughter animals to ensure world renewal” (1986:13). A Nalu man told me that “now the world is upside down” (*gos mundu rabida*, kl) and he justified the lack of rain and crop loss nowadays (see Chapter 5 and 6), as a consequence of people not pleasing the spirits as before.

Some magical beings are closely associated with initiation ceremonies. These are the *mussuncu* and the *mbantchum* (both in Nalu, nl), which are recognised as having more power than other beings, and the second of these holds a key role in some Nalu villages today. *Mbantchum* is probably attached to a sacred mask (see Chapter 7) and it is owned by specific Nalu lineages responsible for “taking it out” for rituals and ceremonies. *Mbantchum* is the magical being of *ntchaper*, the first initiation of the Nalu men, still held in some Nalu villages, as in Cabam, while abandoned in other villages, as in Camcoiã. Only the initiates are allowed to see *mbantchum* and seeing it is equivalent to have gained access to a secret circle of initiated men. This status assumes the initiates have recognised the elders’ authority, who consequently allow them to acquire secret knowledge during *ntchaper*. *Mbantchum* is a symbol of elders’ authority, assists in the reproduction of the social structures of power, plays a role in the intergenerational transmission of knowledge, acts upon the control over certain natural resources (see section 3.2.7.1), and plays a role in the punishment of sorcerers (see also Chapter 7).

¹⁴ A ritualised practice used to apply justice by punishing a transgressor (e.g. bee bites, sickness, death) or to control access to resources (see a section below and Chapter 4).

¹⁵ Also in Ghana, dogs are offered in the shrines. The smiths believe the dog to be the most powerful domestic animal and their lineages offer dogs at the shrine (Herbert 1993).

Sorcery is locally understood as the ability of some people, sorcerers (*futucus*, kl), to kill other people through magic. In other words, it is reported as a “person who eats other people”. For example, when the initiates are living in the bush during *ntchaper*, which nowadays lasts for 2-3 months, they are vulnerable to sorcery and the *mbantchum* runs around the village at night searching for sorcerers. A man warns, “Until the day they [sorcerers] confess what they did, death will not stop in their lineage [matrilineal family], and *mbantchum* will fight them”ⁱ. *Mbantchum* is also associated with the western green mamba (*Dendroaspis viridis*, in Kriol *cacuba*) that accompanies it during its search for transgressors. Ironically, the green mamba is also very often used by sorcerers to shape-shift (see Chapter 7), and the green mamba found in the wild is also reported as powerful and deadly.

The *mussuncu* was described as the *mantchol* spirit. *Mantchol* refers to the second initiation of the Nalu, which is broadly said to have been abandoned. The term *mussuncu* was also the word given for rainbow¹⁶, which is one of the expressions of *mantchol*'s power. A youth explained to me:

There was an initiation of the Nalu, the *mantchol*, in which even if you went far away it could get you, it swallowed you and threw you out where it wanted [referring to the rainbow]ⁱⁱ

Additionally, the *mussuncu* seems to correspond to the mythological serpent (the python, *Boa constrictor*), which is also known as *ningui nanga* (in Puular¹⁷), and *serpenti* (in Kriol). Local people provide different descriptions of this spirit, but all seem to correspond to what Appia (2009) named as river spirits. It is usually in a shape of a python-human like creature, which is “very, very dangerous because it is not only a spirit but also a snake”. It was often said that the middle egg of a python nest corresponds to a magical serpent that grows to an abnormal size and is able to shape-shift into the figure of a person, an animal or another being. Appia (2009) also describes in Guinea-Conakry a *niniganné* being born from the python eggs and able to express itself as a rainbow, which again, stresses the idea of a regional cosmological paradigm. The *mussuncu* appears as a being closely linked to the *mantchol* of the Nalu

¹⁶ In Congo the term *mokele-mbembe* is used both to describe the rainbow and a fresh-water monster (See Mackal 1987).

¹⁷ Pular is the language spoken by the Fula.

people, as it seems to also correspond with the river genies broadly cited for West Africa (Molenaar and Santen 2006).

Alongside the initiation spirits and the regular bush and river spirits, there are the spirits of the ancestors. Quintino (2007:329) wrote that for the Nalu, “the dead are an age category”. In the village of Cabam, each patrilineal-lineage belong to the same *nfoqué* (nl, house) and its *nfoqué* has a ‘big house’¹⁸ (*casa garandi*, kl) where the *barimé* (nl) is located. The *barimé* is the altar of the dead of a family, to whom water libations¹⁹ are offered. Libations can be offered to ask for various favours, such as protection for people who travel abroad, harmony in the family, good harvests and fertilityⁱⁱⁱ.

In a few instances, respondents distinguished the “spirits of the *nfoth*” (*irã di tchon*, kl) from the “spirits of the bush” (*irã di terra*, kl). During an in-depth conversation with a Nalu man, I tried to understand the difference between these two types of spirits. My interlocutor was mainly using symbolic messages, smiling mischievously, and making me guess that it was a secret of the Nalu people. The Nalu people often claimed secrecy as an attribute of theirs, i.e., *Nalu I tchiu segridu*, the Nalu people have many secrets. Blocking access to something is a practice of being Nalu, which serves a logic of practice (Bourdieu 1990), meaning the practical mode of knowledge that is the basis of ordinary experience and draws into the ‘way things are’. What I understood was that the spirits of the *nfoth* represent the ancestors that were given to the spirits when the territories were founded, while other spirits already existed in the supernatural cosmos before the *nfoth* foundation, and these were the spirits of the bush²⁰.

3.2.2.1 The bush initiations and the “seers”

Unlike the *mfenguelem* (nl, dwarfs that live in the forest) who were reported as seen by a number of people (including children, men and women), special powers are needed to see the spirits. People who have skills to see and communicate with the

¹⁸ Sarró (2009:35) also gives an account of the “big houses” in the villages of the Baga of Guinea-Conakry.

¹⁹ Water libations are given to ancestors who converted to Islam, which was the only type of libation I observed to be given in a *barimé* in Cabam.

²⁰ Lundy (2009:46) makes a similar distinction for the Nalu of Kassumba (in a peninsula in the south of Cantanhez): “nature *irã* [spirits]” and the “ancestor *irã*” that represent the three lineages living in the village.

spirits, the seers, are called *pauteros* (kl), i.e., people who have *pauta* (kl, powerful mind). The seers are able to recognize others with the same or lesser power, can belong to any ethnic group or gender, and are in charge of cross-world communication between bush spirits and people. This ability generally confers special roles in society, including (i) asking the spirits about something that is worrying people; (ii) establishing contracts with the spirits; (iii) asking for a new parcel of land; (iv) adjudicating disputes and conflict; (v) officiating at specific ceremonies like circumcision initiation and chieftains' empowerment; (vi) enrolling a spirit as a lineage protector, (vii) providing people with a spirit's object, which is in fact a symbolic commodity that provides certain benefits to the person in possession of them, such as protection (shirt), fame (necklace and ring) and intelligence (pen). People making contracts with spirits for purchasing magical commodities are perceived as greedy, as often the payment to the spirit is reportedly the life of a parent. Deaths are occasionally attributed to people who, for the sake of achieving some goal, gave away a kin member as payment to the spirits. The Nalu people argue that *mbantchum* may fight with those who sacrifice people from their kin. As suggested below (see Chapter 7), improving one's life at the expense of others, or being unwilling to share goods are locally perceived as greedy, and are morally condemned. The spirits' agency is very relevant to people's lives, as they can mediate authority, fortune and knowledge transmission.

3.2.3 *Nfoth ka Nale* – the Nalu homeland

“As territory, space is governed, but not owned by its governing agency.
As property, on the other hand, space is owned, but not governed by its
owners.”

(Lund 2013:14)

3.2.3.1 Knowing stories: the arrival and the first contracts

The first written descriptions of European travellers and traders about the Nalu homeland date back to the 15th century (Mota 1954:151). Some authors describe the Nalu people migrating to the coast from Fouta-Djallon (Carvalho 1949:314, Carreira 1962, Devey 2009:19, Figarol unpublished), while others describe them essentially as a coastal ethnic group (Fields-Black 2008:59). Presented below are field notes of the oral records I collected with Nalu elders:

On the way Nalu people founded Forrea [southern Guinea-Bissau], Forrea is a tree *nfor* [nl], Begine [name of village] means ‘come’ in Nalu, and Buba [name of a town] means ‘let’s blow’ on a gazelle’s horn^{iv}.

Nalus came down, (...) some went to Quitafine, and some went to Catrak, and some went to Tombali, and others to Cubucaré. Buba, Ntchude, Gãtoã, Bissassema? Nalu! Ntuane means ‘graveyard’, Toôn in the area of Nova Sintra means in Nalu ‘the first child’, Ntchude is ‘digging a hole/grave’, Bissassema means ‘you’re shaking’^v.

It is noticeable that the meanings of village names in Nalu claim the historical role of the Nalu people as founders of places (as also described by Frazão-Moreira 2000), and reinforce their status as autochthons and privileged stakeholders in modern-day settlements.

The Nalu homeland is divided into different magic and physical territories, or “spirits’ provinces” (Crowley 1990), marked by big trees and rivers/sea canals. Cantanhez, or Cubucaré in Nalu terms, is split into Cubucaré di Riba (upper Cubucaré) and Cubucaré di Bas (lower Cubucaré) (see Figure 12), and the Nalu people from the two areas speak different dialects. In Cubucaré di Riba there are four *nfoth*: Caiambere, Catonco, Cabsul and Canabem; while in Cubucaré di Bas there are three: Cassintcha, Cabambol and Cabedu. An eighth territory, Captchank, was taken over by the Balanta people. Some interviewees provided the meanings of the territories’ names which were connected to elements of the landscape (for example, the liana *Saba senegalensis*, the palmyra palm *Borassus aethiopum* or rivers) or to relevant episodes (such as other peoples’ arrival to Cubucaré). The knowledge about the elements of a territory and the ability to name them are important to claim ownership over a territory, as is made explicit in this report by a Nalu man:

Things of the land... if you know all the names, others will not come to steal your land. (...) That is the reason why, during *mantchol* [the second male initiation] they were told the names of all rivers, names of the forests, places of ceremony, they knew what ceremony is performed in each place^{vi}

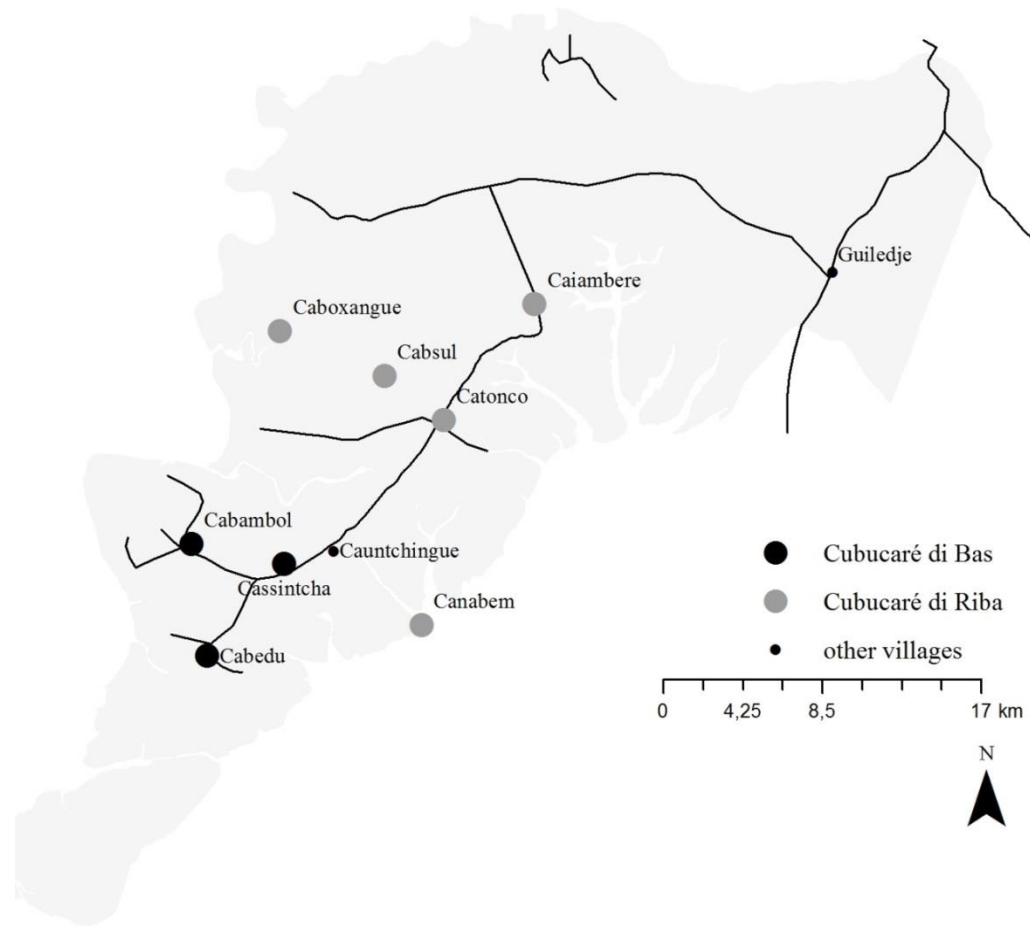


Figure 12- The *nfoth*, spirits' provinces, of Cantanhez.

The importance of naming rests on the struggle of the Nalu founding lineages to ensure that others perceive Cantanhez as their homeland. The Nalu informants would regularly advertise that their homeland is not a regular homeland, but it is a magically “well prepared” homeland; the *nfoth* is bitter, which proclaims that the Nalu are only a few (*Nalu puku*, kl), but are magically fearful. This resembles what Alderman refers to as “naming as symbolic resistance” (Alderman 2008:196). Being able to name and attribute meaning in Nalu to villages and to the landscape is a statement of belonging, an intended proof of ownership and a way of convincing the hesitant among the Nalu and other peoples, including migrants and visitors, that Cantanhez is above everything else the Nalu homeland.

3.2.3.2 Political structures: the *nfoth* and the state

Although the stories about Nalu settlement are scarce, one aspect is often highlighted: only spirits were living in Cantanhez when the Nalu people arrived. These first migrants purchased management rights of the territory from the spirits and founded the Nalu homeland. The terms of contract with the spirits were the handing over of a young virgin boy and of a young virgin girl^{vii}. Local people say that the land was bought with Nalu's children, and a representation of a space purchased with Nalu's blood carries great symbolic meaning. The establishment of contracts with the spirits conferred on some Nalu lineages the right to administer and mediate the use of natural resources of a certain territory. In addition, these lineages would hold relevant political positions in society, which are still in effect although not without considerable struggle, as will be shown in this chapter.

The founding lineages of the territory are responsible for the shrines of the *nfoth*. A person is attached to a territory (*nfoth*) through the matrilineal lineage, and to a house through the patrilineal lineage. House (*nfoqué*, nl) in this context refers to kinship and not to a production unit (*fogon*, kl). A house has a patrilocal representation in a village but is not exclusive to it, as the same house can be found in other villages. For example, the houses of *Cawalma* and *Canculum* carry individual meaning in the village of Cabam, but are also present in other villages and are connected by the same patrilineal lineage. The patrilineal and matrilineal kinship ties attribute responsibilities of reciprocity according to a network of multiple identities, and enable mutual assistance and access to resources (see Chapter 4).

Each territory (*nfoth*) encompasses different villages that have autonomy to decide and manage village-level issues. However, important conflicts regarding access to land, justice, and initiations are arbitrated by the founding lineages of the *nfoth*. These founding lineages, determined by matrilineal kinship, attend secret meetings in the bush that can gather many Nalu people, both men and women. In 2011, there was a meeting at an important shrine of Cantanhez for which Nalu from the entire homeland gathered, including Guinea-Conakry. This meeting was described to me solely as a gathering to discuss "Nalu people's issues" relevant for the entire homeland; although I tried to understand more about this, every attempt of mine was blocked by a reply that intimated secrecy.

Together with this stratified political system based on matrilineal territories and patrilineal houses there is also a chieftaincy system. This includes the chiefdoms of Cubucaré di Riba, and Cubucaré di Bas, which include different territories (Figure 12) and many villages. The chieftaincy system was set up by the Portuguese colonial state, and not without some resistance from the Nalu people who struggled to make this imposition socially meaningful. The Nalu chieftains are closely connected to the founding lineages and today are responsible for the contact with external institutions and actors, such as NGOs, the state, and other guests (migrant workers, farmers asking for land, large-scale traders, companies), and also play a role in mediating local conflicts of justice and political decisions that affect the chieftaincy.

In Cantanhez, there are also two Fula chiefdoms that have a history of tension with the Nalu chiefdoms, especially during the Portuguese colonial period, and after the 1980s when the chieftaincy system was again recognised by the independent state. These episodes are discussed below, as they are relevant to understanding the struggles over territory, and therefore over resources.

3.2.4 Islamisation: changing and staying the same

The Fula invaded Cantanhez in the late 19th century and there are written reports of Nalu and Fula conflicts (Figarol unpublished) that forced the Nalu to seek refuge in Melo Island to avoid being caught by the Fula and being sent to the Forrea as slaves (Carvalho 1949). Rodrigues (1959:224) described the Islamic Fula converting the Mandinga as “reversing the Beafada, seducing the Nalu and pushing the recalcitrant to the coast” (my translation).

The recovery of lands by the Nalu started from Melo Island, going northwards. Elders recount that the forests of the south of Cantanhez were important for the Nalu to hide in, and even if Fula tried to attack them they would cross to Melo Island because the Fula are “scared of water”^{viii}. The same elder said that the Nalu fought the Fula with the help of the spirits: “Nalu people would not start fighting without going first to the shrines”. The narratives about the encounters with the Fula are drawn in violence and the Nalu portray themselves as a resistant people who had a great capacity to establish partnerships with the spirits. The forests, the sea and the spirits are represented as allies, and elements that played a role in the recovery of the territory.

The Fula people, and also the Sussu migrants, are described as having influenced the Islamisation of the Nalu²¹ (Carreira 1962, Frazão-Moreira 2009). Each of the Nalu villages I visited has a mosque where people perform their prayers and it is forbidden to drink alcohol and to eat pork in public. However, at the same time, as Carreira described in 1962 and as is still relevant today, many Nalu maintain their animist practices, which are evident by secret initiations and shrine libations. However, the Nalu I spoke with referred to an erosion of animist practices and a decline of seers' power, as is made explicit in this quotation from an interview with a Nalu man in Cabam:

Dipi Ado [false name] had *head*, had [magical] art. He used to roast groundnut in the straw roofed house and the house did not burn. Elders had power, they could get inside the trees, and you would only see their eyes winking. Before they used to drink palm wine, now they stopped. Because of religion, powers also decreased.

In this village Dipi drank palm wine and he never prayed. However, his son Anpi Ado started praying, and Anpi's son, Musa Ado [all false names], was raised as a Muslim, whose child is now 29 years old. This illustrates that the young adults of today represent the second generation born and raised as Muslims. "Now we pray to God" is a comment I have heard many times. At the same time, very often I was told that the "things of the land" were not completely abandoned and that "some people are being prepared", which refers to the transmission of the Nalu's secret knowledge and magical skills. These comments also illuminate the division between those who know and those who do not, as Murphy (1980:193) said about the Kpelle people "the secret is essentially the boundary mechanism separating members of different social categories or groups".

Probably the most evident consequence of Islam in people's narratives is the decreased importance of the initiation ceremonies compared to several decades ago. The access to the secret Nalu knowledge was mediated through initiation ceremonies in the bush that would provide the initiates with the exclusive knowledge of elders, namely the *imbaiá* and *nhandu* to women and the *nchapter* and *mantchol* to men. Men are said to have abandoned their second initiation in the bush (*mantchol*) and therefore some of the elders today say that they do not know much about Nalu secrecy because

²¹ The effort of Islamisation is still in process. Islamic associations like the Ahmadiyya develop local projects in the area building water wheels and mosques.

they did not follow the *mantchol*. Also, the *ntchaper* ceremony is shorter nowadays as it does not last up to three years but only two or three months, and it is even absent in many Nalu villages. The elders who are approximately 60-80 years old have completed the previous type of *ntchaper*. At that time, this was considered the Nalu initiation into manhood, and after this, only a few men chosen by the elders would proceed to the *mantchol*. This initiation provided membership to a very restricted secret society that used a secret language²² and it allowed for full access to the Nalu secrecy. At present, initiates complete *ntchaper* much earlier. Boys of approximately 7-15 years old are circumcised and stay in the bush for a reduced time (2-3 months). The “*ntchaper* of the past” is represented as a platform for learning new knowledge that concomitantly imbued the youths “with fear and respect for their elders’ ownership of knowledge and their prerogatives over its distribution” (referring to the initiation in Sierra Leone, Murphy 1980:199). Also, the majority of the interviewees say that the Nalu stopped holding the *mantchol* ceremony because it is *medunhu* (kl, scary). Despite this, one respondent in southern Cantanhez said that *mantchol* is still secretly taking place. It is difficult to understand the role of secrecy as established by *ntchaper* and *mantchol* in present-day Nalu society; however, many ritualised practices take place and the beliefs that sustained these are alive. Moreover, the structures of power associated with the founding lineages and initiations are important for resource management and land access. However, as I show next, these are far from being the only institutions involved in the regulation of the territory and natural resource use.

In Guinea-Bissau, both the elderly and the youths report a loosening of the mechanisms that granted elders’ control over youths. Consequently, if the youths’ future does not depend on having access to that secrecy, then the boundary between elder and youth is blurred and the ability of young people to challenge gerontocracy is enhanced (See Chapter 4; Sousa et al. 2014).

In spite of the above, women’s second initiation (*nhandu*), among other ceremonies, is seen as a major resistance against Islam. A young man in a Nalu village told me that “In the women’s shrine there is a lot of wine”^{ix}, meaning that women have no problems with the interdictions of Islam during the Spiritist/Animist ceremonies. The young girls’ excision, *imbaia* (nl), is the ceremony of the first female initiation and

²² I recorded Nalu songs and there was a particular song sung by an elder who had “eaten” *mantchol* that I was told to be the secret language of the *mantchol*. The term “eaten” is also described by Sarró (2009) for the Baga of Guinea-Conakry: “initiation is not just a learning process, but one in which knowledge is eaten and embodied” (:43).

nhandu (nl) is the second female initiation, and both continue to be performed. *Nhandu* is regarded as “sacred” (*sagradu*, kl) and “scary” (*medunhu*, kl), and feared by men. A man says that the objects that women use in their ceremonies have to be kept away from men; he would not dare to open the trunk where his wife keeps those objects. A complete conversion to Islam and the abandonment of secret ceremonies would probably make men less fearful of women, which in a male-dominated society would be a disadvantage for women.

The Nalu people seem to find advantages in following both Islam and magical rituals and beliefs. Although it is often told by the Nalu that “you cannot have a foot in each of two canoes”, they seem to have been navigating quite well while praying to God and pleasing the spirits. Most likely, the secrecy required by Spiritism/Animism eases its coexistence with Islam. Often, God, the spirits and the state are mixed in people’s narratives. A suitable illustration of this was what an elder explained to the public during the empowerment of a young chieftain in 2011: “He is going to dress in the shirt of the state, the elders chose him, god chose him, *nfoth* chose him”^x. *Nfoth* here means not only the physical space, but also the magical power embedded in it. Therefore, nowadays the acceptance of the spirits of the *nfoth* continues to dictate Nalu’s approval of political players.

3.2.5 Colonialism: struggling to stay the same

Until the beginning of the 20th century, the Portuguese were exclusively interested in controlling their colonial possessions through trading, international agreements and a few fortified stations. However, after the Berlin Conference (1884-85), Portugal lost its *a priori* rights over its African colonies. The Portuguese administration was consequently pushed to strengthen its presence in the African territories. Thus, at the beginning of the 20th century, the Portuguese started the actual occupation of Portuguese Guinea (Mettas 1984:26), and this started with the ‘African campaigns for occupation and pacification’ in Guinea (Teeken et al. 2012:6,7), more recently referred to as the ‘colonial conquest wars’ as argued by C6 (2010) (Figure 13).

The Portuguese ‘pacification war’ of 1908 would have been impossible without the support of the Fula and the Mandinga (Ribeiro and Santos 2003:89). The campaigns of 1913 to 1915 worked to subjugate the coastal societies to the colonial administration (Guimar6es 1949) and to the Fula people. In the end it is not clear

which party benefited most from the partnership (Ribeiro 1952, Ribeiro and Santos 2003).

Image removed for copyright reasons

Figure 13- Portuguese military watching the combat during the pacification wars (taken from Lemos and Ramires 2008).

The next section mainly draws from the work of Carvalho (1949) and Carreira (1962); both published their work in the Colonial Bulletin (*Boletim Cultural da Guiné Portuguesa*) and wrote mainly from a colonial perspective (Teeken et al. 2012:6). This perspective is also evident in this quotation of Mota (1954:162):

With the military occupation and the establishment of administrative authorities, the borders between the different territories lost a lot of their meaning and the natives were allowed to move freely and safely all over the place.

Pélissier (1989:156) notes upon the conflicts with the Portuguese that struck the Nalu homeland. The pacification war and the establishment of administrative authorities was a strategy for territorial occupation and a way of undermining local institutions and structures of power. The Fula leader, Abdul Ndjai, played a remarkable role in the military occupation in 1919 the Portuguese granted his lieutenant, Alfa Mamadu Selou, the leadership of the Guiledje chiefdom²³, which was part of the Nalu

²³ Chiefdoms that were given to the Fula as gifts or prizes for military service. In the film *Guinea, an indigenous village in Lisbon* (1931) it is shown the decoration of chieftains with a medal of distinct services in the Portuguese colonial empire (Matos 2006).

homeland in the north. Later, the colonial administration created the Iemberém chiefdom, which was also offered to the Fula people with Soleimane Djaló in charge (Carvalho 1949: 316). Carvalho (1949: 316) describes the constant administrative divisions of the Nalu homeland and refers briefly to the Nalu discontent.

Image removed for copyright/confidentiality reasons

Figure 14- The Head officer of Bedanda sector with his family in 1969. (<http://blogueforanadaevaotres.blogspot.pt/2012/05/guine-6374-p9947-memorias-da-minha.html>).

3.2.5.1 Leopards challenging the colonial political structures

Local historical narratives describe a sorcery episode that was important for the rearrangement of chiefdoms: “it was really a war, that is why nowadays Canabem and Cauntchingue are small villages, but they were big, they were bigger than Cabedu”^{xi}. The ‘leopard war’, as it is often referred to, started because a sorcerer was turning into a leopard and killing people. People from Cubucaré de Riba (Figure 12) said:

There was an old man that was got by the leopard. (...) When I was born Cunumodu was king. (...) Cunumodu was arrested because of that spell of leopard. The leopard killed my father²⁴ My mother was taken, together with Cunumodu. Whites took them^{xii}.

If I get the throne and people are against it someone enter in a leopard through witchcraft and get people in the paths^{xiii}.

²⁴ For the Nalu, the father’s brother is a father and the father’s sister is the aunt, while the mother’s sister is a mother and the mother’s brother in an uncle.

The ‘leopard war’, according to the reports of people from Cubucaré de Bas, occurred as follows:

During the spell of the leopard a chief was in Canabem, his name was Coble, he was from Cauntchingue. People came and told him that a leopard was killing people in their homes and asked him what he was going to do. The chief said the leopard can get people but not his children. Then the elders met, they talked and discussed, they said ‘we gave him the chieftaincy for him to look after us...’ They stole the chieftaincy from him and came here [to Cabedu]. The whites came and got many people^{xiv}

In Canabem it started a great war, it came until Cauntchingue... they ate one another. The leopard got many people. ‘I do not like you and so I go and tell the state that you’re a witch’, they come to get you and your people^{xv}.

Leopard attacks generated witchcraft accusations that served to re-structure the chieftaincy. A chieftain should not be a sorcerer and should be able to control sorcery. The Nalu have incorporated the administration system of the colonial authorities but not without submitting it to rearrangement. Witchcraft was used as a locally meaningful instrument to challenge undesirable political actors. In these descriptions, the leopard’s aggressive behaviour is the personification of a powerful person, a witch, whom others wish to annihilate.

3.2.5.2 Bush spirits and the colonial administration’s office

The requirement of the colonial authorities to implement the chieftaincy system pushed the Nalu political structure to struggle for a representation in the new arrangement of power:

Our elders used to say that only *mbantchum* was chieftain... However, only certain people [the male initiates] are allowed to see *mbantchum* and the whites wanted the chieftain to go to the administrative office to talk^{xvi}.

Mbantchum (magical creature of the first male initiation) is the figure articulating the access to power and knowledge among the men and it was used to transpose the privileged Nalu lineages into the colonial administrative system. Therefore, the lineage owning *mbantchum* came to be in charge of empowering the chieftain, as if *mbantchum* and the chieftain were acknowledged in the same role.

Before, *mbantchum* occupied the throne. Therefore, when colonialists came, the people who had *mbantchum* were the ones giving the possession to the chieftain^{xvii}.

To install a chief there has to be a secret ceremony and a public ceremony. The former is held in a sacred place and its purpose is to test the chief candidate by the greatest spirits.

If you can stay in the throne for a long time they will tell, if you will not stay a long time they will say your ‘hand is dirty’. If you have a ‘dirty hand’, it is likely that you are a sorcerer, you eat people through spells, and if it is like that you’ll die soon^{xviii}.

In case the candidate has “dirty hands”, meaning if he is a sorcerer, the spirits will not accept him to rule for long. The sense of justice is closely related to witchcraft accusations, and therefore to *mbantchum*, who is in charge of identifying sorcerers. The control over *mbantchum* was politically equivalent to the control over chieftaincy and therefore this transcription allowed the Nalu people to cope with a newly imposed political structure while maintaining the privileges of certain lineages. The leopard sorcery detailed above was described as an episode of discontent and the accusations worked to cleanse undesired leaders.

3.2.6 The independence war²⁵

In 1963, in the village of Cabam, people saw messages authored by the PAIGC hanging from trees announcing that a struggle for independence was about to begin²⁶. Amilcar Cabral’s theory and practice made him the most important figure of the independence movement. Despite considering them backward, Cabral used the local cosmologies to encourage the fighters by saying that the spirits were also ‘nationalists’ (Cabral 1974 in Temudo 2008). The struggle took eleven years (1963-1974) and magic was always present as a strategy to protect the fighters and the Nalu homeland. It is recounted that during the war the founding lineages gave sacred shirts to important fighters, which prevented them from dying when they were shot. There are many reports on how the spirits helped the PAIGC fighters; for instance “Nalus fought with the bees, they sent the bees to sting the enemy and bees stung the Portuguese, a lot”²⁷^{xix}

²⁵ Several studies were conducted about the independence struggle (Woollacott 1983, Lobban 1974, Dhada 1998, Chabal 1981, Rudebeck 1974).

²⁶ Urdang (1975) describes two years of political mobilization before the beginning of the war.

(see Lan 1985 for the Zimbabwean experience of their independence struggle and the role of magic in the war).

The Balanta people, who arrived in Cubucaré in the beginning of the 20th century in large numbers (Carreira 1962:313), induced changes in the production systems, namely regarding the development of mangrove rice farming (see Chapter 4), and played a very important role in the independence struggle. The liberated villages were constant targets of bombs and air raids²⁷ (Lobban 1974, Dhada 1998). The PAIGC fought in Cantanhez but the Portuguese kept control of the fortified base of Guiledje until 1973 in the Fula part of Cantanhez (Lobban 1974). The Portuguese protected the Fula people from Iemberem and transported them to Bedanda for refuge (Freire 1963). The Portuguese strategy during the war constituted a typical colonial strategy in Africa (Lund 2013), in which ethnically-based alliances were made in order to impose a new structure of power that would benefit their allies.

During the war, many people ran away to their family homelands, such as the Tanda people (Orlove 1986:125) and the Djacanca^{xx}. On this matter, the Nalu people interviewed said, “we were here until the end of the war; we did not have a place to run to, this is our homeland;”^{xxi} and “when they burnt a place we moved to another place, we kept on moving-moving.”^{xxii} The feeling of belonging becomes very clear when the informants talked about the independence war, their homeland was at war, but fleeing was out of the question since it meant giving the land away.

3.2.6.1 The new structures of power

Temudo (2008) stated that after the war, “Rituals were also performed ‘to stop the hatred that they [Nalu] had taken to the shrines against those who had adhered to the colonial side’” (Temudo 2008:257). With the independence struggle, the PAIGC abolished the chieftaincy system as it was regarded as a remnant of colonial times that enhanced ethnic distinctions. At the same time, the party created regional and village committees (Chabal 1983, Davidson 1984), which were highly imbedded in the PAIGC organisational structure (Chabal 1983). The committees included people from different ethnic groups since the baseline ideology of PAIGC was that “we are all Guineans.” In 1980, Nino Vieira headed a coup against Luis Cabral, and among other

²⁷ NATO and the United States supported the Portuguese, who had 40,000 troops in the territory and controlled the air from 1963 to 1973 (Lobban 1974).

changes, reactivated the chieftaincy system after the reform of the state in 1991. Nowadays, this is regarded as a customary political system, although as Lund described in the case of Ghana, it is mainly a “colonial creation” (Lund 2013:30). The village committees still exist and coexist with other political institutions such as the chieftains, founding lineages, the council of elders, the state and more recently, the NGOs and the local committees for natural resources management.

3.2.7 Managing natural resources

3.2.7.1 Spirits and the control of natural resource use

Frazão-Moreira (2001, 2009:107) states that the “Nalu people do not conceive society and nature as two distinct realities”. Both this author and Temudo (1998) envision the social appropriation of nature through a system of beliefs and symbolic meanings that control the use of land and resources. This is similar to Arhem’s (1996:200) statement in relation to the Makuna people in northwest Amazonia: “a cosmology turned into ecology”.

In cases where there is no living social memory that a parcel of land has ever been used for farming, access to that land requires the foundation lineage to consult with the spirits. Where the parcel has already been allocated to a person, the “guest” (*hospede*, kl; meaning also migrant) may contact the people who can give him/her land to farm. Therefore, the Nalu do not control the ownership over land in an absolute sense; instead elders control the amount of land that is allocated to people, and, as they say, recover land back in case a family abandons it. The Nalu are not the absolute owners of the land as property, but they are the owners of the land as *nfoth* (cosmological territory).

In several villages, *mbantchum* is responsible for *ntchaper* (bush male initiation) and for fighting witchcraft, as previously mentioned, and also for controlling oil-palm harvesting. *Mbantchum* is responsible for installing a “spell in the bush” (*mandji matu*, kl) that prevents the harvesting of oil-palm bunches before they are ripe. Controlled harvesting increases overall production by allowing the oil palm fruits to ripen properly. Importantly, it also serves to remind local and foreign people that the Nalu hold rights over natural resources. In 2011, the village of Cabam did not install the *mbantchum*’s spell in the bush because, as they said, “we have a lot of oil palms

and there's no need to put a spell". However, in 2013, this village cast a spell because there were too many people looking for oil-palm fruits (Ana Luisa Luz, personal communication 2013). The Nalu people adapt magical ceremonies and install prohibitions according to changing resource availability, as opposed to using centralised and externally-based policies that struggle to adapt to local social and ecological variability.

Certain large trees may also be associated with spirits (e.g., silk-cotton tree or *Ceiba pentandra*), but this association does not constitute a prohibition against the species rather it depends on whether the spirits are living in each particular tree. In the same way, particular areas in the bush where important shrines are located, or where the spirits are living, cannot be cleared. Temudo says that "Nalu cosmology is based on a set of rules that help maintain an ecological balance" (2012:360) and describes territory as divided into

Three major classes – i) land belonging to each village for housing and for cultivation; ii) the 'sacred forests' (...) which are small forest niches (located in the dense sub-humid forests), where the shrines are placed; and iii) forest areas that function as buffer zones surrounding the 'sacred forests'. Access to these buffer areas is surrounded by a magico-religious aura that limits the entry and use of resources (Temudo 2012:360).

In spite of the description given by Temudo, when I asked about land use prohibitions during my fieldwork, I was not told about the buffer areas of the *kaleta* (bitter places). In one Nalu village, the *catchaper*²⁸ (sacred forest of the first male initiation, *ntchaper*) was located very close to the village, currently surrounded by two cashew plantations, a road and a fallow area. The area that was not deforested is approximately 1.6 ha in area. The *mbeleket* (women's shrine) is located near a backyard of a house in the village, while the *kanhandu* (sacred forest of the second female initiation) is also located very close to a backyard (less than 250 m). There are no buffer areas in these cases. Also, I was told that one of the main *kaleta* of the Nalu people is located very close to a village. Notwithstanding, this does not mean that there are no other shrines in the dense forests. Nature conservation is sympathetic to the idea of a sacred nature, as if its sacredness would prevent major deforestation, as already portrayed by conservation programmes (MDRARN 2000). In this study the "buffer areas" described by Temudo are only recognised as a metaphor of the slow forest

²⁸ The prefix ca- in Nalu means "the place of". In this case, *catchaper* accounts for the place of *ntchaper* (initiation of the Nalu men)

consumption rationale reported by my informants: “our elders told us to not eat the forest at once”, but it was never presented to me as a prohibition associated to a specific physical place. I argue that the prohibitions regarding the sacred groves do not ensure the conservation of the dense forests valued by the park. Nature conservation discourse often portrays these prohibitions associated to the “sacred forests of the Nalu” (see section 3.3.2) as an element of Nalu cosmology that is in line with nature conservation goals. Instead, the prohibitions have social concerns and are not grounded on any kind of environmentalist perspective.

3.2.7.2 The most recent arrangements: Cantanhez National Park

“While asking ‘what is new?’ we should also ask ‘what is the same?’”
(Fairhead et al. 2012:247)

The current legislation of protected areas states that the park should have a director from IBAP, who among other duties, is supposed to apply the deliberations of the Management Council. The Management Council is composed of the park director, delegates of the local communities, local administration, local NGOs and companies (Official Bulletin 2011a). In turn, theoretically, the Management Council would have the following competences: (i) to deliberate on the budget and management proposal of funds; (ii) to deliberate on the items of the decree-by-law and on the park rules; (iii) to report on all aspects of the park’s life in which its participation is required by the Director, or to suggest and make recommendations about the modes of operation of the protected area (Official Bulletin 2011). The park legislation advises for the participation of local people through the Management Council regarding all these responsibilities, which have not occurred as yet.

The Cantanhez area was officially gazetted as a national park in 2008. However, since the 1990s, the programme *Iniciativa Cantanhez* has raised awareness of the conservation of Cantanhez forests. This initiative involved IUCN as an external partner, and three national NGOs. As far back as 2002²⁹, a local NGO, IUCN, together with the chieftains and the local administration, in the presence of other members of the community, signed an agreement that approved the internal rules of what was at that time referred to as the “14 forests of Cantanhez” (Mendes and Serra 2002). Among

²⁹ For conservation-related records during the 1990s (see Temudo 2005, 2012).

other prohibitions, these rules forbid people to: (i) clear land in the 14 forests for rice farming, (ii) cut large trees (undefined type) to build canoes for fishing, (iii) exploit the *Borassus aethiopum* for wine production, (iv) use snares and traps, (v) cut trees for honey extraction, and (vii) deforest areas close to the road (minimum 50 m) (Mendes and Serra 2002). Among other recommendations it can be read that (i) mangrove rice fields should be recovered and the NGOs should provide financial assistance; (ii) incentives, field material and courses should be given to community guards (up to the present day working on a voluntary regime); and (iii) regular meetings (not specified how regularly) with the inhabitants should be followed to evaluate the implementation of the internal rules (Mendes and Serra 2002). Since 2007 I have recorded community guards asking for (and not receiving) salaries and working material (clothing, boots, weapons), and local people asking for meetings with the heads of conservation organisations.

In 2004, farmers representing their villages in the Management Council founded an association, the Union of the Management Committees of Cantanhez (Temudo 2012), which gained strong relevance for the farmers' conservation debate and became a politically and locally meaningful institution. There is considerable tension between the national park and local farmers, and some different interpretations about what the park represents (see Appendix 5 for two distinct portrays of Cantanhez National Park in photos by two Nalu youths).

Temudo (2005, 2012) provides a historical record of local peoples' views of conservation from the 1990s until the late 2000 and raises concerns regarding the commoditisation of nature, which is associated with hearsay about corruption and authoritarian attitudes from conservation stakeholders that consequently led to the disintegration of the symbolic meaning of the forests (Temudo 2012). Temudo notes that the founding lineages were delegitimised because of the nature conservation initiatives and the:

Destruction of the symbolic value and 'magical aura' of the dense forests (...) was vital in creating the belief that forests could be bought by conservationist outsiders – the 'white man'.

By the time I conducted the interviews for this study, very few people reported that the forests were sold to the whites. Most of the informants said that they had not heard this. In fact, only Fula people reported that the forests were sold. It seems to me that the narratives mainly refer to a criticism regarding the patron-client relationship

between Nalu and Fula chiefs and conservation stakeholders. During my fieldwork, a local rap artist gave me permission to record his song about Cantanhez, which says:

Monkeys and baboons were all sold out
 If we don't watch for us, we will be sold too
 Pretend, pretending
 Until the day that it becomes true
 our forests were sold
 those in charge signed it
 Now they regret
 (...)
 This is not the way it was supposed to be
 Whose fault?
 Those in charge, they signed it
 (...)
 Protecting the forest, protecting the forest
 But, are we protecting our lives?
 (...)"

Song by a young Fula rapper of Cantanhez, 2011

From the information I gathered there is no evidence for the destruction of the symbolic value of the Cantanhez forests due to conservation initiatives. Instead, there are highly context-dependent narratives that shape the ever-changing engineering of the forest space. The next section presents a description of what I observed from 2007 to 2013 to demonstrate the feelings of abandonment and betrayal that local people report regarding the national park.

3.2.7.3 Protesting without the chieftain's support

During the classification of the reserved forests, signs with the forests names were erected along the main road; however, many forest names did not follow the Nalu naming system. Instead, some names were in languages other than Nalu, for example, Amindara instead of Caiambere, Lautchande instead of Cabsul, and Canamini instead of Canabem. This was perceived by the Nalu as both disrespectful and as a challenge to their rights as owners of the land. As a Nalu man described:

We were close to having problems with the Balanta in Canabem... we say Canabem, they say Canamini. Do you understand the problem? Canamini is Balanta... they put that name on the forest sign^{xxiii}.

Canamini is currently the forest name referred to by all who visit Cantanhez. As previously described by Temudo (2005), the Balanta people have been pressuring

the Nalu people for access to forest/savannah land to plant cashew orchards (see Chapter 4), and therefore Nalu suspicion was fuelled by the existing tension between the Nalu and Balanta. Additionally, in 2013, the young Nalu chief of Cadique showed some concern about the meaning of the symbol on the forest signs (Figure 15) and questioned me about the meaning of the two hands around a tree. He was suspicious that it meant an appropriation of the forests and therefore the expropriation of the Nalu.



Figure 15- The symbol beside the name of each reserved forest.

In 2007, groups of people took down the forest signs in protest against the local NGO and the conservation scheme. The organisers wanted to carry on with the protest, but the chief in place at that time did not support the initiative. When interviewed in 2009, people were still angry and there were rumours that the chieftain had been bribed by the NGO: “this chieftain is tiring us a lot, if there are some good things that come for him that is enough; he does not care about others”^{xxiv}. In the same year (2007), three youths involved in the management committees sent a letter to the head of the NGO asking for a meeting to clear up issues related to the conservation strategy of the 14 forests of Cantanhez, but they have never received an answer.

3.2.7.4 Fines and forgiveness

In the period of 2009-2010, a young man who belonged to the Union of the Management Committees of Cantanhez, (Nininhu, a pseudonym) was locally perceived as honest, fearless and hard working. For a certain period he was very engaged with nature conservation and worked closely with IBAP, IUCN, a local NGO, and the governmental forest guard. He led several actions for the sake of nature conservation,

which were fundamentally based on a ‘fines and fences’ approach. During his term Nininhu:

- (i) tried to confiscate rifles and a canoe in a village but people refused and threatened him;
- (ii) caught a Nalu and a Guinea-Conakry migrant³⁰ engaged in illegal logging; the immigrant was beaten up so severely that he required long-term medical attention in the local hospital. Later, it became known that the local chieftain had hired the person for timber. Nothing happened to the chieftain;
- (iii) found Nalu youths who shot three bags of monkeys to sell as bushmeat. He arrested them and held them for two-three days in a storehouse; on the way to the police station they were able to escape. Local rumours say that he released them because one was his nephew;
- (iv) burnt down houses that Balanta people had built in a wildlife corridor, which had already been mentioned as a threat to wildlife in the action plan for the conservation of chimpanzees and colobus (Casanova and Sousa 2007). Reportedly, this action had the support of a local NGO, IBAP and IUCN^{xxv}. A Fula man supportive of the local NGO argued that the corridor was set before the Balanta settled there and that it was properly marked: “They were warned that they should leave; they said they would, but they never did.” A Nalu working as a tourist guide says that people were told to leave and did not; “that is an elephants’ corridor”³¹, he explained. The Balanta family supporters say that the local NGO did not make them aware in the beginning and that now they have a zinc roofed house and a mature cashew orchard. A Fula man said that the traditional authorities gave this place to the Balanta family. “People’s houses are burnt only during war times”, added another Fula man;
- (v) went to a Fula village during forest clearance for swidden farming and accused a Balanta youth (who had converted to Islam) of farming in the

³⁰ Who are pejoratively called *nania* (kl) in Guinea-Bissau.

³¹ Already in 1954, Teixeira da Mota says that “the species is at risk of extinction, with only some individuals registered in the area of Contabane” (Mota 1954: 112), which is close to the present day corridor. Nowadays, 4 to 10 individuals were estimated to live in the north and south of the Corubal River (Brugière 2006).

reserved forest. Nininhu and a forestry guard took his clothes off and obliged him to walk around naked as a form of humiliation. The forest guard claimed to have a GPS that could inform him where the reserved forest was, a possibility that worried local people³². This episode and the fact that the man had his clothes removed was perceived as socially very disrespectful;

- (vi) pressured the Balanta not to take wine from *Borassus aethiopum* as the species is very important for housing construction and dies when the wine is extracted. The Balanta did not stop, so the local management committees destroyed all the wine containers they found in the *B. aethiopum* trees and told the Balanta they must pay a substantial fine ($\approx 100,000$ XOF³³).

The dismay and discontent towards Nininhu increased as more people began to voice their disapproval of his actions. Consequently, a meeting of the Union of the Management Committees on the 15th January 2011 gathered 30-40 people from all over Cantanhez to discuss the previous episodes. I was also present. The participants were all men, both youths and elders, tourist guides, community guards and members of the Union of the Management Committees, and therefore people linked to nature conservation. Several ethnic groups were present, but not the Balanta. During the meeting, many of the participants, including non-Nalu people, highlighted the Nalu rights over their homeland and the following idea was repeated by others:

The Nalu elders gave their children access to the forest [the foundation of the Nalu *nfoth*]. We cannot accept others to come and take what is ours. Now we see Nininhu with the military. We are tired; we do not accept this head of the management committees.

While the participants of the meeting seemed to place more trust in Nalu homeland institutions, Nininhu felt that his agenda was protected by the state, and replied: “the land belongs to the state, and if it is not from the state, it is God’s.” The elders raised moral codes of gerontocracy by recalling their responsibility for the

³² Temudo (2012:363) describes a similar concern expressed by local people who heard that pictures of forests are taken from airplanes. Also, Offen (2003:385) describes local people (Nicaragua) being afraid about the mapping of their landscape as they were concerned that this was a way of the government to “steal” their lands.

³³ £125.62 CoinMill (2013)

situation. They openly criticised the attitude of Nininhu at first but ended up saying that they were also responsible for Nininhu's behaviour because they had not advised him competently. The main outcome of this meeting was that Nininhu would have to change his attitude. After this first point of discussion in the meeting, those present moved on to discuss the place local people held in the park. People were afraid of future evictions, complained about the unpaid position of community guard work, demanded that IBAP elect a director to the park, criticised the lack of transparency of a local NGO involved in conservation and complained that IBAP and NGO did not reply to their calls for meetings. After the meeting, people were gossiping about a Fula man who was spying on the meeting with the intention of telling the NGO technician what had been said. This made evident the distrust between local people and the NGO.

In general, it seems that while several people wished to fight for the de-classification of the park, three tourist guides clearly defended a more compliant perspective of claim within the previous agreements established for nature conservation. Local tourist guides receive around 5,000 XOF³⁴ (equivalent to five times the daily wage of a farm labourer; see Chapter 4) each time they go with tourists to the forest, which may explain their interest and compliance with the park. Accompanying tourists to observe chimpanzees happens only occasionally, as I observed during my fieldwork, the most active tourist guide had up to two-three visits a month.

During 2011, a new and young Nalu chieftain was installed after the death of his father making both the Nalu chieftains of Cubucaré de Riba and Cubucaré di Bas youths (under 40 years old). Many people wondered whether this would mean a change in the interactions with the park and NGOs. On 18th December 2011, I attended a meeting called by the heads of the chiefdoms to “discuss the park” with local people. A large number of people (60-80) attended this meeting and there were not enough seats or standing space in the room. Although disagreements and tension between local people and NGO/conservation have recurred since the 1990s (Temudo 1998, Temudo 2005, Temudo 2009, Temudo 2012), this was the first time that the chieftains called people for a meeting to discuss the park. The meeting started with an idea that evidenced the will for change, with a chief saying, “Those who received the NGOs are already dead [their parents], those who signed the park are also already dead [meaning the previous Nalu chiefs that had died recently].”

³⁴ £6.28 (CoinMill 2013).

During the meeting, participants' interventions expressed a common feeling of abandonment, betrayal, and lack of control over natural resources. As in the 2011 meeting, people of different ethnic groups evoked Nalu rights over the territory. Again as before, now one year later, local people seem to prefer defining Cantanhez as a "Nalu homeland", rather than as "Cantanhez National Park".

Also in this meeting it was mentioned that the forestry guard that accompanied Nininhu was fired for corruption due to illegal timber exploitation. Local people forgave Nininhu's disrespectful manner of taking action. The innocence of the elders "signing the park" was forgiven and justified as a consequence of a "lack of knowledge". The ambiguity of the promises made by conservation projects, and people's misguided expectations were raised and discussed several times.

The Guiledje-Cacine road [outside the park] was improved in 2010-2011, but by contrast, people attributed the bad conditions of the Guiledje-Bedanda-Cabedu road inside the park to the existence of the park. A Fula elder stressed that the park will never allow factories or roads in Cantanhez because "they do not want [wild] animals to go away". A member of a village committee said:

As long as [the local NGO] is working in Cantanhez, we will not go anywhere, they are setting us apart. Chieftains and youths, we should not be scared. The whites went away but it seems we are being colonised. After 30 years of independence we do not have a road, why?

The absence of a road, in this context, portrays the perceived effect of an illegitimate force pushing people into isolation. The park/NGO is compared to a colonial power in the sense that it is neither subject to elections, evaluated or discussed, does not integrate the obligations of local reciprocity (see also Chapter 6 and 7), is not responding to local people's attempts for discussion and negotiation, and constrains local people's livelihoods for the benefit of "others" (wildlife and conservation projects).

Some people said the park should be "closed"; others said its future state should be discussed. One man stated, "Our elders have never seen a park and the forest still exists". A Sussu man said "We gave them the forests. What did they give us? Nothing! Don't you ever tell me about reserving forests!" An elder spoke ironically that "they said they do not want to give us money because we will get used to it! They think we do not know what money is!" This last statement is critical of the idea that

local people have been isolated from the market, or at least that nature and natural resources have not been drawn into the market economy and that the area has somehow remained in a pristine socio-economy of local subsistence goals, which has not been the case (see Chapter 4).

People demand compensation for the park's existence. The chieftain suggested visiting the sector administration and the regional governor with a letter explaining their claims against the park. Consensually, the meeting participants agreed on the following claims: (i) community guards should receive salaries; (ii) people do not want an NGO technician as the director of the park, as allegedly he installed himself in this position; (iii) all NGOs working in Cantanhez should employ people from Cantanhez; (iv) conditions of the road to be improved; and (v) there should be better school education.

3.2.7.5 The Balanta absence

It was noticeable that the Balanta people did not take part in any of the meetings described above. In one of the meetings, some people referred to this. A man said that the Balanta always have other plans and that they do not attend meetings. Another man stated that Balanta people should come. Afterwards, I realised that many Balanta people had relinquished their positions as community guards or as members of the management committees, and at the same time they were the most accused and victimized during Nininhu's mandate, together with the Fula migrants (see Chapter 4).

The fact that the Balanta were being treated in a different way and were stepping down from the management committees might be ascribed to several causes. One set of arguments would be that many Balanta are still more interested in mangrove farming than in forest land to produce rice and therefore their farming systems do not depend on park regulations as is the case for other ethnic groups. Farmers relying exclusively on swidden farming are more vulnerable to the nature conservation regulations than mangrove rice farmers (Chapter 4), as the conservation efforts of the park focus almost exclusively on the dense forests (Chapter 2). However, some Balanta people have been planting cashew orchards in the forest, as this is the main cash crop in the country (see Chapter 4). A few Balanta farmers also invest on *Borassus aethiopum* wine tapping and do not have religious prohibitions against the consumption of monkey meat. Therefore, even if the Balanta's main source of

subsistence is based on a strategy that ensures low conflict with the park, the diverse livelihoods strategies do not exclude any ethnic group from people-park conflict.

Another set of arguments places the Balanta people as socially segregated, which is in line with the position that some Balanta military elites in Guinea-Bissau assumed since the coup of April 2012 which overthrew Carlos Gomer Junior's government. It could be that some Balanta were aligned with the pressure put on the government of Carlos Gomes Junior, in which the park, NGOs and environmentalism in general were seen to 'stand for' the state. In 2011, a group of youths told me that a Balanta military officer was supporting the local youths' association in a Fula village to rebel against the NGO. Also in 2011, I heard rumours of guns being distributed to some Balanta households. Perhaps some Balanta people felt harassed, not only by park regulations, but also specifically by the initiatives taken against some Balanta people, and more broadly speaking, by the state.

The stories about the Nalu and Balanta encounters are expressed both in knowledge exchange and in conflict over land access. The Balanta people are the only cattle raisers in Cantanhez and Balanta cattle are said to damage other people's crops (see Chapter 5). Conflicts because of crop loss by cattle led the Nalu to abandon some of their villages (such as Camtchete, Cabsul and Caboxangue), which are nowadays inhabited by the Balanta (see Chapter 7). The Nalu elders also describe a situation in which the Balanta, after their arrival in the area, wanted to control the Nalu's shrines and thus take over the territory. Again, the Nalu recall the role of their magical abilities in warning the Balanta that they should not try to take over. When the Balanta arrived in Cantanhez, they had been given mangrove land to farm; however, more recently they have been pressuring the Nalu people for access to forest land for cashew plantations, and sparking several individual-level conflicts over land access.

Temudo (2012) reports a more open tension over land rights during the PRS (Party for the Social Renovation, composed mainly by Balanta people) leadership in 1999-2003. The author describes the Balanta declaring that "The land has no owners now!" (Temudo 2012:363). During my study, a Balanta elder claimed he was the chief of Caboxangue; however, Nalu people rejected the existence of a chieftain in Caboxangue. After the 2012 coup, the local tensions between Nalu and Balanta have steadily increased. In February 2013, I heard Balanta youths saying that when the Balanta people arrived in Cantanhez, the Nalu were not in the southern part of the peninsula, but far north. In the same period, a Nalu youth of a founding lineage told

how he was chosen to visit a very knowledgeable Nalu elder and learn from him the secrets about how Nalu people can deal with the Balanta in case they try to take over the Nalu homeland. The position of the Balanta nowadays seems to be one of considerable tension with institutions that represent both the state and the Nalu homeland. Broader tensions at the military-government level increase the likelihood of local conflict over natural resources. Nevertheless, the Balanta-Nalu and Balanta-Fula interactions are at the same time deeply rooted in mutually advantageous agreements based on seed loans, knowledge sharing, and access to labour and land (see Chapter 4), and therefore these act as a brake on more violent confrontation that a perceived abuse of power may trigger.

3.3 Discussion

“Telling not only stories about nature, but stories about stories about nature”
(Cronon 1992:1375)

The central argument of this chapter is connected with two ideas described in the context of Guinea-Bissau: first, Temudo (2008) affirmed the intricate relation of politics and cosmology, and second, Crowley (1990) described the regional cosmological paradigm, “spiritism”, as based on reciprocal contracts with the supernatural. The Nalu homeland is said to have been purchased from the spirits. Magical commodities can also be purchased from the spirits and the slaughtering of domestic animals is offered as an exchange for fortune. Finally, one has to give away in order to receive. These are the grounds of local morality – reciprocity is fundamental to a peaceful sociability, with the spirits and among people. Whenever outsiders or insiders challenge this imposed consensus, social tension breaks out, as happened during the Fula invasion and Portuguese colonialism. Likewise, it seems that the relation with nature conservation institutions today is being subjected to the same moral judgement. Whoever demands but refuses to give, whoever is not being reciprocal, is challenging the local morality (Chapters 6 and 7), and thus challenging the *nfoth*, and may well be punished by the spirits of the Nalu homeland. In addition, the settlement of allegedly patron-client relations between individuals (e.g. chieftains) and external powerful stakeholders (e.g. park/NGOs), is heavily criticised by both local people who seek a more egalitarian sharing, and by others who seek to be included as clients (e.g. community guards). Nevertheless, there has been some collective effort to

challenge or even invert these patron-client relations. Far from seeming absurd, this inversion would mean that local farmers would be seen as the influential producers of forests instead of secluded consumers of forests. The Nalu people have synthesised animism, Islam, chieftaincy, and nature conservation, as well as the respective systems of knowledge, institutions and political players, but not without struggling to adequately represent the Nalu political structures within these new configurations.

3.3.1 Narratives as a space for contesting places

The reinforcement of particular lines of oral history is, for the Nalu, an instrument of resistance. In a context of on-going Islamisation and decreasing importance of the Nalu language, the foundation histories and the naming of landscapes and places are often perceived as the indisputable evidence of Cantanhez as Nalu homeland. Narratives are instruments that aim to guarantee that both the Nalu founding lineages and Nalu chieftains remain privileged political players in Cantanhez, as Berliner put it, “memory as cultural transmission has become a politicised issue throughout Africa” (2005:586). Consequently, any sign with a name or a symbol is regarded as a fixed version of a particular story among many contested stories. Naming goes along with a permanent re-construction of the space. Cantanhez is the Nalu homeland with important shrines and magically mediated access to resources. It is also a place where land is being claimed for agriculture by various peoples (see Chapter 4). Furthermore, and in conflict with the above-mentioned, it is also the Cantanhez National Park, a place where, for the purposes of a global biodiversity conservation agenda, charismatic species and habitats are to be conserved.

3.3.2 Sacred forests and nature

The centrality of the bush spirit of male initiation has been described for other societies in the adjacent areas to the Nalu homeland, such as the *djag* for the Beafada people (Abrantes 2011) and the *amango ngopon* for the Baga of Guinea-Conakry (Sarró 2008). Similarly, for the Nalu, *mbantchum* represents a rationale that merges the control of both knowledge and morality. The institutions of Islam, chieftaincy, and nature conservation have been taking over *mbantchum*'s responsibilities, and therefore influencing control over knowledge and morality. However, new institutions do not

necessarily mean that local perceptions have changed much: people's perceptions seem embedded in a common cosmological reasoning where spirits are agencies of distribution and justice.

In different contexts in Guinea-Bissau and across West Africa, sacred forests have been described as places for ceremonies, initiations, and political negotiations which structure and re-structure local cosmologies and people's identity. This is the case for the Nalu in Cantanhez, as for the Manjaco people (Gable 1995, Gable 2000), for the Diola (Davidson 2000), and for the Bijago people (Bordonaro 2006). Additionally, the sacred forests have been valued in nature conservation as reservoirs of biodiversity in Guinea-Bissau (MDRARNA 2000) and in other West African contexts (Bi et al. 2010), or indeed as a narrative that re-invents Nalu cosmology, as is the case for the "14 forests of Cantanhez", which are supposed to be sacred. However, the area covered by the sacred forests seems to be rather small to ensure biodiversity conservation. Instead, the relevance of the sacred forests to nature conservation is enmeshed in its meanings, rather than in its physical space, in the sense of understanding local institutions, morality and knowledge. Furthermore, it is probable that when a sacred forest is valued for nature conservation, the concept of "a sacred forest" is likely to be used as a political instrument for negotiating with nature conservation institutions. This would transform sacred forests as places of negotiation, into instruments of negotiation.

3.3.3 People's identities and institutions

In Cantanhez, the landscape has long been a living and political body, because the space has variable meanings that determine use and access. One's identity (ethnicity, gender, age, source of income), as argued by Li (2008:340), "is not natural or inevitable (...). It is, rather, a positioning which draws upon historically sedimented practices, landscapes, and repertoires of meaning", and is relevant to guaranteeing rights of access to shrines and farming land. As described by Offen, "group identity is coupled with notions of place" and this "identity shapes and reflects changing concepts of place" (2003:382). The past is used as a reservoir of arguments for the representations of one's right of access to a particular space. Identities are played at specific moments and are highly context-dependent, and they do not intentionally oppose groups out of particular contexts of struggle. The opposition of Fula and Nalu

in oral narratives regarding past wars and chieftaincy rights becomes blurred when they both struggle against the park, and the Nalu rights are stressed by both peoples. These processes of articulation (and disarticulation) of ethnic identity produce political agency. In the particular context of park policies, the most telling antagonism lies between the few people who are perceived to receive some benefit from the park, and the many people who do not (see Chapter 7). Still in this context, the Balanta were mainly reported as self-excluded people and I could not understand the reasons for this. Care should be taken since access to forest resources can trigger open conflict if aligned with broader political goals.

In line with the previous idea, Brockington et al. (2008:88) write that fortress conservation and conservation led by or involving local communities both “distribute[s] fortune and misfortune unequally to different groups in society”. It is not in essence about fortune/misfortune but rather about power and the use of threat to achieve certain legitimised goals. A notable aspect is that people belonging to a common terrain of social interaction possess instruments - such as witchcraft and magic, histories of foundation, storytelling, gossiping, local protests and meetings - for negotiating power and access to resources. Whenever a certain person/group/institution does not fulfill the calculated need for mutually advantageous coexistence, social tension breaks out. Social unrest leads to the repositioning of institutions and individuals that negotiate local power through locally meaningful strategies. There have been meetings to discuss the park and to forgive those who have failed and unfortunately the urban conservationists (IBAP, NGOs) have not been attending these. Local people seem to claim a more fundamental and long lasting role in the park’s decision-making institutional matrix. Nature conservation officials would do well to hear and understand these claims and the social complexity behind them.

Most people in Cantanhez feel harassed and encroached upon by the park and there has been some dismay and frustration regarding what the park represents for local livelihoods. The next chapter presents an in-depth description of local livelihoods. Presently, the Nalu people are struggling to ensure their rights over land as different aspects have been suppressing their role as users and managers of natural resources. Again, the context of the national park is relevant for discussing local farmers’ ability to ensure livelihoods resilience and overcome stresses and crop loss.

4. Food, trade and forests

The previous chapter examined the historical and contemporary representations of a contested landscape. One of the most important components of this contestation nowadays is linked with livelihoods, and therefore access to resources. This chapter continues the historical and ethnographic approach of the previous chapter, complementing it with quantitative information regarding production and trade.

4.1 Introduction

Chambers and Conway (1991:5) defined livelihood as “a means of gaining a living”. I can venture to say that in Guinea-Bissau livelihood is, virtually, a means of getting rice. In Cantanhez, rice is central to local livelihoods such that a meal without rice is not a meal. Rice is as necessary as it is difficult to obtain; its production requires mature forest or mangrove land, a labour force, and adequate rain. While rice is the most important staple, cashew is the most important source of income and requires less labour and less rain than rice production. “My orchards will be my eldest son when I get old”, said Braima, an elder Nalu man, meaning that even if his son does not grow rice for him, the land and several fruiting trees can be harvested with a reduced labour force to provide him with rice. Orchards, mainly cashew orchards, are grown for security over land, cash revenue and to assert certain autonomy from younger generations. Braima’s statement illustrates the two main resources currently restricting livelihoods in Cantanhez – labour and land.

According to Scoones et al. (1998:4), livelihoods are defined by contexts, resources (land and labour), institutions and strategies (migration, farming, trading); these components are permanently subjected to disturbances and challenge livelihoods to change. Polanyi argues that “embedded economies” exist in societies where land and labour are transacted through elaborated social relationships. Gudeman (2001:17) adds that “when kinship dominates, reciprocity prevails; when political and religious institutions dominate, redistribution is found” while in the modern market economy, “all things are disembedded from their social conditions of production”. In the West,

this process is often associated with “modernization, progress, and the triumph of rationality” (Gudeman 2001:11).

In this text I use the term “resilience” and this is understood in terms of economic embeddedness, as defined in the above paragraph. From this perspective, resilience is lost when a “community economy loses control of its base, [and its] members must enter the market, offering their goods or labor for cash” (Gudeman 2001:127), which Gudeman defines as a process of “debasement”. In Cantanhez, the economy seems to be in a permanent state of transition; part of the economy is connected to the global while another part is grounded in local practices. Land access remains dependent on both patrilineal kinship and complex networks of social relationships that enable land access through reciprocity or patron-client relations. However, these practices have not prevented land concessions or commoditisation. Similarly, labour is offered, exchanged, and marketed with different economic arrangements coexisting in a dynamic and manifold system.

This chapter demonstrates that trade and cash crops alone are not sufficient to fulfill household food needs, thus making land access for the production of food crops fundamental to food security. Access to land is also directly crucial for swidden farming but it also plays a role in the allocation of labour and transmission of knowledge in both upland and mangrove rice farming. All these, however, collide with the nature conservation goals of Cantanhez National Park.

In the next section, I provide a historical view of local livelihoods and trade in order to illustrate how in addition to self-sufficiency Cantanhez has been embedded in market frameworks. The second section presents local livelihood strategies and discusses farming and trade. Quantitative information is not uniform across the study since farmers did not always provide quantitative information for every question (see Chapter 2). The third section examines the components of livelihood – land, labour and climate – and their relevance in the context of the resilience of livelihoods in a protected area.

4.1.1 A lively market economy in the Nalu homeland

“The notion that small rural producers are backward (‘traditional’) subsistence cultivators is one that dies hard” (Galli 1987:69).

The term ‘traditional’ is regularly used to denote local people’s natural resource management systems (e.g. Kasisi 2004, MADR 2006, Sousa 2007, IBAP 2007-2011, IBAP no date). More ‘modern’ strategies are portrayed as those in which local people seek profit (e.g. Casanova et al. 2008:11). Although mangrove rice farming was developed in southern Guinea-Bissau only after the 1920s, it is regarded as more ‘traditional’ and sustainable (e.g. Hockings and Sousa 2013:3) than fruit production and/or swidden farming. The social representation of a certain group of people matters to the political and social role ascribed to them, which therefore defines what is ‘traditionally’ expected from them. The following section serves to question the usage of ‘traditional’ as a synonym of environmentalism and/or lack of profit-thinking.

As described by van der Ploeg, even the most remote areas of Guinea-Bissau participate in commodity chains (1990). Namely, the Nalu’s participation in international trade circuits is noted as early as the first written records by Europeans. Crops, wild products and even people (slaves), were regarded as important commodities. Unlike in some parts of the world, where local people have been incorporated more recently into the world economic system, as explored by Thomas (1991), the Nalu people of southern Guinea-Bissau have established not only a symbolic relation with nature (see Chapters 3 and 7), but have also established a market-based relationship with natural elements through centuries of trade and exchange.

4.1.1.1 Slaves, ivory, leathers and wax as valuable commodities

As early as the 16th century, the Nalu are described as important cattle raisers and traders of slaves, ivory, mats (Almada [1594]1964:68-69) and amber (Coelho 1953 [1669]:207). During the 1700s, numerous Nalu crafts passed through Bolama for trade at Bissau (Brooks 2010: 68), and manufactured clothing for the Fouta-Djallon (Botte 1991:1426). During this same period, the commercial trade of palm oil between the

Nalu and the Portuguese and French flourished and was traded along with other commodities, including groundnuts, beeswax, ivory and salt (Havik 2004). The growing importance of palm products, timber and the rubber trade in the 1800s also attracted the Belgians and the British to the Nalu region (Vallon 1860, Sandelvar 1882, Puvél 1909/10 in Havik 2004). These products would remain important for European merchants for several decades. From the early 1900s (Mettas 1984:30) to 1941-1950 (Rosa 1951), Portuguese Guinea was mainly exporting groundnut, oil-palm kernels, rice, but also exported rubber, timber³⁵, wax and leather. In 1929-1931, the destinations of Guinean exports were mainly Portugal, other Portuguese colonies, Germany, USA, France and respective colonies, Holland and England (Galli 1995).

4.1.1.2 Exports and the Portuguese demand for groundnuts and rice

After the military occupation during 1900-1920s (see Chapter 3), the Portuguese control over the territory was reinforced. This was achieved by the establishment of administration posts, partnerships with local chiefs/leaders that often also undermined local political structures (see Chapter 3) (Schoenmakers 1987), and traders who worked for the firms controlled by the Portuguese (Galli 1995).

The expansion of groundnut farming in Guinea-Bissau and in West Africa as a whole was encouraged by the European development of the soap and oil industries in the first half of the 1900s (Mota 1954:305, Brookes 1975). From 1941 to 1950, Portuguese Guinea exported 19,327-44,278 tonnes of groundnuts per year, which was equivalent to 50.9-69.3% of its exports (Rosa 1951:592), and in 1977 achieved 72.8% of the total exports (Kofi 1981). In the same period, 10,753-17,292 tonnes of oil-palm kernels were exported from Portuguese Guinea, which corresponded to 24.4-36.3% of the exports (Rosa 1951:596). However, the low prices imposed by the Portuguese authorities encouraged farmers to decrease production and/or to engage in black market exchange (Galli and Jones 1987:38).

The banks of the Cumbidjã river in the Nalu homeland were known to be “one of the most important centres of rice production” by the Portuguese colonial administration (Veiga 1949:289,290, Carreira 1962:290). Especially after 1930, the

³⁵ The species more important for exportation were the *Khaya senegalensis*, *Pterocarpus erinaceus*, *Albizia sp.* (Rosa 1951:633).

mangrove rice, mainly produced by the Balanta people, was used for both local consumption and export to Portugal, Cape Verde, São Tomé, Portuguese India and British West Africa (Carreira 1962:300). In 1931-1964, the colony exported an average of $2,206 \pm 1,806$ tonnes of rice per year (9 to 7,305 tonnes/year) (Viegas 1940, Ribeiro 1989), which during 1941-1950 was equivalent to 0.78-9.4% of its exports (Rosa 1951:604). While Cantanhez was proudly called the “barn of the colony” (Carreira 1962:312), “in some places people use forest foods such as wild tubers, mangrove fruits, edible tree leaves, to dispel hunger” (Carreira 1962:238). Therefore it remains arguable whether this peninsula has ever produced the rice stocks required for local rice security. In fact, exports would continue even though production was not sufficient to meet the local demand for rice (Ribeiro 1989). Rice has remained a key item in national and international trade until today.

4.1.1.3 The Period of Independence: 1974 to 2013

During the struggle for independence, local farmers played an important role in supplying rice to the pro-independence fighters (Ribeiro 1988, 1989). During the struggle, the Portuguese military bombed the mangrove rice fields to prevent the independence fighters from accessing rice (local reports; Dhada 1998). From 1964, local production of rice in the areas controlled by the PAIGC could be exchanged for imported goods, such as clothes and sugar (Frazão-Moreira 2009:46), in the ‘Stores of the People’ (*Armazéns do Povo*) (Dhada 1993). Significantly, this was a bartering system that did not use the colonial government’s currency. Instead, rice was used as currency with the terms of trade decided on by PAIGC (Rudebeck 1974:179).

After Independence, the Stores of the People became state-owned enterprises and the farmers were obliged to exchange their products or sell them at fixed (low) prices. Authors (Berry 1984, Galli and Jones 1987, Ribeiro 1989, Temudo 2005) have noted how these policies, together with a centralised economy contributed to “the stagnation of agriculture, the impoverishment of farmers, and the increase of informal trade” (Temudo 2005:256). Low exports and high imports, the constraints on production after the war (Galli 1990), the weakening of the “anti-colonial alliance between a ‘petty bourgeois’ leadership and popular forces” (Rudebeck 1990:34), and the failure of the industrialisation efforts (Rudebeck 1990), all contributed to the conditions for the coup of 1980 by Nino Vieira. The coup not only ended the

governance of Luis Cabral which existed since independence (Munslow 1981) but also allowed the re-structuring of the economy during the 1980s, and the later adoption of multi-party elections. The liberalisation of the economy started with the Structural Adjustment Programme in 1987, advocated by the IMF (International Monetary Fund), the World Bank and the PAIGC leaders (Galli 1990). The liberalisation of the economy would provide a suitable environment for the adoption of the cashew nut, the most recent cash crop of Guinea-Bissau, which is an important element under analysis in this chapter.

4.1.1.4 From Guinea-Bissau to the world: the cashew nut

In 1953, banana, papaya and mango represented 80% of the fruit trees in Guinea-Bissau, while oranges, cashew and lime were much less common (Cabral 1956:38,89). During the 1980s, several West African countries, including Guinea-Bissau, became important cashew nut producers in response to the Indian demands for raw cashew nuts (Kyle 2009:5), as illustrated in Figure 16.

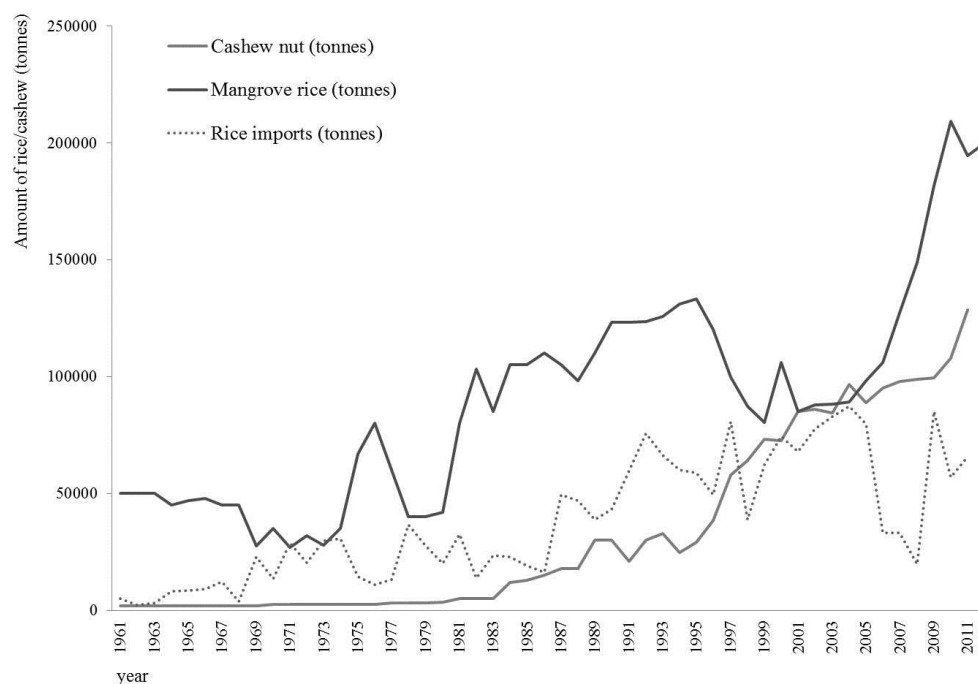


Figure 16- Amount of cashew nuts and mangrove rice produced and rice imported from 1961 to 2012 [source: (FAOStat 2013)].

From 1985 to 2001 Guinea-Bissau contributed 7.3%-26.1% to the international cashew nut market (Eapen et al. 2003:16). In 1979, the cashew nut trade represented 2.5% of total exports; by 1989 it corresponded to 61.1% (Hugo and Cardoso 1990), and in 2010 it reached 98.0% of the country's total exports (WFP 2011:17). At the beginning of the 1990s, six large commercial organisations were involved in the export of cashew nuts, but one foreign enterprise held most of the cashew business in Guinea-Bissau (Hugo and Cardoso 1990). Cashew prices³⁶ undergo monthly and annual fluctuations, depending on international production and market speculation (Hugo and Cardoso 1990, Sousa 2011). The recent falling prices of cashew in 2012 and 2013 decreased exports from Guinea-Bissau as well as rice imports, as the latter mainly depends on the cashew revenue (IRIN 2013). In 2012, 100,000 tonnes of cashew were exported; however the amount decreased to 60,000 tonnes in 2013, mainly because 38% of the harvest remained unsold (IRIN 2013).

National operators and Indian exporters exert considerable influence on availability and rice price in the country (Niang 2013). Internationally, food prices escalated during 2002-2008 (Mitchel 2008) and rice prices tripled in 2008 (\$370 to 1,000\$ a ton, Wodon and Zaman 2010). The use of food grains to produce biofuels, higher energy prices, the dollar weakening (Mitchell 2008), export restrictions, a decrease in productivity, and poorly understood financial market speculation (Headey and Fan 2008) are all factors that have increased global food prices.

4.1.1.5 Cashew and rice production: mapping the connections

It has been illustrated in the literature how cash economies may threaten subsistence economies (White et al. 2012). Cash crops, sold as commodities, have been shown to replace subsistence and labour-intensive farming by forms of production that require less labour. Similarly, several authors relate the decrease in rice production to the increase in cashew production in Guinea-Bissau (Bock 2001, IRIN 2006, Boubacar-Sid et al. 2007, MADR/FAO/PAM 2007, World Bank 2010, Temudo and Abrantes 2012:9). From 1996 to 1999, rice production decreased sharply which overlapped with the boom in cashew nut production (Figure 16), and between 2003-

³⁶ See a discussion of the trends of cashew nut prices in Sousa (2011:50-52).

2007 Guinea-Bissau depended on rice imports for about 30% of the country's needs in cereals (Niang 2013).

Despite the relationship described between rice and cashew, the decrease in mangrove rice farming may also be explained by other factors. Ribeiro (1989:257-260) describes the decrease in rice production as starting in 1931, long before the establishment of cashew nut plantations, and mainly as a consequence of (i) the rice exportation efforts of the Portuguese (1931-1963) that did not secure the rice needed for the reproduction of mangrove rice farming (labour, investments, seed stocks and loans); (ii) the need to feed the fighters and dikes' being bombed during the independence war (1963-1974); and (iii) the low state-controlled rice prices after independence, which decreased the purchasing power of the Balanta, the main mangrove rice farmers. Therefore, in the view of Ribeiro, the decrease in the production of mangrove rice is not dependent on the production of cashew, but rather on rice-related economic and social factors.

Table 3- Imported and produced rice in Guinea-Bissau from 1979 to 2009 (for purposes of reference rice/inhabitant is used).

Year	Rice/inhabitant* (kg person ⁻¹ day ⁻¹)
1979	0.24
1991	0.51
2009	0.47

* FAO Stat 2013 divided by the INE population surveys for Guinea-Bissau (see Chapter 2)

Ribeiro asserts that from 1986 there was a revitalisation of mangrove rice production in Guinea-Bissau (Figure 16) probably boosted by high rice prices and the increase in the amount of rice flowing into the local economy from imports and made available through cashew-rice exchange (Table 3). Hugo and Cardoso (1990:28) describe the same increase in mangrove rice production in the Quinara and Tombali regions due to the high rice prices of 1988-89 (see below). Accordingly, Lundy (2012) reports that from 2006 to 2010, there was some recovery of mangrove rice farming in the Cacine peninsula (Tombali region) due to the less favourable cashew prices. Rice and cashew are the protagonists of local livelihoods and are affected by resources available, such as land and labour, and strategies followed, such as migration, production, and trade.

4.2 Results

4.2.1 Farming systems

The central unit for analysing farming systems is that of household. A 'household' (*fogon*, kl), is defined as both the social unit of production and the management of staples, commodities and income. The head of the household (usually a man) is responsible for food management (consumption, buying, and selling). Ultimately, he is in charge of guaranteeing rice for the household, although women can play an important role in ensuring household food requirements during rice shortages. At the discretion of the head of the household, both men and women have individual croplands of groundnut, beans, cocoyam, chilli, and other items to meet the personal goals (See Table 6 and Appendix 6). The individuals then decide whether a portion of the harvest is assigned to the household or whether it is all kept as personal revenue.

4.2.1.1 Producing rice in the mangrove and the forest

While Balanta farmers are the main producers of mangrove rice, several Nalu people farm both mangrove and upland rice. Preparing the mangrove fields for rice production involves significant investments of time and labour for (i) clearing the mangrove vegetation, (ii) building dikes and ditches (Appendix 7), and (iii) ensuring desalinisation, all of which may take up to six years to complete (Carreira 1962:214). The main dike serves as the barrier to the sea. Rice fields are set perpendicular to it and surrounded by a system of smaller dikes and canals that allow the management of salty and fresh water. Ploughing and the preparation of the nursery (*ipa*, kl) take place after the first rains in July or August. In August, the rice seedlings are transplanted in the mangrove fields³⁷.

Mangrove rice has three main functions; it serves as (i) a household staple crop, (ii) a trading surplus, and (iii) capital for production (Ribeiro 1989:253). Rice is both an output and a required ingredient. Therefore, it cannot be removed from the production chain. Rice requires considerable social investment (loans, gifts,

³⁷ For more information on mangrove rice farming see Temudo (1998: 125-138) and Gonçalves (1998).

ceremonies) and technological investment (dike construction and labour). Mangrove rice farming is highly dependent on labour and rain. It does not rely on forested areas. Therefore, to a certain extent it avoids collision with the current conservation priorities set by the national park that aims at protecting the upland forests. The case is different with swidden farming, and this system is highly blamed for the deforestation of dense upland forests.

Swidden farming, is also known as shifting cultivation or slash-and-burn cultivation, and these three terms refer to a troublesome concept that was, and still is, viewed largely as the cause of environmental degradation in West African landscapes (EU Guinea-Bissau no date). However, in Cantanhez, 94.4% (n=90) of the interviewees relied on swidden farming and this farming system is of considerable importance.

In swidden farming, forest clearing is initiated in March/April (late dry season) though burning may be postponed until the first fortnight of June, just before the first rains fall. In the first year of the agricultural cycle, rice can be intercropped with crops like cassava, pumpkin, maize, sorghum, millet, sugar cane, cucumber, aubergine, okra, roselle, tomato and/or chili, among others. Although occasionally rice is grown for two years on the same plot, farmers usually grow groundnut in the second year. It too can be intercropped with the crops listed above. If tree crops such as cashew are not planted in the first years the parcel is abandoned, allowing the vegetation to re-grow. It takes more than five years to re-use a parcel of land for rice farming, with land use transitioning from farm to fallow to forests before returning to farmland again.

Livelihood strategies for the production of rice that households and individual farmers adopt determine their dependence on natural resources. Understanding these connections is relevant to recognise the opportunities for specialisation or diversification.

4.2.1.2 Specialisation in Cantanhez

In Cantanhez, farmers grow an average of 22 ± 9 crop types. All farmers interviewed produced food and cash crops, which in periods of rice scarcity are exchanged to purchase rice. Only four interviewees reported growing fewer than nine different crop types; instead they relied on mangrove rice farming (Cabslau, n=1), cashew nut (Mcunda, n=2) and citrus orchards (Mcunda, n=1). Cantanhez is probably

the least important area in the country in terms of cashew nut production (Camará 2007:47). Yet, since the 1990s, it has become a generalised farming strategy (Temudo 1998) and thus 76% (n=90) of my interviewees produced cashew.

Within villages, the majority of interviewees adopt a diverse strategy based on swidden agriculture. In the vicinity of the villages are the *pontas*, or larger plantations of fruit trees, mainly cashew (5.0±7.2 ha). Of the twenty-two households in the territory of Cabam³⁸, six households (27.2%) in the village surroundings rely heavily on cashew nut production, four of which were producing mangrove rice during the 1980s, before adopting the cashew as a main strategy. Accordingly, Nalu elders interviewed said that “before there was a lot of rice”^{xxvi} and the Google Earth images of the rice fields of Cabam also show previous areas of rice farming currently overtaken by mangrove recovery (see Chapter 5). Nonetheless, recently, three of these six households were planning to (re)invest in mangrove rice farming, mainly due to the high prices and scarcity of rice as well the disadvantageous cashew-rice exchange. In 2013, people in Cabam were also constructing a long dike to extend the area for mangrove rice farming (see Chapter 5 and Sousa et al. 2014 in Appendix 1).

Providing labour and land are available, specialisation is not a dead end strategy. Mangrove rice farming, upland rice, and cashew production offer different and variable but often complementary, pathways for ensuring rice stocks. The next section analyses the diversification of production and trade and their effect on local availability, re-distribution, and the purchase of rice.

4.2.2 Rice stocks

Rice is a central element of the local economy, and people trade crops in order to purchase it. Rice is crucial for rice farming and the farming utopia is to ensure rice stocks without “tiring the body”. Securing rice stocks becomes harder during the rainy season (June to September) and because household rice stocks are depleted, yams, cassava and beans are temporary substitutes for rice.

For upland rice farmers, household rice production in 2010-2011 ensured rice for an average of 6.3±3.3 months (3-12 months; n=18 households). However, in the Fula village of Macubé, four farmers said that in some years rice production is

³⁸ Twenty-two households include 13 households in the village of Cabam and other nine households away from the village but in its territory.

sufficient to fulfil household rice needs. This adequate supply is probably due to the larger farms in Macubé (1.37 ha/farmer) than in Cabam or Camcoiã (0.42 and 0.23-0.32 ha/farmer, respectively; see Chapter 5). The farms are larger in Macubé because people are exclusively dependent on the upland systems; there are no mangroves in the areas, fewer oil-palms for palm oil trade, no kola trees and limited fishing, all of which can play a role in the purchase of rice.

The rice used in each household per day ranges between 1-15 kg of rice (143-667 g of rice/day/person, n=25 households). The actual amount of rice consumed per person per day varies and is influenced by: (i) the proportion of children/adults; (ii) whether breakfast is rice based; (iii) consumption of foodstuffs other than rice; (iv) food being sent to or received from/to family, guests and neighbours; (v) the phase of the agricultural cycle (during the labour intensive periods rice consumption increases³⁹); and (vi) rice stocks. For reference purposes in this thesis, a household regularly consumes 2-5 kg of rice per day (79% of the cases, n=34; see Figure 17), or 730-1,825 kg of rice per year. These numbers do not take labour intensive days when people consume more rice into consideration (see Table 4).

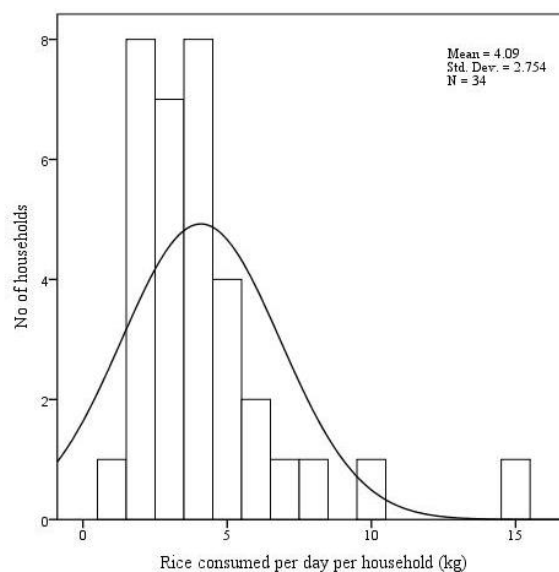


Figure 17- Amount of rice used per day per household (kg).

³⁹ The average requirement of rice/household/day is 4.1 ± 2.7 kg (n=34) in regular days and 5.3 ± 1.7 kg (n=11) in days of heavy work.

Table 4 - Minimum and average rice supplied by household production (number of months) and respective amount and cost of rice that has to be purchased (n=18) for a hypothetical consumption of 2-5 kg per household/day.

Rice supplied by production (no months)	Rice to purchase (kg)	Rice cost (XOF)	
		200 XOF/kg ⁽⁵⁾	450 XOF/kg ⁽⁶⁾
3 ⁽¹⁾	540 ⁽³⁾ – 1,350 ⁽⁴⁾	10,800 – 270,000	243,000 – 607,500
6,8 ⁽²⁾	312 ⁽³⁾ - 780 ⁽⁴⁾	62,400 – 156,000	140,400 – 351,000

⁽¹⁾ Minimum number of months that production can fulfil rice needs in a household

⁽²⁾ Average number of months that production can fulfil rice needs in a household

⁽³⁾ Assuming an average consumption of 2 kg/day

⁽⁴⁾ Assuming an average consumption of 5 kg/day

⁽⁵⁾ Minimum rice price (see Table 6)

⁽⁶⁾ Maximum rice price (see Table 6)

Given the need to purchase rice in order to respond to household needs, trade is very important. In addition to rice, the crops reported as most important for food security are cashew, groundnut, cassava, and lime, all of which are regularly exchanged or sold to purchase rice. Beyond these, thirty-three crops were identified, all of which contribute to a complex system of exchange and trade. Crops reported by more than 20% of participants are highlighted in grey in (Table 5, n=90).

Table 5- List of crops grown by farmers in Cantanhez.

English name	Kriol names	Scientific names
Rice	Aruz	<i>Oriza sativa</i> ⁴⁰
Cashew	Caju	<i>Anacardium occidental</i>
Groundnut	Mancara	<i>Arachis hypogaea</i>
Orange	Laranja	<i>Citrus sinensis</i>
Cassava	Mandioca	<i>Manihot esculenta</i>
Lime	Limon, var. Limon di terra	<i>Citrus</i> sp.
Lime	Limon, var. Limon francis	<i>Citrus</i> sp.
Roselle	Badjiki, baguitxi	<i>Hibiscus sabdariffa</i>
Maize	Midju bacil	<i>Zea mays</i>
Black-eyed pea	Fizon mancanhe	<i>Vigna unguilate</i>
Pumpkin	Bobra	<i>Cucurbitas</i> spp.
Sorghum	Midjo cabal	<i>Sorghum bicolour</i>
Millet	Midjo pretu	<i>Pennisetum typhoides</i>
Fonio	Fundu	<i>Digitaria exilis</i>
Yam	Nhambi di terra	<i>Dioscorea</i> sp.
Sesame	Bene	<i>Sesamum</i> sp.
Sweet potato	Batata	<i>Ipomoea batatas</i>
Coco yam	Manfafa	<i>Colocasia escolenta</i>
undetermined	Tifa ⁴¹	undetermined
Pigeonpea	Fizon congo	<i>Cajanus cajan</i>
Okra	Candja	<i>Abelmoschus esculentus</i>
Aubergine	Beringela	<i>Solanum melongena</i>
Bitter aubergine	Djagatu, djacatu	<i>Solanum incanum</i>
Pepper	Malagueta	<i>Capsicum</i> sp.
Cucumber	Pipinu	<i>Cucumis sativus</i>
Onion	Çabola	<i>Allium cepa</i>
Carrot	Çanaoira	<i>Daucus carota</i>
Tomato	Camate	<i>Lycopersicon esculentum</i>
Sugar cane	Sucar	<i>Saccharum</i> sp.
Banana	Banana	<i>Musa</i> sp.
Jackfruit	Maracussa	<i>Passiflora</i> spp.
Pineapple	Ananás	<i>Ananas comosus</i>
Tamarind	Tambarina	<i>Tamarindus</i> sp.
Granja palm-oil or Angola palm-oil	Palmera di granja or Angola palm	undetermined

With the exception of sugarcane and cucumber, crops are regularly traded. People sell crops in villages, local markets, travel to larger markets and negotiate with traders coming by truck from Bissau, Guinea-Conakry, Senegal, and Gambia. Several factors may lead them to sell more cheaply than desired, such as rice shortage, the need

⁴⁰ For information on the African rice, see Teeken (2012).

⁴¹ Temudo (1998:161) says that this species belongs to the genus *Solenostemon*.

to generate cash to purchase goods and hire labour, ceremonies, storage constraints and debts.

There is considerable variation in prices for the most important crops (see Table 6 and Appendix 6). The quantification of products follows various local conventions of volume and number. Except for the cashew, the volume of a particular container and not the weight of a crop is meaningful, e.g. ‘a bag of 60 kg’, ‘small bottle’, ‘small basket’, ‘condensed milk tin’ (Table 6). Gudeman (2001) described similar systems in places like Colombia and Panama where there is not a common scale to measure a production process. Gudeman described cash crops being “counted” (as the cashew nut in Guinea-Bissau) and food crops being “accounted”, which in the author’s words, “reflects the difference between the community and market realms of economy” (Gudeman 2001:128).

It is particularly important to note that after harvest (October-January), the price of rice is at its lowest. It will then increase until the next harvest. The influence of the cashew nut price can also have an added effect on this increase, as to say, “now rice [price] follows the cashew [price]”^{xxvii}. Around March 2011, it was difficult to find local farmers who wanted to sell rice because those with a rice surplus, namely the mangrove rice farmers, were waiting for prices to rise with the cashew season. There are two main causes of rice inaccessibility in the region, first (i) farmers save rice during periods of surplus to sell it at higher prices, and second (ii) the rise in the price of rice limits the purchase capacity of many farmers.

During the cashew season, the rice price increases, and many farmers say they have no bargaining power with traders. Farmers report cashew-rice terms of trade from 1.5:1 up to 3:1, respectively. In 2011 and 2012, farmers were pleased with the cashew exchange in Cantanhez at a rate of 1:1. Unfortunately, by 2013 the terms of exchange dropped again (see Table 6). Furthermore, farmers say that in years when the cashew price is high, the rice price is kept artificially high to maintain the advantageous terms of trade for traders. Given this uncertainty, other crops are crucial to balancing insufficient harvests and disadvantageous cashew-rice terms of trade.

Table 6 - Local prices of more important trading crops in Cantanhez during the period 2008-2011. Darker grey corresponds to higher prices; “d” to “n” corresponds to the months from December to November, respectively (see Appendix 6 for other crops traded). The “X” indicate the crops mainly produced by women and/or men.

Products	Gender		Price (XOF)	per	Months ⁽¹⁾														
	♀	♂			d	j	f	m	a	m	j	j	a	s	o	n			
Rice		X	200-450	‘Kg’ ⁽²⁾															
Cassava (dried)	X	X	7500-10,000 ⁽³⁾	Bag 60 ⁽⁴⁾															
Cassava (fresh)	X	X	4000-5,000 100 200-250	Bag 60 pile ‘tchangle’ ⁽⁵⁾															
Groundnut	X	X	2500-10,000	Bag 60															
Kola	X	X	200-700	‘Kg’															
Orange		X	2500-7,000	Bag 60															
Palm oil	X	X	500-750	Litre															
Banana		X	100	‘Kg’	Stable price														
Lime juice	X		100-250 ⁽⁶⁾	Litre															
Chili	X		300-500 15,000 50	‘Kg’ Bag 60 Pile															
Cashew nut	X ⁽⁷⁾	X	50-300 2006: 50-125 2007: 200-225 2008: 150-225 2009: 100-250 2010: 150-300 2011: 250-300 2012: 200-400 2013: 100-150	Bag 60	Between 2006-2013 it varied unpredictably, both yearly and weekly														

⁽¹⁾ The rainy season is from June-September.

⁽²⁾ Corresponds to the volume of 1 litre tin.

⁽³⁾ The price increases up to 12,500 XOF (Cabum) or 17,500 XOF (Macubé) during Ramadan.

⁽⁴⁾ This corresponds to the volume of a 60kg rice bag (there are also the 50 kg bags)

⁽⁵⁾ A black bucket is approximately 10L.

⁽⁶⁾ The price increases up to 400 XOF during Ramadan.

⁽⁷⁾ This is common in the Fula village of Macubé.

4.2.3 Trade

4.2.3.1 Trading beyond Cantanhez

Farmers who sell greater amounts of products at a time to traders were able to provide trading information for some crops. A few larger producers, mainly from Macubé, have access to large farming areas, hire labour frequently, grow larger farms,

and therefore are able to produce amounts above the average (see maximum values in Table 7). The majority of farmers however are below the average shown in Table 7. For instance, 78% (n=28) of interviewees sell less than 1,000 kg of cashew nut, and 78% (n=18) of interviewees sell less than 25 bags of groundnut (Table 7).

Table 7- Amount sold to large-scale traders for the most important crops traded in 2009-2010 (interviewees from Cabam, Camcoiã, Macubé, and Nfcunda).

Product	Average amount	STDV amount	Max amount	Village ⁽¹⁾	Average Income (XOF) ⁽²⁾	No inf ⁽³⁾	% of sellers ⁽⁴⁾ (n=67)
Cashew (kg)	824	1,304	5,000	Macubé	202,920	28	39
Groundnut (<i>bag</i>)	25	40	178	Macubé	120,014	18	72
Orange (<i>bag</i>)	17	18	60	Camcoiã	86,714	7	21
Chili (<i>bag</i>)	n.a.	n.a.	17	Macubé	83,125	4	48
Beans (kg)	97	108	300	Macubé	24,675	5	42
Cassava (<i>bag</i>)	8	6	16	Macubé	24,125	6	67
Lime (l)	154	207	600	Camcoiã	23,861	9	39
Banana (kg)	281	157	500	Macubé	28,067	3	39
Maize (<i>lata</i>)	12	12	32	Macubé	11,500	4	39

⁽¹⁾ Village where the maximum amount was registered

⁽²⁾ Calculation based on the prices given by farmers who could reply to this question

⁽³⁾ Number of informants who provided information for the estimations

⁽⁴⁾ Number of informants who usually sell each product

My main argument in this section is that even if households hypothetically allocated their total income to purchase rice, it would still not be guaranteed that rice demands would be fulfilled. This study estimates a requirement of 730-1,825 kg of rice/year for households consuming 2 to 5 kg/day (see section 4.2.2). Considering the average income presented in Table 7, the amount of rice a household is able to purchase by selling other products largely depends on the variations of rice prices (see Table 8). Moreover, it is likely that both during and after the cashew season the rice price increases. This relationship is illustrated in column 2 of Table 8 (high rice prices), especially in years, such as 2008, in which there are spikes in the international prices of rice.

Similarly, if farmers exchange cashew crops at a rate of 1:1, they would get ≈ 824 kg of rice. If the exchange rate were to be 1:3, they would only be able to purchase about ≈ 275 kg. Accordingly, this unpredictable variability can easily precipitate the decline of a household from rice utopia, meaning that the household is able to purchase rice through a strategy that does not require much labour (such as the cashew-rice exchange), to rice failure.

Table 8 - Amount of rice that could be purchased with income generated by trade (see Table 7).

Product	Rice (kg)	
	200 ⁽¹⁾ xof/kg	450 ⁽²⁾ xof/kg
Cashew	1,015	451
Groundnut	600	267
Orange	434	193
Chili	416	185
Beans	123	55
Cassava	121	54
Lime	119	53
Banana	140	62
Maize	58	26

(1) Minimum rice price

(2) Maximum rice price

One of the persons that expectedly would be closer to rice utopia is Adama, one of the largest producers of cashew in Macubé. She had the largest orchard in the village with about 9.26 ha. The average size of other orchards was 2.38±2.28 ha (N=18). She described the events that made her one of the wealthiest farmers in Macubé in the following vignette:

Case 1: Being the wealthiest woman in Macubé

I gave birth to ten children, only two male, and one of them is alive today. I realised that I had to work hard. I started selling products that I grew, like potato and groundnut. Afterwards, every time I grew a crop, I planted cashew. Now I have two orchards here and another in Cureri [a nearby village]... Now I want to invest in cassava, but I will keep on planting cashew.

In 2010, Adama produced 5,000 kg of cashew, 300 kg of beans, and 178 '60 kg' bags of groundnut. She does not produce enough rice for household consumption. She uses 15 kg of rice/day [5,475 kg/year]. This amount of rice is both for workers that she constantly hires for farming tasks and for people who come to her.

As one of the wealthiest people in Macubé, she has a local shop, a zinc-roofed house, and has also offered land parcels to some Guinea-Conakry immigrants. Nevertheless, she is not able to produce sufficient rice for household consumption and she depends on trade to purchase rice. Her balcony is usually busy with people eating, and travellers and guests that often meet there. One of these migrants told me, "She is a

good person”. As a woman and as the wealthiest farmer, Adama does not forgo sharing, even if that means having to cook 15 kg of rice per day; being perceived as greedy would probably bring other trouble (see Chapter 7). Production and consumption, particularly of rice, are so embedded in the social aspects of livelihoods that guaranteeing rice for the household can be difficult, even when one is expectedly the wealthiest.

4.2.3.2 Trading in local markets

Locally, there are lively, accessible, and frequent trading opportunities in villages and local markets⁴² (*lumu*, kl). Transactions depend on local exchange arrangements based on volumes and established by custom, which shield the local economy from price variations to a certain extent. Locally, many staples are depleted by the beginning of the rainy season and therefore the price of several crops increases synchronically, which allows for a seasonal price adjustment (see Table 6 and Appendix 6). Below are two examples of synchronic variation in supply that are followed by an adjustment for equivalence:

One kg of fish is usually 250 XOF, but during the rainy season it depends on the rice price. If rice costs 300 XOF, and other people have rice and they want fish, then it is better if you set your fish price at 300 XOF^{xxviii}

If we exchange chili with kola nuts, and if 1 L of kola nuts is 500 XFO, we also charge 500 XOF for the chili. For example, now 1 L is 750 XOF. It can increase until 1,000 XOF. We discuss the price until it reaches 1:1^{xxix}.

The diversity of products exchanged, the patterns of availability and demand, and the variability of prices allows local farmers to synchronise the fluctuations of some prices and maintain exchange rates (Table 9).

⁴² There are weekly local markets (*lumu*, kl) in Calaque, Caboxangue, Cabante, Cruzamento.

Table 9 - Local terms of trade for rice exchange (1 *tchandelê* unshelled rice = 1 L of shelled rice; 1 *tchandelê* of cassava = 1 L of cassava powder).

Amount of product	Amount of rice
One '60 kg bag' of groundnut	One '60 kg bag' unshelled rice
One ' <i>tchandelê</i> ' of cassava	One litre of shelled rice
Two ' <i>amarraduras</i> ' of cassava	One kg of rice
One small bottle of palm oil	One litre of shelled rice
1 'kg' of fish	One litre of shelled rice
1 'kg' of duiker or gazelle meat	Two litres of shelled rice
2 soap units	One ' <i>tchandelê</i> ' of unshelled rice
1 kg of shelled beans	1 kg of shelled rice
1 '60 kg bag' of potato	1 '60 kg bag' of unshelled rice
1 L honey	1 ' <i>tancon</i> ' of unshelled rice
Half of gourd	1 kg of rice

The exchange of volumes is typical of local markets, and women are the main actors in these realms. Women are not only engaged in trading beyond Cantanhez (as shown in Case 1), they are also privileged actors in local-level platforms of exchange. An elder in a Nalu village described the role women play in food security:

In many cases today, women are those supplying rice [when the rice from production finishes]. They make soap and take it to the market, buy potato and take it to the market (...) When women get money, they invest in the oil palm business, and then they buy soda again, cook soap, and take it to the market^{xxx}.

With this small-scale but continuous manufacturing-trade, women exchange products for rice or cash, which they then use for both household consumption and personal gain. In Cabam, women frequently travel by foot 10-12 km to a weekly local market where they can sell the products they grow or re-sell products they buy in their villages. For example, the re-selling of 6-11 kg of banana can provide 1,000-1,500 XOF of income, while the tubers from 2-3 cassava stalks can provide 5 L of rice (equivalent to 1,000-1,500 XOF). Products like tomato, roselle, bitter aubergine, and aubergine also provide revenue⁴³, especially chilli (see Appendix 8 for other products).

⁴³ All these are used to cook the sauce/relish (*mafê*, kl) that is eaten with rice.

Case 3: Palm oil and local trade in Cabam

Amineta's is part of a household with her second husband, her teenage daughter, and two small children. They farm upland and mangrove rice but cannot ensure household rice demands. From 2007-2010, her husband worked as a small cashew nut retailer. For each ton of cashew nut he received 10,000 XOF from a bigger retailer. In 2010, he traded 8 tonnes of cashew nut [80,000 XOF], and he used the revenue to buy rice. He wants to keep his income a secret in the village⁴⁴. During the dry season, Amineta frequently engages with trade. On one occasion, I accompanied her to the market and she profited 1,000 XOF out of her cargo (tomato, potato, and banana). She told me she earns between 500 and 2500 XOF in a day in the market. She is investing part of her income in her daughter's high school studies at the evangelic mission, which demands a monthly payment of 3.500 XOF [31,500 XOF/year]. In 2010 and 2011, Amineta sold chili, soap, and palm oil in the local market and 10 '60 kg' bags of groundnut [65,000 XOF] to truck traders. She says that if she invests 2,000 XOF for young men to cut 20 bunches of oil-palm for her, she can extract 10 L of oil, which is equivalent to 5,000 XOF and earns 3,000 XOF of profit. After this, she can still extract kernel oil and sell it. She had to borrow money from people to keep up with school fees, but she was able to pay it back before the rains. The fact that rice stocks are not secured does not prevent Amineta from allocating money to her daughter's school fees and her personal goals.

Amineta would earn 24,000-120,000 XOF per year if, hypothetically, she went to the market every week. If the cash was only used to purchase rice (and it is not), it could provide 53-267 kg to 120-600 kg of rice for 450 and 200 XOF/kg of rice, respectively. High rice prices could hamper Amineta's efforts to attend the market year-round. Instead, Amineta says, during the rains she tries to exchange black soap for rice with the Balanta since they are working in the mangrove rice fields and women do not have time to prepare soap. In this case, the opportunity for trade is specific social context that benefits exchange and can be more beneficial than buying rice at faraway markets. Indeed, low amounts of rice in the region forces farmers to buy imported rice at high prices.

⁴⁴ Also reported by Davidson (2000) among the Diola in northern Guinea-Bissau.

4.2.4 Rice flowing

Trade plays an important role in the distribution of products between producers who invest differently, providing of course, that there is rice circulating locally, which is not always the case. A farmer explained that since 2009, Fula traders from Guinea-Conakry have come to the region to buy rice *baribaridu*,⁴⁵ driving the price of rice up even faster:

They come, a lot of them, they compete to buy rice and so the rice price increases. They make trading agreements with Balanta farmers in the mangrove fields before harvests, sell them mobile phones and merchandise on credit then collect the debt in rice.^{xxxix}

This exchange reduces the rice stocks available in the region, especially for farmers who do not have cashew nut to exchange for rice later in the season.

In 2012, a Nalu chieftain managed to prevent Balanta people from selling their rice to traders to ensure that enough rice would be available locally for exchange and trade. A dissenting Nalu farmer told me:

We do not have a place for the Balanta to sell their rice... If they produce rice and they are not allowed to sell it, they will decrease production. If you look at Balanta villages now...they are roofing their houses, buying motorcycles...only through rice.^{xxxix}

Merchants' interest in the mangrove rice harvests stimulates local rice production and selling but also encourages price increases shortly after harvests. Neither of these benefit the upland rice farmers who rely on the purchase of mangrove rice. As an upland farmer said: "Sometimes we have the money but we can't find rice to buy". Again, local trade can assist in the re-distribution of rice, but if there is not enough rice circulating in Cantanhez, the role of local trade for rice household security is narrowed. This stresses the importance of rice production for food security. Rice production is tied to land, labour and rain, which I explore next following the main concerns reported by the interviewees.

⁴⁵ Rice boiled before being husked, which makes the grain inflate. Rice prepared this way is more expensive than the rice *queredja* that is husked without previous boiling.

4.2.5 Livelihood resources: constraints on farming

This section describes the limitations of rice production as perceived by the interviewees. Their descriptions illustrate the modes in which rice production is intermingled with climate change, youth aspirations, and land access.

4.2.5.1 Climate constraints: sea and rain

The rainfall shortage

Both farmers and scholars (Funk 1991, FAO/GIEWS 2002, Embaló 2008, Davidson 2009) have noted a shortening of the rainy season and/or a decrease in rainfall (Appendix 2 and 9). The climatological studies for West Africa and the Sahel (Dai et al. 2004, Christensen et al. 2007, Trenberth et al. 2007) also support the reports of the interviewees in Cantanhez, particularly during the 1960s-1990s (Appendix 9).

While rainfall limits farming in multiple ways, mangrove rice is most vulnerable to variations in rainfall and salinity. Gonçalves (1998:21) noted that it “requires a minimum of 1,500 mm regular precipitation,” and “with sporadic precipitation the water must be handled with care”. Years with limited rainfall present the following challenges for mangrove rice farming: (i) it increases the presence of salty water in rice fields; (ii) it requires agricultural work to be completed earlier and is thereby constrained by labour availability; and (iii) it means that fresh water levels in the fields have to be carefully controlled because if the rain stops earlier, the rice seedlings could be lost. Therefore, less rainfall does not allow for delays in completing agricultural tasks, and demands more skilled and rigorous labour.

A ‘stronger sea’

Cantanhez is a peninsula with several sea canals extending inland that enable the cultivation of mangrove rice. Several villages reported that the “sea has more strength”, noting that the water-level had increased in two different sea canals. Elders said that when they were young (\approx 30-50 years ago), they crossed the sea canal using a wooden bridge. Now, they have to use a canoe to cross it. Balanta farmers from another village described the same for another canal of the same river. These descriptions may correspond to the climate change threat of a rise in sea level

worldwide (Dasgupta et al. 2009) or to more local changes in the sediments of both mangroves and mudflats (Anthony 2004), which affect flooding regimes and erosion (Brown et al. 2009, Church et al. 2010). The IPCC estimated a rate of sea-level rise of 2.0 mm/year during 1971-2010 and 3.2 mm/year during 1993-2010 (IPCC 2013). The West African coast is an example of a high flood risk area by sea-level rise (Nicholls et al. 2007:123).

As with a decreased rainfall, also a stronger sea increases the demands on labour to build and fix adequate dikes and ditches to defend the rice fields from salt water flooding. Therefore, although climatic factors are of considerable importance and should be investigated, it is also crucial to study the social constraints be considered alongside environmental variations, particularly as they relate to labour allocation.

4.2.5.2 Labour

In Cabam and Camcoiã, much of the agricultural labour is undertaken by the household and by groups of workers engaged in labour reciprocity at the village level. Groups of friends or people from different households are organised by age and gender (*mandjuandadi*, kl) to perform particular farming tasks. They often receive predefined payment in foodstuffs or cash. Individuals or small groups of people are also hired to perform particular farming activities. This practice is very frequent in Macubé since, unlike in Camcoiã and Cabam, many households depend on hiring labour due to young people migrating to other regions to study. Men participate in farming activities like vegetation clearing, orchard clearing, groundnut and rice harvesting, and dike building in the mangrove rice fields while women usually tend to the cashew nut harvest, weeding, rice transplantation, threshing and sifting.

Mangrove rice farming requires young labour

Mangrove rice ploughing, transplanting, and harvesting (June to January) can be fulfilled by a household composed of one adult man and one adult woman. This was the case for seven households (n=13) in Cabam but they were not self-sufficient in rice, mainly because the collective investment in the mangrove rice fields has been insufficient. The construction of main and secondary dikes and ditches, water pumps

and their respective maintenance are crucial to a successful harvest. The required labour for these investments depends on the length, size, and width of the dike or ditch to be built or repaired, but at the very least, building a main dike requires dozens of people and many days of work (Figure 18).



Figure 18- Construction of a main dike in Cantanhez in 2013 (Photos by Ana Luisa Luz).

In villages like Cabam, where mixed farming is practiced, or like Camcoiã, where people rely mainly on upland rice farming, the recovery of mangrove rice farming seems a possible move forward for ensuring rice harvests. However, in Cabam, elders say that young people are living in the village but “they do not want to work; do not want to tire their bodies”. “They are here, but drinking tea, and playing checkers, pak pak pak”, mimics a Nalu elder. Groups of Balanta farmer workers can be hired for fixing or building dikes and ditches for 15,000-25,000 XOF⁴⁶ per day, depending on the number of people in the group. Good rice meals⁴⁷, wine, cigarettes, and tobacco are generally provided. However, without a young labour force willing to participate in the recovery of mangrove rice farming, hiring labour for several months at this rate is economically unfeasible.

Some connections between elderly and youth have to be made to analyse the allocation of labour to mangrove rice farming. For the Nalu of Cabam, the elders of the village are recognised for having performed great and dreadful initiation ceremonies (*ntchaper* and *mantchol*, see Chapter 3) and are referred to as the “elders of the past”. The softening of the male initiation ceremonies enhanced the vulnerability of gerontocracy as well as young people’s ability to challenge it. Initiations like *ntchaper*

⁴⁶ £18.89-£31.48 CoinMill (2013)

⁴⁷ Large portions of rice with relish of fish and palm-oil (*caldo di tcheben* or *bontom*, kl) or peanut (*caldo di mancara*).

were long lasting, allowed for knowledge exchange between elders and youths, and imbued the youths “with fear and respect for their elders ownership of secret knowledge and their prerogatives over its distribution” (referring to the initiation in Siera Leone, Murphy 1980:199). Additionally, *ntchaper* also allocated young labour, since during the years that *ntchaper* lasted, youths used to work in the mangrove rice fields (Sousa et al. 2014).

The abandonment of previous initiations have probably affected the young peoples’ engagement in the mangrove rice fields. Today in Cabam, *ntchaper* does not contribute to the allocation of the workforce; instead, initiates stay in the forest for a short period (2-3 months) at a very young age. Money and rice are also needed to hold the ceremony, which has caused other villages like Camcoiã to abandon bush initiations. For youths, investing in mangrove rice farming means dependence on collective forms of production, while fruit cultivation allows for a more independent way of life guaranteeing income and land ownership. In villages like Cabam, labour allocation is inevitably linked to youth, and it strongly depends on the place of youths in society, namely their expectations and livelihood strategies. In both Cabam and Camcoiã the migration of youths has not lead to bottlenecks of labour (Gable 2000, Davidson 2009, Sousa 2011, Temudo and Abrantes 2012), but the allocation of young labour from the village is one of the main constraints standing in the way of the mangrove farming recovery (see Sousa et al. 2014 in Appendix 1).

Upland farming and wage-earners

While labour allocation is the primary limitation of mangrove rice farming, in upland rice farming the access to land is the limiting factor. Furthermore, limitations upon land access also influence the capacity to retain labour locally, especially among migrant labourers. In Cabam and Camcoiã people rarely hire daily-wage earners for upland farming because village working groups complete the majority of farming tasks. In contrast, in Macubé there are no cooperative groups of work beyond kinship; at least six households rely almost exclusively on hiring wage workers. Farms in Macubé are also considerably larger than in Cabam and Camcoiã. Together with youth migration, the size of land parcels makes households more dependent on hired labour.

Wages for upland farming activities such as ploughing, weeding, and harvesting may be paid daily at around 500 XOF⁴⁸ (8am-12am) or 1,000 XOF⁴⁹ (8am-2pm). Slashing the vegetation for swidden farming are often paid by cash-contracts per area. Harvesting is usually paid in rice, at the rate of 1-2 out of 10 *amarraduras*⁵⁰ of rice harvested. From one *amarradura*, it is possible to harvest 3-4kg of rice. Each day a person is able to harvest around 7-10 *amarraduras*. “Some days I don’t take rice home”, said a Fula farmer^{xxxiii} who also works for daily-wages. One *amarradura* corresponds to a payment of 600-800 XOF⁵¹ for 200 XOF/kg of rice.

Collecting cashew nuts is an activity paid in different formats. In São Francisco da Floresta, the only large private cashew plantation established by the Catholic Church, a worker is paid 1,000 XOF⁵² per day. In Macubé, workers are paid 1,000 XOF per 10 litres⁵³ of cashew nut collected, or 1 bucket of cashew nut to the worker and 2 buckets to the owner. In some cashew orchards in Nalu villages, one bucket of cashew nut is paid to the worker after three days of work. Considering the cashew nut price was 300-350 XOF in 2011, which was quite high compared to previous years (see Table 6), the daily wage varies between 1,000 and 1,333 XOF. In 2011, a ‘good’ cashew price allows for an increase of up to 33% on the daily wage earned in the cashew season.

In summary, a wage worker is paid an average of 1,004±370 XOF/day (173±55 XOF/hour of work for 6 hours of work/day, n=8). Based on this rate, it is possible for a worker to purchase 2.2 to 5.0 kg of rice/day at 450 to 200 XOF/kg, respectively. Where wage earners do not have access to land to produce food crops, it unlikely they could rely on this strategy to guarantee food and income. As I discuss in the next section, land access is crucial not only for food security but also for retaining migrant and young labour in Macubé.

⁴⁸ £0.63 CoinMill (2013)

⁴⁹ £1.26 CoinMill (2013)

⁵⁰ A hand of rice plants harvested by the technique “one by one”.

⁵¹ £0.76-£1.01 CoinMill (2013)

⁵² £1.26 CoinMill (2013)

⁵³ The amount of cashew nuts a farmer is able to collect in one day is equivalent to approximately 10L (a bucket).

4.2.5.3 Land access

“There can hardly be a word more freighted with meaning than ‘property’”
(Bell 1998:29)

There is considerable friction between different actors regarding property and access to forested land. In Cantanhez, youths put pressure on their elders to allocate and consolidate individual property. Newcomers also negotiate access with the founding lineages; the park pressures the farmers to restrict access, and the farmers pressure the park to guarantee access (see Chapter 2 and 3). Farmers follow two main routes for expressing their discontent and anxiety regarding land access – discourse and trees.

Formal and informal land ownership entitlement

“There is something that will tire us, here where we stand: land” (Nalu farmer)

In Cantanhez, there is no formal entitlement of property, but that does not mean there is no sense of individual and collective property. However, in Cantanhez, in 2011, a company installed communication antennas and wanted formalised titles for the plot of land occupied by the antennas. Formalisation of property is performed through a land rights’ transfer ensued by those recognised as the traditional owners. This episode is not relevant for the size of the plot but for its symbolic reading; land was sold by local leaders through state mechanisms and for the sake of “business” and “development.” In both cases, Fula chieftains were paid for the transfer of land ownership, resulting in considerable anger among local people. For the Nalu in particular, the land transfer was perceived as disrespect. One interviewee noted:

That is not right because our elders [Nalu] did not sell land. This is our homeland. Our elders gave their land piece by piece for people to settle. You are given land to settle, and afterwards you sell it... Is that good? It is not good!^{xxxiv}

Thereafter, the Nalu elders frequently evoked the episode and reinforced their foundation rights in social gatherings by recalling how their elders purchased the Nalu homeland from the spirits (see Chapter 3). They also warned what could happen to those who dared to sell land in the Nalu homeland. When the Fula chieftain

unexpectedly died in 2012, the Nalu rumours said that his death was a consequence of him selling the land. “Our elders advised him on that”, a Nalu man explained. His death was seen as a magical punishment undertaken by the spirits with whom the Nalu have privileged connections (see Chapter 3). Narratives of resistance by the Nalu people aim at preventing the replacement of the paradigm of land property legitimised by bush shrines and founding lineages by one based on formal and individual entitlements legitimised by market transactions.

Trees as locally legitimate land titles

Trees imbue the landscape with meanings in different ways, and they have become an important vehicle for claiming property. In the past, trees were planted together and were recognised as belonging to the person who planted them. Nowadays, the property right incorporated into the trees has spilled out to the surroundings carrying the same property attributes. As the land surrounding a tree became one’s property, trees started to be planted together in plots as markers for one’s land.

Cashew orchards are mainly owned by adult male heads of households, although more and more youths have been allocated land or are starting to plant cashew on their farms. One farmer^{xxxv} revealed his goal of planting cashew trees in every parcel he farms in order to claim his property. Currently, much land is borrowed with the condition that the borrower will not plant trees, and yet during my fieldwork, I noted that several people had been accused of planting trees in borrowed plots without the authorisation of the owners. A Nalu youth who has not been given land to grow cashew disclosed his strategy, stating:

I do not have land of my own, but I think that nobody will say that the places where I am farming now are not mine. I planted trees. My parents are not from here, they came to live here, but I was born here, so I think now they will not take that land away from me.

In a general analysis of West Africa, Berry (1988:14) argues that the claiming of land through tree crops is more a method of negotiating land than a “consolidation into forms of exclusive control over land or trees”. Accordingly, cases were observed where a lack of maintenance of fruit trees plantations in Cabam and Camcoiã transformed the areas into fallows. The parcels then entered the circuit of swidden

farming. Planting trees is less bureaucratic, less costly, more accessible, and more dynamic than formal entitlements, and equally meaningful as property throughout the region. In a period of land access anxiety, planting trees for land division and marking are means for ensuring household access to land.

The big squeeze on land and one's social identity

"'Access control' is the ability to mediate others' access"
(Ribot and Peluso 2013:158)

My interviews note that the park's policy of reserving forests and an increased migration to the area has decreased the availability of forests for swidden farming. In order to guarantee rights over land, people recount narratives of origin and settlement (see Chapter 3) along different lines of social identity (ethnic group, lineage, nationality). In addition, as criteria of eligibility for land access are established, rural social differentiation is enacted (Berry 2009:40, White et al. 2012:639).

Fula people from Guinea-Conakry have been migrating to southern Guinea-Bissau and are referred to as *nanía*⁵⁴ as a form of distinguishing them from the Fula nationals (Fula *cidadons*, kl). In 2011 in the village of Macubé, 14% (N=162) of adults were from Guinea-Conakry⁵⁵. In 2009, these migrants were asked to pay a village tax to the chieftain, one "60 kg bag" of unshelled rice for each upland farm. This procedure was no unprecedented, as Berry (2009) noted that a similar procedure was described for Ghana. The tax supposedly belonged to the village fund, but when the chieftain was accused of selling land, the procedure was abolished in 2010.

In May 2011, both regional and national radio stations broadcasted that migrants from Guinea-Conakry were responsible for deforestation in the north of Cantanhez National Park, including the area of Macubé. A farmer in Macubé said, "We do not deforest much, but immigrants sow twelve *latas*, twenty *latas*, which is a huge area"^{xxxvi}. Contradicting this statement, the analysis of my interviews revealed that the three farmers who sowed more than nine *latas* were three Fula households from Guinea-Bissau. I only met immigrant farmers with limited access to mature, forested land that were not allowed to plant tree crops.

⁵⁴ The word 'nanía' is adapted from the expression "mim nanani" in Puular, which means, "I do not understand". This has a pejorative meaning for a Fula from Guinea-Conakry since they do not understand Kriol.

⁵⁵ Similar to Cantanhez, in the village of Gadamael 13.6% of migrants were from Guinea-Conakry (Sousa 2009).

For example, Ragui is a Fula woman from Guinea-Conakry. She was reticent to talk about her situation. The following notes are from our short conversation:

Ragui is pregnant with their second child. She lives with her husband in a provisional round house in Macubé. Her husband went to Cantchungo [north of Guinea-Bissau] to work in the cashew nut trade. The rice in her household was finished, and she was extracting palm oil and working as a daily wage earner in the cashew harvest. She said that the orchards' owners paid her one bucket for each 3-4 buckets she collected. "It depends," she said. Ragui said that the chieftain accused immigrants of the deforestation. She said local people denied them forest land to grow rice and would only give them fallows to grow groundnut. She would like to stay in Guinea-Bissau, but she cannot, she said.

In a meeting held by a local NGO in Macubé in 2011, it was agreed that forest land would not be given to farmers from Guinea-Conakry. The NGO said that local people asked them to prevent non-citizens from farming (NGO employee, personal communication 2012), while local people said that the NGO was preventing immigrants from farming. By May 2011, some immigrants were allocated land in the forest to grow rice. While some were allocated fallows to grow groundnut, others considered going somewhere else.

The chief of Macubé supported the NGO's policy, but the interviewees held different views. While some agreed with the new norm because the forest is scarce, others disagreed. They argued that preventing someone from having access to land is disrespectful because these immigrants are "family" and "guests". Both of these distinctions hold important status in southern Guinea-Bissau. These people claimed that hosting migrants enabled alliances with villages in Guinea-Conakry, which would allow people from Macubé to migrate as well. Mobility allows for the exchange of knowledge. Additionally, should the immigrants leave, the village would be left without a valuable labour source. The recognition of migrants as a valuable source of labour is an important factor when considering whether to provide them access to fallow and forest land.

4.2.6 Gifts and reciprocity

Land, labour, and rice integrate networks of reciprocity and patron-client relations entangled between individual goals and social obligations. One's social identity represents the rights ascribed to individuals in these networks. Networks of reciprocity constitute "back and forth delayed exchanges that are buttressed by social bonds" (Gudeman 2001:19) and frequently assist households in overcoming small harvests, labour and food depletion, unexpected misfortunes, drops in cashew prices, spikes in rice food prices, and rain shortages. Rice, more than any other crop, integrates these networks of reciprocity.

Temudo (2005:264) argues that mutual help systems are anchored to kinship and interethnic social relations. I would add to Temudo's definition that the physical space of a village is also a social tie in reciprocity. In Kriol, this attachment is described as *sinta djuntu*, or "live together". Elders in Cabam say that trans-household ties, mutual-help, and mutual-control in the village have weakened. They noted that "before, our elders used to control each other's granaries^{xxxvii}, meaning that previously it was hard to make one's rice inaccessible to others. Nowadays, scarcity brings suspicion, as people are concerned with who might be escaping from reciprocity or the obligation of sharing. As a farmer clearly described: "If hunger comes into the village, nobody trusts one another, distrust takes over"^{xxxviii}.

Mutual help systems and the sharing obligations of the wealthier, the luckier, or the more successful play an important role in the mitigation of negative effects from crop loss, bad harvests, and other hazards, as illustrated in the chapters to come. Reciprocity requires resources to change hands and property to change owners. Trees are a means that allow this exchange to happen, whereas formal entitlements, or dis-entitlements in the case of the reserved areas in the park, transform land into static, accumulated objects.

4.3 Discussion

Guinea-Bissau is not on the margins of world economy, nor is it only a resort of wilderness. Local livelihoods are linked with both markets and nature. The economic history of southern Guinea-Bissau not only informs current livelihoods but also questions the historical dichotomy that opposes the supposedly traditional and

sustainable livelihoods of the past against the market-based strategies of today. In the Nalu homeland, farming is not, nor has it ever been, exclusively about food consumption; farmers have also been “small producers of commodities” (a term by Bernstein 2011:52).

4.3.1 Crises and hikes in production and trade

Cashew production has provoked considerable and seasonal dismay, and yet farmers have not abandoned cashew as a crop. Instead, it has led to a reinvestment in mangrove rice and a struggle to access forest land to rice farming. In Cantanhez, cashew and rice farming do not appear as mutually exclusive strategies, and there are considerable advantages to growing cashew nut. Not only is it an efficient land marker, but it also offers a good, though sometimes unpredictable, income. It can be exchanged for rice, and it does not require as much labour as mangrove rice farming. In a similar fashion, there are advantages to rice production. Cultivating the staple crop means food security, and outputs from trade can be invested in goods other than rice purchase. It also avoids dependence on high rice prices or on seasonal or regional rice depletion.

High rice prices benefit not only cashew nut traders but also mangrove rice farmers with rice surpluses. There is a regional production-trade rice dilemma; while low rice prices discourage mangrove farmers from producing surpluses, high rice prices weaken upland rice farmers’ ability to buy rice, thus encouraging mangrove rice farmers to sell rice to merchants. In both circumstances, there is regional rice depletion. The local asymmetry of rice stocks among households promotes local trade inasmuch as crops are traded for the purchase of rice. The main constraint to the redistribution of rice through local trade networks is the rice loss from Cantanhez through larger-scale trade. This factor highlights the importance of household rice production for rice security.

Due to decreased rainfall, mangrove rice farming demands skilled labour and detailed agricultural knowledge of the dike systems to control fresh and salty water in rice fields. This labour-intensive agriculture system depends on young people’s abilities and aspirations regarding the enterprise of farming. Male initiations in the bush used to play a role in mangrove rice production by allocating youths’ labour directly to the rice fields during the period of initiation. Nowadays, however, these are mainly rice-demanding ceremonies detached from production. Moreover, the

aspirations of young farmers are not only dependent on food security, but also education and land property. They are also concerned with developing business opportunities. Recently, high rice prices rather than bush initiations have encouraged youths to invest in mangrove rice farming.

4.3.2 Elements of resilience

Crops have different roles in farmers' livelihoods and grant multiple ways of coping with unpredictable natural, social, and economic hazards. As stated by Scoones (2009:175), diversity allows farmers to “cope with and recover from stresses and shocks”. The different opportunities for trade and exchange enable farmers to engage both in “the impersonal exchanges of the market” and “the world of reciprocity relationships” (Bourdieu 1977:186). In Cantanhez, consumption, trade, and sharing are based on a calculation of individual opportunities, household affiliation, kinship, and other social obligations. Evers (1994) describes it as the “trader's dilemma”, or the interwoven acts of making profit and maintaining the communal relationships of sharing.

A wide array of crops increases the number of opportunities for selling, exchange and consumption. Diversification, together with land access and mutual help systems constitute the main elements of livelihoods that provide the means to cope with disturbances in production or revenue. These factors can minimise the costs of labour bottlenecks, farming experimentation, price drops, attempts at innovation, and recovery from possible failures and misfortunes. Without this security, all possibilities of farming flexibility and re-organisation are undermined. In the context of nature conservation, the removal of land from reciprocal networks represents a major constraint for the resilience of people's livelihoods.

Mutually advantageous interactions provide food sharing, land access, knowledge exchange, village and inter-village labour exchange, and rice loans in cases of food scarcity for different actors at different moments. Gifts and the exchange of products and services are crucial for innovation and food security. Frazão-Moreira (2009:73) described the market in Cantanhez as “guided not by a maximization of profit but by an ‘ethical-economic’ calculation”. Or, it could be said that there is maximization of profit within the social obligations of reciprocity and sharing (Parry and Bloch 1989).

Like local trade, mutual-helping systems also act upon difference and diversity. The dynamic asymmetry of households that shift temporally from deficit to surplus strengthens the effectiveness of these systems. However, if inequality is polarised in the same actors/households, it is likely that patron-client relations will become predominant. In Macubé, social differentiation based on land access and income is evident when compared with Cabam or Camcoiã. In the latter two villages the livelihoods are strongly anchored in “embedded economies” while in Macubé the differential access to land enables the commoditisation of labour that is hired by wealthier households. The relationship between land policies and class formation is under debate (Borras Jr. et al. 2011). According to Mauss (1990:5), it is not individuals but groups that impose obligations of exchange and contact upon each other, and therefore lack of farming diversification (e.g. cashew nut as a generalised livelihood strategy) or long-term established asymmetries are both likely to erode the mutual help system.

Cantanhez has been a politically contested space, and both the rush to mark land with trees and the enacted limitations set upon land access for shifting cultivation have enhanced the tension between socially constructed identities. Here, access to land is fundamental factor enabling farmers to choose and to test the most adequate livelihood strategies given existing labour and climatic conditions. If this becomes an alienated good or a mere commodity, selling one’s labour to land owners will be the only possible means for subsistence.

This chapter argued that trade provides numerous advantageous for different actors and plays an important role in the regional re-distribution and purchase of rice. Given that the terms of trade and rice prices exhibit considerable fluctuations, the production of rice is the most important source of rice for household food security. The lack of labour and increasing climate variability limit rice production push farmers to seek other farming strategies. However, when access to land is hindered, the system’s plasticity is disabled. Therefore, the adequacy of nature conservation policies can only be addressed when considered alongside its relation to local livelihoods. The next chapter explores the effect of crop loss to environmental hazards and wildlife, illustrating that nature conservation is also embedded in people’s perceptions and knowledge.

5. Animals in farms

‘Just as humans have a history of their relations with animals, so also animals have a history of their relations with humans. Only humans, however, construct narratives of this history’ (Ingold 1994:1)

5.1 Introduction

West Africa is dominated by forested-agricultural landscapes (Norris et al. 2010) where farmers and wild animals live in close contact. Sharing resources is perhaps the most conspicuous challenge for people and wildlife living alongside each other and crop foraging is a problematic threat to this coexistence. Farming and hunting enable close interactions of people and wildlife but while these are obviously advantageous for people, crop foraging is not.

Across sub-Saharan Africa areas of high human population are positively correlated with high bird, mammal, snake and amphibian species richness (Balmford et al. 2001). Some of these animals not only live alongside humans but also rely on agroecosystems (Estrada et al. 2012), which means their foraging activities are likely to intermingle with farmers’ livelihoods. People’s needs overlap those of other species and are affected by winds and droughts. Different kinds of crop loss occur, some derived from wildlife consumption and environmental conditions, or as a consequence of lack of farming opportunities caused by deficits in livelihood resources, for example lack of land or labour depletion (see Chapter 4).

The first and main part of this chapter sets out a measure of crop loss through ecological sampling and local people’s views. To accomplish this analysis I mainly followed a quantitative approach that was integrated with observation and some records from semi-structured interviews. The different types of data allowed investigation of two different strands in the studies of people-wildlife interactions. The first refers to a paradigm of the studies on human-wildlife interactions which is that research-based crop loss assessment represents the “actual crop loss” and is used as a yardstick against which to analyse local people’s perception of crop loss. Departing from the data and analyses drawn in this study this paradigm is critiqued. The second strand, which is often used as a generalised description of human-wildlife conflict

worldwide, is that agricultural expansion has led to an increase in negative interactions between people and wildlife. From my point of view, and especially in farming contexts, humans and wildlife have always been in contact and the origin of conflict is highly context dependent. With this in mind, this chapter aims to characterise crop loss through both an ecological assessment and a study of people's perceptions of crop loss, and from these draw theoretical considerations about this field of knowledge.

5.1.1 Relevance of “crop-lossology” in the conservation debate⁵⁶

Crop damage by wildlife can have serious consequences for food security (Mackenzie and Ahabyona 2012). For example, in Western Uganda it was estimated to decrease food security by 14% annually as a result of both staples and cash crop losses (Barirega et al. 2010). Crop loss is therefore intrinsically related to farmers' livelihood-level decisions (Gupta 2013).

Understanding crop loss is very demanding since it happens at different stages of crop development, occurs in a wide variety of ways, has different effects on yields, and is influenced by several biophysical factors (Nyirenda et al. 2011). In spite of these limitations, quantifying and understanding the spatial and temporal patterns of crop damage is relevant both for (i) reducing crop loss and/or its costs by improving/implementing control methods, and (ii) understanding the position of small farmers in contexts in which farming is not prioritised over alternative land use objectives, such as nature conservation by policy-makers. Nevertheless, and in spite of its importance, quantitative estimations of crop losses are very limited (Oerke 2006).

Similarly, understanding local people's perceptions of animal species and crop loss is a central, if complex, point when studying people-wildlife conflict (Hill 2005). Perceptions of wildlife are influenced by religion (Gillingham and Lee 1999, Costa 2010), constraints on land access (Hill 2005), gender (Naughton-Treves 1997, Kleiven et al. 2004, Costa 2010), expectations from tourism (Sousa et al. 2014), and/or expectations from farming/crop yields (Knight 2000). Cultural values and religious beliefs have been described as assisting in the avoidance or mitigation of negative interactions between people and wild animals (Priston 2005). In addition, human

⁵⁶ Walker, P. T. (1983). Crop losses: the need to quantify the effects of pests, diseases and weeds on agricultural production. *Agriculture, Ecosystems and Environment* 9: 119158. advanced the term “crop-lossology” to illustrate its complexity.

perceptions of, and attitudes towards, crop-foraging species depend upon both the benefits and costs of interactions (Hill 1998, Lee and Priston 2005) including threat of human injury or death (Richards 2000, Sitati et al. 2003, Choudhury 2004, McLennan 2008, Hockings et al. 2009, Mackenzie and Ahabyona 2012, Halloran et al. 2013).

People's interpretations of crop foraging can be highly symbolic. For example, in Uganda, as well as in other sites where conflict with primates occurs (Knight 1999, Wheatley *et al.* 2002), baboons are “believed to embody rebels” (Webber 2006:143) due to their unpredictable yet seemingly planned forays into croplands (Hill 2005). Not only baboons, but also chimpanzees (Hockings et al. 2009, Hockings and McLennan 2012, McLennan and Hill 2012) and gorillas (Tumusiime and Svarstad 2011) can cause considerable crop and income losses to the people living alongside them. Nonetheless, both chimpanzees and gorillas are prioritised for conservation.

5.1.1.1 From invisible pests to flagship species

In 1983, Walker tackled the importance of gathering information on crop losses to “stimulate actions against” crop pests (:119). In 1997, small vertebrates, invertebrates and diseases were the main concern of crop loss studies (Hill 1997). Since then, and after the contribution of Hill (1997, 1998) and Naughton-Treves (1997, Naughton-Treves 1998), much effort has been put into including large vertebrates in the studies about crop loss. Among others, Thirgood et al. (2005) and Hockings and Humle (2009) provide an overview of the different types of ‘human-wildlife conflict’ interactions, particularly that of crop foraging by large vertebrates. The focus of these studies has provided another perspective about the risk of extinction of certain species, such as “the mass destruction of pest vertebrate species” (Else 1991:155). The recognised dilemma of a species being simultaneously a pest in farms and for farmers, and a boon in conservation and for conservationists, has dragged people-wildlife interactions studies to an interdisciplinary realm of ecological and social sciences.

5.1.2 Records of crop loss in Guinea-Bissau

Crop loss by wildlife in Guinea-Bissau has been mentioned in reports since the hunting legislation of Portuguese Guinea (see Chapter 6), as well as in several reports since then. In 2000, the UNDP and the MRDANRE reported some primate species and

rodents as causes of crop damage (MDRARNA 2000:111-114). Also, in the work of Bock (2001) and Temudo (1998), and more recently Sousa et al. (2007, 2014), Costa (2010) and Hockings and Sousa (2012, 2013), there are descriptions of crop loss by large vertebrates such as chimpanzees, baboons, bush pigs, among others. In spite of this no studies on Guinea-Bissau have been identified relating to estimates of losses by large vertebrates and analyse local people's perceptions of crop loss.

In the Bijugu archipelago, hippopotamus are a threat for the physical safety of local people and a constraint for mangrove rice production (González et al. 2009). In Cantanhez, baboons have been described as crop foragers (Costa 2010, Ferreira da Silva 2012), but again more detailed information is missing. In Cantanhez, chimpanzees have been described as feeding on various crops (Sousa 2007, Hockings and Sousa 2012, Costa et al. 2013). Recently, it has been reported that in southern Cantanhez there is no conflict between people and chimpanzees over cashew (Hockings and Sousa 2012), the country's main cash crop (see Chapter 4). At the same time, Casanova and Sousa (2007:17) developed the national action plan for the conservation of chimpanzees and reported that the species was threatened in the vicinity of certain villages in Cantanhez from where chimpanzees were reported to have "recently disappeared". Indeed, Costa (2013) advised against chimpanzees being kept as a conservation flagship species in Cantanhez due to their crop feeding behaviour and women perceiving them as threatening. This chapter provides a multi-species approach to human-wildlife interactions in farming contexts; however, the chimpanzee is given particular attention due to its importance as the charismatic species for the national park.

5.2 Specific methods

The next section summarises the methods specific to this chapter, and provides more information about data collection and analysis. A more detailed reflexion and exposition of study methods is given in Chapter 2.

5.2.1 Assessing crop loss in farms

An exhaustive quantitative investigation was undertaken into the losses that concern the crops most commonly grown in the villages concerned in this study, which include rice, groundnut, cassava, orange, cashew, banana, maize, cowpea, pigeon pea, and kola nuts. These were also the crops identified as most important in livelihoods (see Chapter 4). Other crops that are grown together in upland farms, such as tomato, roselle, aubergine, okra, sorghum, millet, among others (see Appendix 6), were scattered throughout farms, and consequently were less frequently detected in transects. These were referred to in qualitative terms.

I sampled 45,168 m² of transects in mangrove rice, upland rice, groundnut and cassava; and used 3,532 point samples to study damage in orange, cashew, banana, orange and pigeon pea (Table 10). These were replicated as many times as possible until a crop was harvested. The number of repetitions varied from one to six, according to the number of fields studied at a time since more fields require more time to complete a sampling round. In upland rice, groundnut and cassava farms, I followed one to three replications of each transect. In banana fields, two repetitions were followed, while in orange fields this increased to five to six repetitions. Other crops were only measured once, such as sweet potato and cowpea that were sampled in quadrats. Thirty-one cashew orchards were visited and 1,215 trees sampled. We measured banana damage in 14 orchards in the village of Macubé, sampling 548 banana plants or 1,830 banana stalks.

Table 10- The areas and points (trees or shrubs) included in the study (sampling effort depended on the number of repetitions).

Crop ⁵⁷	Village	Agricultural year	Transect (m ²) and point* samplings
Mangrove rice	Cabam	2009/2010	4,468
	Camcoiã	2009/2010	2,501
	Bdjanf	2009/2010	1,829
	Cabam	2010/2011	3,423
Upland rice	Cabam	2010	1,215
	Camcoiã	2010	1,260
	Macubé	2010	1,800
Groundnut	Cabam	2010	780
	Camcoiã	2010	1,800
	Macubé	2010	660
Cassava	Cabam	2009/2010	1,080
	Camcoiã	2009/2010	2,539
	Cablau	2009/2010	2,429
	Mcunda	2009/2010	6,324
	Cabam	2010/2011	3,600
	Camcoiã	2010/2011	3,097
	Macubé	2010/2011	6,483
Cashew	Cabam	2010/2011	336*
	Camcoiã	2010/2011	269*
	Macubé	2010/2011	610*
Banana	Macubé	2010/2011	1,830*
Orange	Cabam	2010/2011	133*
	Camcoiã	2010/2011	31*
	Mcunda	2010/2011	72*
	Macubé	2010/2011	30*
Pigeon pea	Camcoiã	2010/2011	221*

I participated in all data collection and was accompanied by at least one field assistant. The field assistants were local farmers who helped with systematic surveys of field crops and acted as key informants. This exchange of knowledge is relevant to the discussion elaborated upon about the ‘perceived’ and ‘actual’ crop damage at the end of the chapter. My knowledge and my field assistants’ were both subjected to biases, but were also highly complementary. They did not know about sampling in ecology, and I did not know about crop loss identification. I learnt a great deal about crop development and crop loss with different field assistants, and whenever our interpretation of a crop loss episode was not consensual the information was discarded. Therefore, together our knowledge formed the basis for what can be referred to, in our

⁵⁷ In Cantanhez there was only one field of freshwater rice farming (2009-2011).

publishing scheme, as ‘scientific knowledge’ and therefore ‘measured damage’, which is in fact an amalgam of university training and the contextual knowledge shared by local people.

Patterns of crop loss can be classified as a measure of severity and incidence, the former being the intensity of loss per episode of crop loss, and the later the number of farms where a certain source of crop loss appears. Both severity and incidence were integrated into a risk map that allows for a visual distinction of different types of crop damage. According to the procedures described by Smith et al. (2000), Quinn (2003) and Webber (2006), I composed risk maps based on the severity index (S) and the incidence index (I) for each factor inflicting crop loss.

Severity of my estimates of crop loss was calculated by:

$$SI_x = 1 + \frac{r_{s1} - 1}{n_x - 1},$$

where r_{s1} is the ranking of loss inflicted by a certain factor in the crop x , and n is the number of factors damaging crop(s) x . SI_x varies from 1 (most severe) to 2 (least severe), which sets the most serious loss to $r_{s1}=1$ and therefore to $SI_x=1$. Incidence is expressed by the proportion of farms/orchards where a certain factor of loss was identified, ranging from 0 (no farm/orchard affected) to 1 (all farms/orchards affected). While reading the risk map one should keep in mind that some sources of loss are exclusive to certain crops, and therefore the incidence is affected by the sampling effort in each type of farm. This is referred to in the analysis of the risk map.

The descriptive and statistical analyses were organised by crop type, year and village. ‘N’ refers to the total plants sampled, while ‘n’ refers to a partial sample within ‘N’. Whenever I refer to wildlife, invertebrates and birds are also included.

5.2.2 Farmers reporting crop loss

This chapter is based upon the responses given by ninety-two people (N interviewees). During these interviews, 2,952 reports correspond to episodes that describe sources of crop loss for sixty-four different crop types/varieties (Appendix 6). The total number of reports were 3,342 (N reports), which include people mentioning absence of damage for certain crop types. The different types of damage cited (damage by wildlife, environmental hazards, farmer’s performance, domestic animals, among

others) were post-categorised according to major similarities in the origin of damage (Appendix 10).

A similar procedure to the one described in section 5.2.1 was used to calculate the index of severity (S) and the index of incidence (I) regarding the reports of crop loss, and to draw the respective risk map. The index of severity regarding the perceptions of crop loss was calculated as follows:

$$S2_x = 1 + \frac{r_{s2} - 1}{n_x - 1},$$

where r_{s2} is the rank of a certain factor of loss to the crop x as given by the farmer (not the order of response), and n is the number of factors reported as damaging crop type x . $S2_x$ varies from 1 (reported as the most severe) to 2 (reported as the least severe), which sets the most serious loss to $r_{s2}=1$ and therefore to $S2_x=1$. Incidence is expressed by the proportion of people reporting a certain loss, ranging from 0 (not mentioned) to 1 (reported by all interviewees). As a note of analysis, for the crop-specific longhorn beetle, banana disease and salty water, the maximum incidence ($I=1$) was considered as the total number of interviewees growing cashew, banana or mangrove rice, respectively, and not the overall number of interviewees.

For statistical comparisons of gender and village, I considered the crops reported by at least five interviewees. The descriptive and statistical analyses were organised by village and gender. ‘N’ refers to the total reports about crop loss (including absence of damage), while ‘n’ refers to a partial sample within ‘N’.

5.2.2 Assumptions of comparing the ‘actual’ and the ‘perceived’

The ‘measured’ crop loss - mostly referred to ‘actual damage’ in the literature, is measured by the researcher and the ‘perceived’ crop loss is reported by the farmer. By comparing the latter against the former, researchers infer the nature and accuracy of farmers’ reports (Gillingham and Lee 1999, Siex and Struhsaker 1999, Naughton-Treves and Treves 2005, Webber 2006, Linkie et al. 2007). While some studies reveal a difference between the reported and estimated crop damage (Siex and Struhsaker 1999), others show no significant differences (Tzilkowski et al. 2002).

Three assumptions are coupled with the following comparisons: (1) the axis of analysis is the provenance of knowledge, which is associated with the

perceived/subjective and rational/objective nature of both sources of knowledge; (2) the ecological sampling followed is able to provide meaningful spatial and temporal representation of crop loss; and (3) farmers' reports are more likely to be biased than outputs from research. The emphasis put on the subjectivity of people's perceptions in opposition to the objectivity of research outputs leads to a difficult setting, that of the highly criticised strict distinction of expert knowledge and other types of knowledge, as is discussed in the work of Agrawal (1995). Considering this distinction, it can be argued that researchers are at least potentially more objective than farmers are because farmers were not trained scientifically. Even if scientists are sympathetic to the cause of chimpanzee conservation, their training is expected to act against this source of bias. However, even if it is assumed that objectivity is possible, sampling methods are spatially and temporally conditioned, limited by one's knowledge, critical thinking and techniques. It is then questionable why ecologists would be considered more reliable and capable of following crop loss assessments than farmers themselves who have by far a more long-term and close experience of this matter. The last part of this chapter, aims to challenge this dichotomy by scrutinising the variability and similarities in local and scientific knowledge, as one is often not detached from the other.

5.3 Results

5.3.1 An overview of crop loss

The interviewees report their harvests as extensively and regularly affected by various factors. Of the reports about all crops, 90.2% (N=3,342) refer to some kind of crop damage, while 9.6% (N=3,342) correspond to crops that are often described as less susceptible to damage (29.7%, N=64 crop types, Table 11). Eleven of these nineteen crops were mainly produced and traded by women (Table 11). Men and women provided a similar number of responses reporting the absence/presence of crop loss ($\chi^2=0.17$, $df=1$, two-sided p -value=0.68).

Table 11- Number of reports about crops described as resistant to damage (%). Crops mainly grown by women are indicated.

	No damage (%) ⁽¹⁾	Mainly grown and traded by women
Sesame	80.6 (n=14)	X
Bitter aubergine	21.6 (n=63)	X
Okra	43.5 (n=64)	X
Aubergine	42.9 (n=41)	X
Lime	40.3 (n=68)	X*
Yam	33.3 (n=41)	
Cocoyam	32.9 (n=54)	X*
Custard apple	27.3 (n=18)	
Roselle	25.3 (n=68)	X
Pigeon pea	22.6 (n=27)	
Papaya	21.8 (n=35)	
Granja oil palm	20.5 (n=33)	X
Tomato	20.0 (n=65)	X
Cucumber	19.8 (n=61)	
Pineapple	17.6 (n=29)	
Gourd	15.8 (n=44)	
Francis lime	12.8 (n=43)	X*
Chili	10.9 (n=65)	X
Sugar cane**	6.1 (n=49)	

* Lime and *francis* lime are both grown and traded by men and women.

⁽¹⁾ Number of participants referring each crop is within parentheses (n).

During the structured part of the interview, the informants were asked about the factors diminishing crop production (see Chapter 2, Appendix 3). Their responses disclosed there were particular sources of damage that do not lead to the destruction/death of the crop, but that are ‘tiring’ (*cansa*, kl) for the plant. These affect the quality of the fruit but do not prevent it from maturing. All factors described as ‘damaging’ or ‘tiring’ are considered as damage (*dana*, kl), since both interfere with the harvest.

Wildlife was reported to affect 93.7% of the crops planted by people (N=64, Figure 10), and accounted for 87.7% of responses (n=3,013). Environmental conditions or hazards, like poor soil quality, lack of rain, too many weeds, were reported to affect 76.6% of crop types (N=64, Figure 19), which corresponded to 5.2% of responses (n=3,013). Among the latter, people referred to lack of rain (48.4%, N=64 crops), lack

of water in the natural springs/wells (21.9%), lack of fog⁵⁸ (4.9%), and lack of cold (4.9%), “Saharan dust/wind”⁵⁹ (4.9%), stronger spring tides (see Chapter 4), too much sun, and bad ashes⁶⁰ (1.5% each, N=64). People also reported factors concerning farmer’s performance (Figure 19), such as late harvesting (24.4%, N=64 crop types), late sowing (15.6%), lack of weeding (14.1%), lack of manure (4.7%), inadequate distance spacing of plants (3.12%), among others.

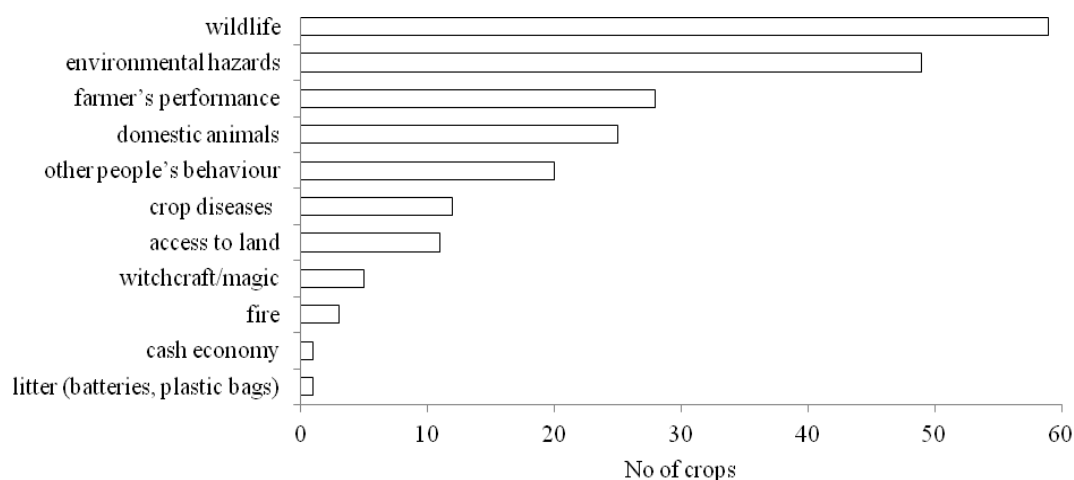


Figure 19- Number of crops described as affected by different causes of loss.

Crop damage by domestic animals (goats, cattle, pigs, chickens) was also reported, together with other less frequently reported categories, such as: other people’s behaviour, crop diseases, and access to land, among others (Figure 19). The next section focuses on the measurements of crop loss together with the factors inflicting crop loss that were most frequently cited by local farmers in contexts of interview.

⁵⁸Farmers described fog as essential to “feed” the final maturation phase of many crops, especially the long cycle varieties.

⁵⁹ The cashew was reported to be affected by the Harmatan winds in February-March that dry out the cashew flower. Back in 1947, Guerra (1947) describes the Harmatan as very rare.

⁶⁰ The ashes of certain trees are considered as toxic to the crops

5.3.1.1 Mangrove rice and water management

I measured mangrove rice damage in 114 fields (Appendix 11) along 269 transects in Cabam, Camcoiã⁶¹ and Bdjanf (Table 11). In the inland villages of Macubé and Mcunda, there is no mangrove. In Camcoiã and Bdjanf the Balanta households involved in mangrove rice farming also invested in cashew nut and wine production. These farmers produced a larger extension of mangrove rice than people in Cabam, where both upland and mangrove rice farming is practiced (Table 11).

Table 12- Extension of mangrove farming in Cabam, Camcoiã and Bdjanf.

Agricultural year	Village	No. farmers	Cultivated fields	Fields/farmer	Total area (m ²)
2009/2010	Cabam	10	38	3.8±2.8	47,341
2010/2011	Cabam	11	28	2.6±2.3	36,118
2012/2013	Cabam	11	27	2.7±1.7	42,128
2009/2010	Bdjanf	5	28	5.6±2.6	34,791
2009/2010	Camcoiã	1	16	16	24,154

Although farmers reported losses a few days after sowing, rice damage to the standing crop was measured, that is to say from the seedling phase, covering the maturation of the plant, until rice harvest (Appendix 12).

The number of rice plants per meter of ridge is greater in the centre of the field than at the edge⁶² (Mann-Whitney: $U=1073$, exact 2-tailed, $p<0.01$). The number of stems with panicles per plant in central ridges (18.43 ± 9.65) is also greater than in ridges at the edge of the field (16.60 ± 8.80 ; $U=7651$, $Z=-2.692$, $p<0.01$; see Figure 20 for an illustration of what is meant by ‘plant’ and ‘stem’). In spite of these differences, the average production is 48.6 ± 28.7 panicles per m² for the area within field boundaries, as indicated in Figure 20.

⁶¹ Only one farmer living in Camcoiã produces mangrove rice.

⁶² Both have non-parametric distributions (S-W= 0.947, df=116 $p<0.01$; S-W=0.652, df=117, $p<0.01$).

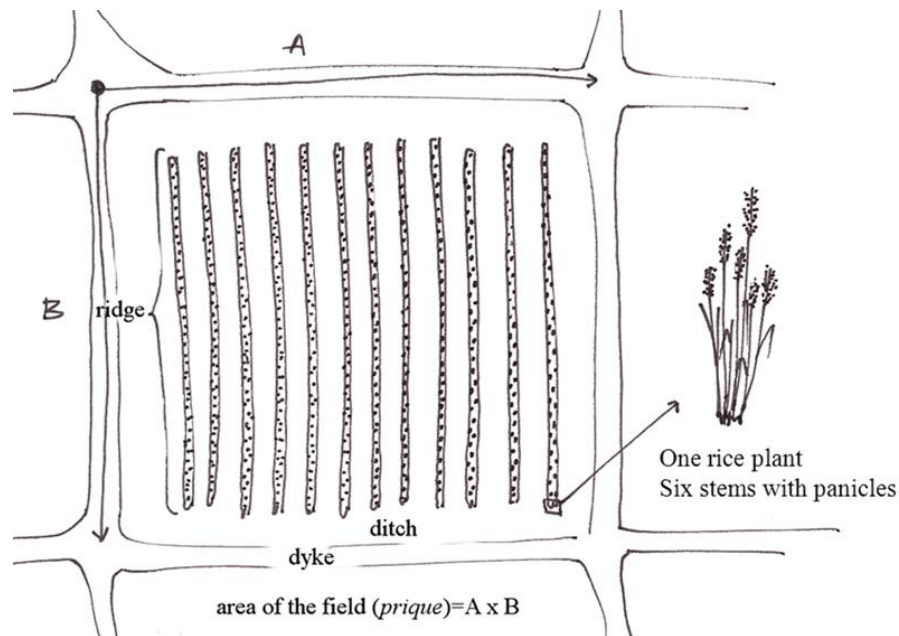


Figure 20- A rice field. The area of the field is given by the length of the dikes (A and B). Each ridge has several rice plants, and each of these has several stems with rice panicles (on the right).

The main limitation to mangrove rice production was lack of appropriate water management. This included failing to protect the field against sea water incursion and/or lack of adequate level of fresh water to the developing state of the rice plant. The effect of salty water corresponded to 97.2-99.6% of the rice lost in Cabam and Bdjanf, and it meant a decrease in production of 2-51% (Table 12). In 2009/2010, there was no damage associated with poor water management in Camcoiã (Table 12); however, I was told that in 2011/2012 the spring tides breached the main dike and consequently some rice fields were damaged.

Table 13- Rice losses due to poor water management in mangrove rice farming.

Agricultural year	Village	No. fields with total rice loss ¹	No. fields with partial rice loss	Area lost (m ²)	Average no. of panicles lost
2009/2010	Cabam	10 (26%)	0	13,913 (29%)	676,172 (29%)
2010/2011	Cabam	1 (5%)	1 (4%)	812 (2%)	39,463 (2%)
2012/2013	Cabam	7 (25%)	0	10,684 (25%)	n.a.
2009/2010	Bdjanf	13 (46%)	1 (4%)	17,824 (51%)	882,868 (51%)
2009/2010	Camcoiã	0	0	0	0

¹ These fields were not considered for the estimations of damage by wildlife and invertebrates because rice plants did not achieve maturation.

In transects, 32.2% (N=19,282) of the mature plants were damaged by wildlife. Damage inflicted by wildlife corresponds to a decrease in production of 4.6% (N=326,059 potential rice panicles, Table 13).

Table 14- Percentages of rice loss due to mammals, insects and birds per rice plant and rice panicle in mangrove rice farming per village and by year considering the rice that was able to develop and mature.

Year	Village	% Plants damaged ¹	% panicles damaged
2009/10	Cabam	39 (n=7,817)	4.1 (n=132,185)
2010/11	Cabam	32 (n=4,363)	9.0 (n=73,778)
2009/10	Bdjanf	27 (n=3,086)	2.0 (n=67,911)
2009/10	Camcoiã	21 (n=4,016)	2.9 (n=52,184)

¹ plants presenting at least one panicle damaged.

Birds were responsible for the greatest amount of rice loss in the four villages, followed by invertebrates. The latter was distinguished between different stages of insect life, larval stages⁶³ (Appendix 13) and adult stages, which were detected in 88% and 96% of the rice fields (N=114), respectively. Bush pig, cane rat and monkeys caused occasional rice loss (Table 14). There is considerable geographic variation in the sources of damage in a same year. Mangrove rice fields in Cabam accounted for more rice damaged from birds relative to other villages, which showed greater levels of invertebrate and bush pig damage than Cabam (Table 14).

⁶³ Identified by a larvae growing inside the rice stem.

Table 15- Percentages of mangrove rice loss due to mammals, invertebrates and birds (the same notes of the table above apply here).

Year	Village	Sources of rice loss per no of panicles damaged					
		% of panicles					
		Birds ¹	Invertebrate	Bush pigs ²	Cane rat	Monkeys ⁴	Small rodents ⁵
2009/10	Cabam (n=3,150)	92.7	7.2	0.0	0.0	0.1	0.0(4)
2010/11	Cabam (n=1,393)	82.9	8.4	8.1	0.0	0.0	0.7
2009/10	Bdjanf (n=836)	56.9	28.9	14.2	0.0	0.0	0.0
2009/10	Camcoiã (n=829)	26.8	41.3	5.7	19.2	7.0	0.0
	no. of panicles damaged (n=15,088 panicles damaged)	77.4	13.6	5.3	2.5	1.0	0.3
All villages		No of panicles damaged per rice plant sampled					
		Birds	Invertebrate	Bush pigs	Cane rat	Monkeys	Small rodents
		0.651	0.081	0.041	0.019	0.007	0.002

¹ this includes all bird damage, probably *Euplectes* sp., *Ploceus* sp. *Quelea* sp. among others. These have been previously described to feed on cereals in West Africa (Manikowski 1984) and are described for Guinea-Bissau (IUCN RedList 2013).

² Common warthog (*Phacochoerus africanus*) or red river hog (*Potamochoerus porcus*). Field assistants reported that only the common warthog comes to the mangrove fields.

³ I only observed green monkey feeding on mangrove rice.

⁴ This category might include *Arvicanthis ansorgei*, *Cricetomys gambianus*, *Graphiurus lorraineus*, *Lemniscomys* sp. *Mastomys* sp., *Praomys rostratus*, and particularly the *Dasymys rufulus* that inhabits wet and swampy areas (IUCN RedList 2013).

Bird and invertebrate damage were present in almost all fields studied; damage by monkey, small rodents, bush pig and cane rat occurred much less frequently (Figure 21).

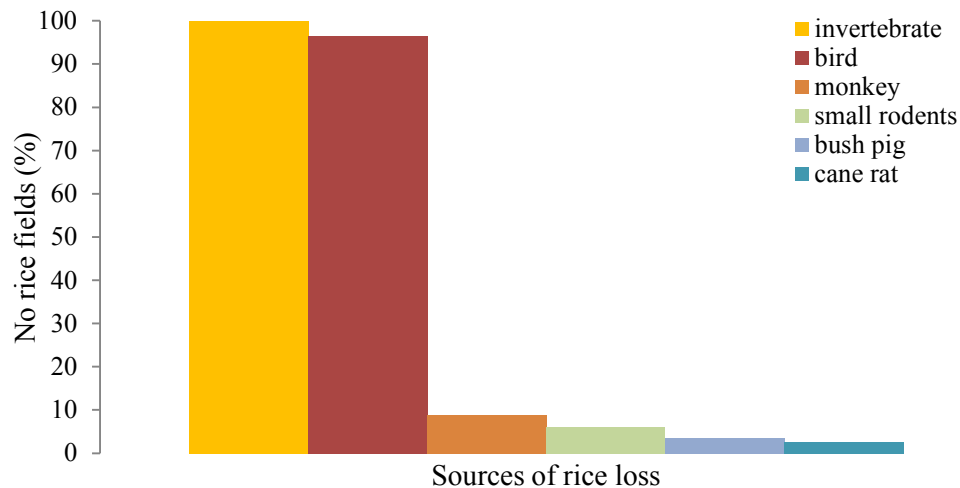


Figure 21- Percentage of rice fields with invertebrate, bird, monkey, small rodents, bush pig and cane rat damage (n=114 rice fields).

Bird damage diminished rice harvests by $\approx 3.6\%$ (N=326,059 panicles sampled). Bush pigs damaged 0.2% of the rice panicles (N=326,059 panicles sampled), which was a result of three raids by an unknown number of bush pigs. Bush pig and cane rat damaged a relatively higher number of panicles per plant compared to monkeys or small rodents (Table 14).

Farmers frequently mentioned birds (63.6%, n=22) and salty water (59.1%, n=22) as sources of mangrove rice loss, followed by invertebrates (18.2%).

5.3.1.2 Upland farms

Upland rice: cane rat and birds

Upland rice fields were larger in Macubé than in Cabam or Camcoiã (Table 15). In some years, in Macubé a few farmers are able to ensure their rice needs year round mostly by relying on upland rice production (see Chapter 4). The environmental conditions in Macubé (north of Cantanhez) do not allow for mangrove rice farming or salt manufacturing, and it has lower densities of oil-palm trees, which are important elements for trade and exchange (see Chapter 4), as happens in Cabam or Camcoiã (south of Cantanhez). A narrower range of production alternatives, together with a high labour force available through Guinea-Conakry migrants (see Chapter 4) all encourage larger upland rice fields.

Table 16- Extension of upland rice farming in Cabam, Camcoiã and Macubé.

Agricultural year	Village	No. farmers	Area/farmer (ha)	Total area of upland rice farmed (ha)
2009/2010	Cabam	n.a.	n.a.	4.76
2010/2011	Cabam	12	0.42	5.04
2009/2010	Camcoiã	4	0.32	1.29
2010/2011	Camcoiã	5	0.23	1.16
2010/2011	Macubé	26	1.37	35.75

I measured 43 upland rice farms owned by different farmers. I followed 139 different transects of up to 30 m length (total 4,124.5 m²). The sampled fields contained on average, 30.0±20.7 rice plants/m² and 2.89±3.50 panicles/rice (N=60), which is approximately equivalent to ≈86.7±72.5 panicles/m².

In eleven transects (8%, N=139) rice losses were not detected. Approximately 18.3% of the standing rice panicles were damaged by wildlife; particularly cane rat and birds, which were responsible for a decrease of 7.7% and 7.0% of rice seedlings' production, respectively. Weaver birds were frequently observed eating rice in the fields, together with other unidentified bird species. Results confirm that birds and cane rat were the most important sources of rice damage (Table 11), followed by invertebrates and monkeys.

Table 17- Percentage of crop losses due to wildlife, people, invertebrates and birds in upland rice.

Year	Village	% Panicles damaged	Sources of rice loss (% of panicles)					
			Cane rat	Birds ¹	Invertebr ²	Monkeys ³	Small rodents ⁴	People
2010	Cabam	16.7	58.0	40.6	1.2	0.0	0.1	0.1
2010	Camcoiã	15.5	69.7	28.4	1.5	0.4	0	0
2010	Macubé	20.0	19.7	42.4	24.8	13.1	0.1	0.1
% of panicles (N=64,096)			42.3	38.3	12.8	6.5	0.05	0.1
% of total production			7.7	7.0	2.3	1.2	0.0	0.0

¹ this includes all bird damage, probably *Euplectes* sp., *Ploceus* sp. *Quelea* sp. among others.

² see Appendix 13 for different types of invertebrates

³ I observed green monkey and Campbell monkey feeding on upland rice

⁴ This category might include *Arvicanthis ansorgei*, *Cricetomys gambianus*, *Graphiurus lorraineus*, *Lemniscomys* sp., *Mastomys* sp., *Praomys rostratus*, and particularly the *Dasymys rufulus* that inhabits wet and swampy areas (Red List IUCN 2013).

In Cabam and Camcoiã, cane rat and birds were the most important source of rice loss, while in Macubé, birds and invertebrates accounted for the highest amount of losses. In Cabam and Camcoiã, invertebrate and monkey damage caused the least amount of damage, while in Macubé these were important sources of rice damage.

Farmers most frequently mentioned cane rat (87.7%, n=73) and birds (80.8%) as sources of upland rice loss. Some farmers said that cane rat damages rice “only for the sake of cutting”, meaning that these animals cut rice purely because they wish to destroy it. Can rats were followed by references to invertebrate (32.9%), monkey (28.8%), baboon (23.3%), and lack of rain (12.3%), among others. The most common effect of invertebrates is to make the rice grains “taste bitter” (*malgos*, kl) or to completely dry out the rice panicle (Appendix 14).

Groundnut: bush pigs, cane rat, porcupine and monkeys

The overall groundnut plant density was 8.42 groundnut plants per m². In 19 transects there was no groundnut damage (35.8%, N=53). The impact that wildlife, birds and invertebrates had on groundnut production was 3.1%. Bush pigs inflicted the most groundnut damage. Monkeys, cane rat and squirrels were the second most important animals foraging on groundnut. Bush pigs can cause much damage in only a few incursions, as demonstrated by the loss of 1.4% of overall production from just two forays (Table 17). Cane rat and squirrel damage were recorded in several transects, while monkeys damaged more plants per transect than squirrels or cane rats (Table 17).

Table 18- Percentages of groundnut loss (in number of plants) due to wildlife and insects during the development phase of groundnut.

Year	Village	% plants damaged (N=27290 plants sampled)	Sources of groundnut loss (%)				
			Bush pig	Cane rat	Monkeys	Squirrel	Porcupine
2010	Cabam	3.64	0	25.7	77.0	0.2	0
2010	Camcoiã	3.25	64.9	27.9	0.5	5.7	1.0
2010	Macubé	1.94	49.0	11.1	0.0	39.8	0
% of plants (n=841 plants damaged)			44.4	24.3	22.2	8.5	0.6
Number of transects with damage			2	22	7	26	1
Loss in total production (%) (N=27290 plants sampled)			1.4	0.7	0.7	0.7	0.0(1)

* estimated using the number of panicles damaged

In 2010, some farmers lost their harvest due to unpredictable and very late rains that damaged the harvested groundnuts drying in piles in the farms (Appendix 15). Usually, it is advantageous to complete the agricultural tasks as early as possible. However, 2010 was an exception, as those who had not yet harvested their groundnut did not suffer any loss from the rains. This highlights the variability of farming regimes in which rare and unpredictable events can have dramatic consequences and inevitably influence people's perceptions of risk.

The most frequent sources of groundnut loss reported by the interviewees were cane rat (73.0%, n=74), followed by bush pig (68.9%, ten people referred red river hog⁶⁴), and porcupine (62.2%). The unpredictable and drastic crop damage of bush pigs was described as follows:

Of the 35-45 kg of groundnut I sowed, the bush pigs damaged it all in three nights. I did not harvest groundnut this year. A group of more than 20 can damage a lot^{xxxix}.

These were followed by reports of damage by squirrels (43.2%, n=74), monkeys (33.8%, nine people referred specifically the Campbell monkey), double-spurred francolin (28.4%), doves and/or pigeons (27.0%), invertebrates (18.9%) and baboons (18.9%), among others.

⁶⁴ In Kriol *purcu burmedju* (*Potamochoerus porcus*) is distinguished from the *purcu pretu* (kl, *Phacochoerus africanus*) by the skin colour, red and black, respectively.

Cassava fields: cane rat, porcupine and bush pigs

Damage in cassava was monitored at different levels: (i) tubers, (ii) plant branches, and (iii) slips (Table 18). I monitored 6,403 cassava plants at different stages of development during 2009/2010 and 2010/2011. In Cantanhez, 15.3% of the cassava plants sampled showed some kind of damage (branches, roots or slips) and 6.3% of the plants were completely destroyed by wildlife damage.

Cane rat was the wildlife species that damaged cassava most often. Termites, bush pigs and porcupines accounted for fewer plants damaged, but they damaged the complete plant more often (Table 18). This corresponds to pulling out the cassava slips after planting (squirrels), damaging the slips (termites) or eating all cassava tubers (bush pigs, porcupines and cane rat).

Table 19- Damage by wildlife in cassava fields per number of plants affected (with tubers eaten) and plants that were completely damaged (N=6,388 plants).

Cassava damage (no of plants)								
Village	Cane rat	Porcupine	Bush pig	Termite	Squirrel	People	Monkey	Chimpanzee
2009 Sampling effort: 12,372 m ²								
Cabam	11	1	1	0	0	0	3	0
Camcoiã	168	0	0	2	2	4	0	0
Cabslau	9	53	53	36	7	0	0	0
Mcunda	121	47	47	1	0	2	1	0
Total (no. plants damaged¹)	309	101	45	39	9	6	4	0
% plants died from animal actions	9.1 (n=309)	80.2 (n=101)	95.6 (n=45)	100.0 (n=39)	66.7 (n=9)	0.0	0.0	0
2010 Sampling effort: 6,336 m ²								
Camcoiã	80	8	0	0	5	4	0	5
Cabam	67	33	0	0	0	1	0	0
Mcunda	163	23	0	2	0	0	0	0
Total (no. plants damaged¹)	310	64	0	2	5	5	0	5
% plants died from animal actions	26.1 (n=310)	65.6 (n=64)	0	100.0 (n=2)	0	0	0	100.0 (n=5)

¹ plants that have at least one tuber damaged

My field assistant and I were surprised to detect evidence of chimpanzees foraging on cassava. Below I transcribe a field note of mine on the feeding remains we found (Appendix 16):

Chimpanzees tried to access the tubers by pulling and pushing the stalks. It seems that they grabbed two stalks at a time and shook the plant. In two plants, two branches broke and they were not able to take the tubers out of the ground. It is still possible to see their handprints in the cassava stalks and the footprints nearby the tubers. They were able to take the tubers off the ground of five plants and they fed on them. There were chimpanzee faeces nearby (15.12.2010).

Chimpanzee feeding on cassava tubers could be an occasional event or it may become a usual behaviour in the future. It might result from a more generalised adoption of the Guinea-Conakry variety of cassava that has stronger stalks, which allows chimpanzees to uproot the plant through push and pull.

Farmers interviewed reported mostly cassava damage by porcupine (84.6%, n=78), cane rat (65.4%), bush pig (57.7%, eight people referred to red river hog), and baboons (39.7%), among others.

5.3.1.3 Fruit trees

Orange: fruit fly, monkeys and chimpanzee

Orange trees were located in small orchards in backyards, in front of houses, around abandoned compounds and villages, or in mixed orchards away from the village. Sixteen of the trees studied were infected with a disease attacking the trunk and were not very productive (6.0%, N=266).

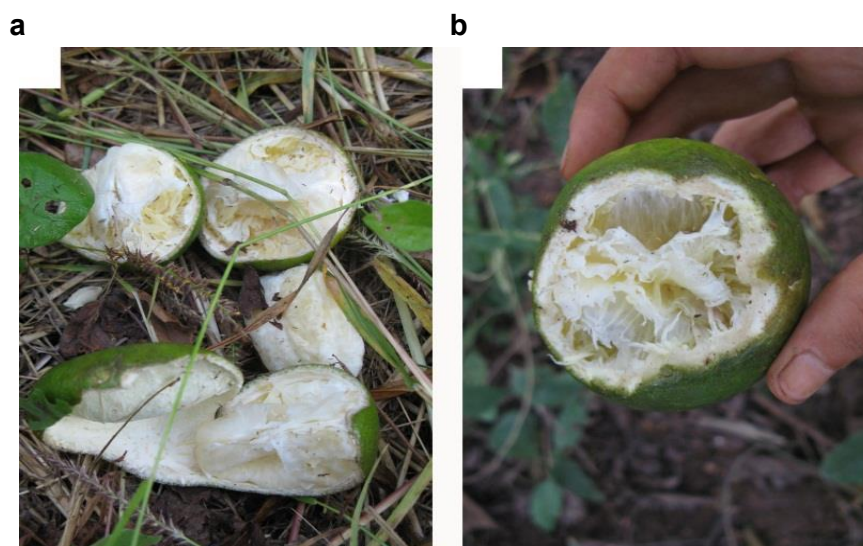


Figure 22- Damage in orange by (a) chimpanzee and (b) monkey.

Almost all damage of orange fruits was due to a fruit fly⁶⁵, while monkey and chimpanzee accounted for much less damage (Figure 22, Table 19).

Table 20- Percentages of orange losses due to wildlife and insects.

Year	Village	Sources of rice loss		
		Fruit fly % of fruits	Monkey % of fruits	Chimpanzee % of plants
2010	Cabam (n=6,959 damaged fruits)	84.0	7.9	8.1
2010	Camcoiã (n=8,474 damaged fruits)	95.6	4.4	0
2010	Mcunda (n=252 damaged fruits)	73.8	0	26.2
2010	Macubé (n=3,321 damaged fruits)	98.2	0.1	1.7
	% of fruits	91.5	4.9	3.6
	(N=19,006 fruits damaged)			

Oranges are ripe by early January, however fruit fly, monkey and chimpanzee start damaging the fruits earlier (Figures 14 and 15). In Camcoiã, a farmer was unable to wait for better trading prices, and decided to harvest and sell his oranges in early January to avoid more damage. In Cabam, people were unable to sell any oranges in 2010/2011 due to the high loss.

⁶⁵ A local NGO identified two species *Diptera tephritida* and *Bactrocera invadens* (AD 2009).

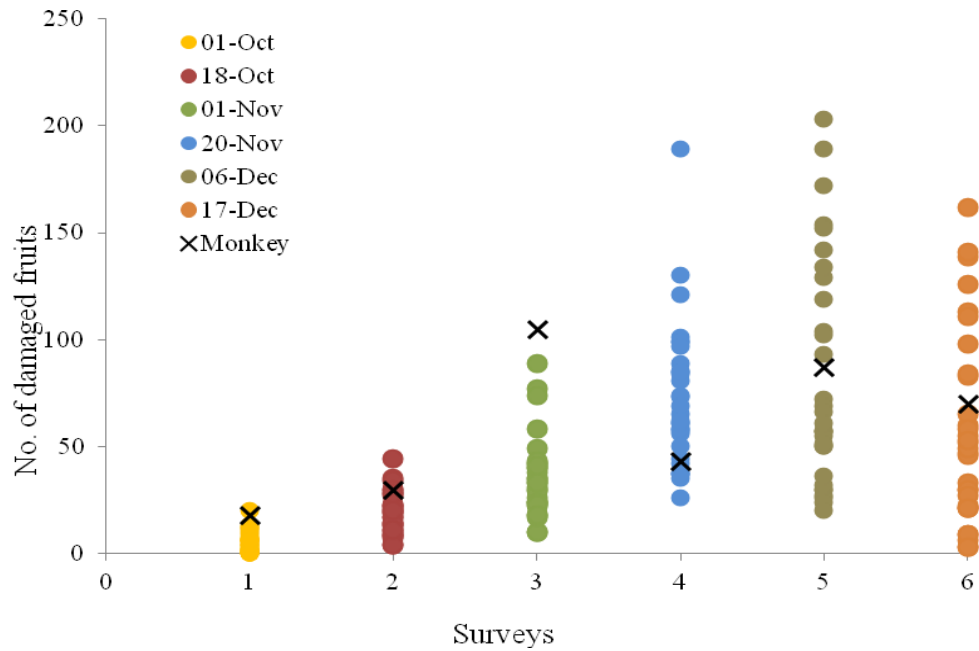


Figure 23- Temporal assessment of total orange fruits' damage in Camcoiã during six surveys (two-weeks interval). Each coloured dot represents the total number of damaged fruits by fruit fly in each tree; the cross represents the total number of fruits damaged by monkey in each survey (all trees).

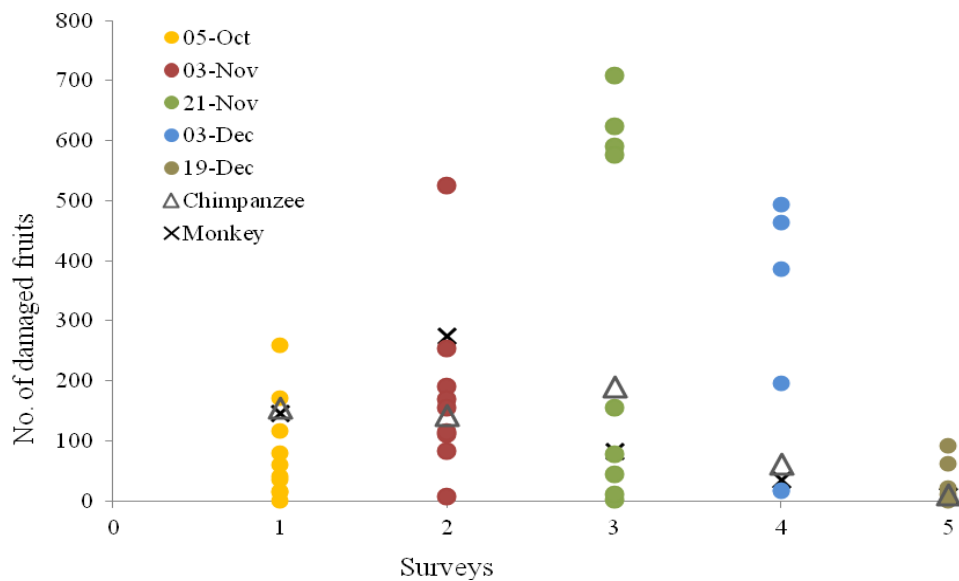


Figure 24- Temporal assessment of total orange fruits' damage in Cabam during five surveys (two-weeks interval). Each coloured dot represents the number of damaged fruits by fruit fly in a tree; the cross and the triangle represent the total number of fruits damaged by monkey and chimpanzee in each survey, respectively.

In Cabam, by December 3, there were no oranges left on the trees as chimpanzees and monkeys had been feeding heavily on them before they ripened. In the literature, chimpanzees are reported to be ripe food specialists (Wrangham et al. 1998), but probably in trees also visited by monkeys, chimpanzees choose to eat oranges unripe.

The most frequent factors recounted by the interviewees as inflicting damage on orange were fruit fly (90.9%, n=44), chimpanzee (77.3%), and monkey (59.1%). The interviewees ranked the damage by fruit fly (R=1.24) as harsher than that by monkey (R=2.06) or chimpanzee (R=2.25). Some farmers were very angry regarding orange loss:

This year I did not harvest even one bag⁶⁶ of oranges from my orchard; the chimpanzee and *bitchus*⁶⁷ finished all of it.^{xi}

The fruit fly stings the tangerine, then the chimpanzee comes and takes it all. People even think that the tree did not bear fruit, [the chimpanzee] takes it all and it peels it. If they do not find oranges on the floor they climb up the tree and take them.^{xii}

Despite the damage caused to citrus fruit, chimpanzees were reported to follow a particular selection of food and calculation of resources use, in contrast to the gluttonous behaviour of monkeys that repeatedly try and throw away the unripe fruits. A farmer portrays the foraging behaviour of chimpanzees like this:

A chimpanzee came to try the oranges but left them in the place because they were not good to eat yet.^{xiii}

Also, in Cantanhez, people provided detailed description of chimpanzees peeling oranges, or bananas. These reports often highlight the aspects in which chimpanzee behaviours mirror those of humans.

Cashew: longhorn beetle, chimpanzee and monkeys

Different types of damage were distinguished depending on the plant part affected: apple (or false fruit), nuts or tree branches. The apple was mainly consumed by monkeys (46.4%, N=1,863), birds (23.0%), and to a lesser extent by chimpanzees (3.3%). In addition, many animal species were observed to feed on cashew apples, such as ants, gazelles, mongoose, domestic pigs, chickens, goats

⁶⁶ This 'bag' refers to the volume of oranges that fit in a 50kg or a 60kg rice bag.

⁶⁷ Meaning insects and termites.

and cattle. People also use the cashew apple for direct consumption, to prepare juice, wine or rum (mainly in Balanta villages⁶⁸).

The source of direct loss of nuts is due to fruit that fell off unripe for an unknown reason (89.2%, N=224 nuts damaged), and to squirrels that directly damage the nut by biting (10.7%, N=224 nuts). These two types of damage are of negligible amounts.

The longhorn beetle (Figure 25) was the main cause of branch losses in cashew trees (Table 20). Cut off branches means a long-term effect of loss of flowers and fruits in future years until coppicing structures develop. Similarly, several large and medium-large branches were found broken by chimpanzees, probably as a consequence of their climbing, which were frequently associated with chimpanzee food remains or faeces. It was not possible to determine whether thinner branches were broken by monkeys, baboons or chimpanzees.

Table 21- Crop loss by wild animals and invertebrates in cashew trees.

Year	Village	% Trees with damage	Cashew tree branches (%)			
			L. beetle %	Chimpanzee %	Monkey %	Children %
2010	Cabam	55.4	94.3	1.5	4.2	0
2010	Camcoiã	21.6	85.1	0	13.8	1.2
2010	Macubé	55.5	73.2	20.9	6.0	0
% of tree branches (no. of branches)			82.4 (961)	11.7 (137)	5.8 (69)	0.1 (1)
Number of orchards (N=31)			30	7	12	1

⁶⁸ There are religious prohibitions imposed by Islam to wine consumption, which is the most economically important byproduct of the apples. In general it is not used by Muslim peoples like the Nalu, Fula, Sussu.



Figure 25- Analeptes trifasciata.

Whereas longhorn beetle damage is present in almost every orchard, chimpanzees broke 137 branches in seven orchards. Damage by chimpanzee on cashew represents a much less severe and more clustered occurrence of damage than beetle damage. One of these orchards was very isolated from the village and the vegetation was not cleared properly and here 70 branches were broken by chimpanzees. In this case, chimpanzees built nests very close to the orchard and there were multiple signs of their having been in the orchard (cashew apples remains, faeces, footprints).

In another orchard, a middle-sized branch broken by chimpanzees had on it 51 cashew fruits and associated nuts, and 35 small branches with flowers. This branch was used as a size reference for other chimpanzee branch damage events in the same orchard where eight branches were broken by chimpanzees (Table 21). The damage by chimpanzees in this orchard was estimated to be approximately 1,580 false fruits and respective nuts.

Table 22- Broken branches and the equivalent fruit and flowers damaged. Estimated against a sampled middle-sized branch.

Damage [Reference: middle-sized branch with 51 fruits and 35 small branches with flowers]	Estimation by comparison (\approx times the reference)
2 large branches (one of the main branches)	6
1 middle sized branch	\approx Equals the reference
2 middle sized branch	2
1 large branch	4
2 large branches	5

Cashew was frequently noted as being damaged by longhorn beetle (56.9%, n=58), followed by chimpanzee (39.7%, n=58), monkeys (34.5%) and baboons (15.5%), among others. Respondents ranked cashew damage by longhorn beetle as more severe (R=1.5, n=13), followed by monkeys (R=1.91, n=8) and chimpanzee (R=2.10, n=14). People say monkeys bite unripe cashew apples and throw them away, and likewise waste the unripe nuts.

Less frequent reports are that baboons damage and knock down the cashew flowers when they play and display in orchards. Two farmers also told me that during cashew season baboons injure their mouths through biting into the cashew shell⁶⁹. Bush pigs and cattle were reported to eat the cashew fruit and the nut together (3.8% n=156 citations).

Banana: disease, bush pig, and primates

By the beginning of the 21st century, a breakdown in banana production (see Chapter 4) affected southern Cantanhez dramatically, including Cabam and Camcoiã. In Macubé (north of Cantanhez), there is still significant production. From the stalks monitored in Macubé, 6.0% (N=1,830) showed some kind of damage (Table 22).

The most important type of damage killing the plant is the “banana disease” as it is locally referred. Farmers know that a stalk is infected when brownish blotches appear in the newly unfurled leaves. The farmers’ criteria were used for this study.

⁶⁹ The shell of the cashew contains anacardic acids.

Table 23- Damage in banana stalks and fruits.

Cause of damage	No. of plants	% (N=548)	No. of stalks	% (N=1,830)	No. of fruits
Disease	181	33.0	264	85.2	n.a.
Chimpanzee	9	1.6	17	5.5	34
Baboon	3	0.6	4	1.3	n.a.
Monkey	1	0.3	1	0.3	1 bunch
People (theft)	n.a.	n.a.	n.a.	n.a.	7 bunches
Undetermined¹	n.a.	n.a.	24	7.7	n.a.

¹ The stalk was eaten until the end without recognizable bite marks. These are likely to correspond to cattle or bush pig damage.

In northern Cantanhez, farmers described chimpanzees eating the banana fruits by breaking the bunch or pulling the stalk (46.42%, N=28), and there were several reports of chimpanzees tearing and/or chewing the pith^{xliii}. I also observed feeding remains of chimpanzees that spat out boluses of banana pith fibre (Appendix 17), but exclusively in the north of Cantanhez, particularly in Macubé village. In Cabam and Camcoiã (southern Cantanhez), people did not report chimpanzees feeding on banana pith or fruits, and attributed the “tearing” of the stalk only to baboon activity^{xliiv}. Of the twenty farmers citing losses to banana crops in this area, none reported chimpanzee damage. Two farmers clearly stated that “chimpanzees do not eat bananas, only monkeys do”^{xliv}. In the very few banana plants grown in Cabam and Camcoiã, I opportunistically registered monkey damage of fruits and the effect of banana disease, but I did not observe evidence of chimpanzees or baboons feeding on banana pith or fruits.

People reported more frequent damage by monkey (60.4%, n=48), bush pig (47.9%), baboon (45.8%), chimpanzee (31.3%) among others, than banana disease (27.1%). However, during informal talks people complained greatly about banana disease and it was regularly pointed to as the reason for the decrease in banana investment.

Beyond the formal observations along transects, I also opportunistically observed damage by cattle, bush pig and cane rat in banana stalks. The effect of these three species did not allow the banana plant to survive. Bush pigs were also said to rely on banana pith during periods of fresh water shortage^{xlvi}. Another wildlife behaviour described by local people is that of chimpanzees stifling banana bunches:

The chimpanzee stifles the banana, breaks the bunch above, takes out some banana leaves, and covers the bunch. It comes to check it. When is ripe, it sits and eats it like a person does; peels the banana and eats

it. If it's cashew it is the same: the chimpanzee eats it all and leaves the nut^{xlvi}.

Again, these descriptions were often followed by a comment about people-chimpanzee behavioural similarities.

Kola: monkeys and squirrels

A group of at least six western red colobus (*Procolobus badius*) was twice observed foraging on kola nuts. Many kola nut capsules were bitten and thrown away both by monkeys and squirrels (Figure 26). Another source of kola loss was theft (Appendix 18).



Figure 26- Kola nut damaged by a western red colobus.

The interviewees reported kola damage by monkeys (53.1%, n=32, eight people specifically named the West African red colobus), squirrel (40.6%, from these nine people named the arboreal squirrel⁷⁰), and invertebrates (25.0%), among others. Farmers were often angry at squirrels, mainly because they were small, quick, and persistent: “The squirrel damages kola nuts: it chews them and throws the nut away, simply to enjoy the waste”^{xlvi}.

⁷⁰ Respondents distinguished ground and aerial squirrels according to their behaviour. The latter is probably one of the following species *Funiciurus pyrropus*, *Heliosciurus gambianus* or *Xerus erythropus*

5.3.4 Legumes

The majority of pigeon pea shrubs were partially damaged by birds or monkeys (Table 24). Other shrubs were unable to survive due to termites and cane rat. In addition, a type of insect was identified living inside plant branches, which caused them to break easily. It was not possible to distinguish monkey from chimpanzee foraging remains, but both were observed feeding on pigeon peas. The interviewees reported most frequently pigeon pea damage by monkeys (27.3%, n=22), followed by chimpanzees (22.7%) and invertebrates (18.2%), among others.

Table 24- Damage in pigeon pea, maize, cowpea and sweet potato.

Crops	Plants/fruits damaged (%)	Partially damaged			Completely damaged	
		Plant part	Damage (%)	Species	Damage (%)	Species
Pigeon pea	35.1 (n=321 plant)	Fruits	48.8	Birds	18.4	Termite
		Branches	25.4	Primates ¹	1.7	Cane rat
		Branches	17.6	Invertebrate		
Maize	-	Cob	38.8	Monkey	59.2	Cane rat
Cowpea	27.1 (n=1,315 fruits)	Fruit	89.1	Insects	Cane rat destroyed 7 out of 10 ridges in a cowpea farm.	
			3.1	Cane rat		
			1.4	Bushbuck		
			1.1	Squirrel		
			0.6	Monkey		
			0.3	Termites		
4.5	undetermined					
Sweet potato	11.0 (n=56 tubers)	Tubers	8.9	Squirrel	Cane rat damaged a ridge of 12 m in a small farm. Cattle damage a complete farm.	
			10.7	Cane rat		

¹ Chimpanzee and/or monkey

Cane rat destroyed the maize plants, while monkeys removed the cobs (Table 23). The interviewees reported maize being negatively affected by monkeys (68.3%, n=63), cane rat (46.0%), birds (34.9%), baboons (34.9%), and invertebrates (23.8%), among others.

In farm samplings, insects and cane rat were the most important factors inflicting cowpea loss (Table 23). After harvest, an opportunistic count found 66.1% pods damaged by insects, and 3.4% of that was damaged by squirrels, doubled-spurred francolin, or fowl (N=735). Farmers frequently reported monkey as feeding on cowpea (45.8%, n=59), followed by cane rat (39.0%), and invertebrates (22.0%).

Cane rat and cattle produced the most conspicuous sweet potato damage, while squirrel damaged fewer tubers (Table 18). Several farmers reported sweet potato as damaged by bush pig (42.6%, n=47) and cane rat (40.4%), followed by

invertebrates (25.5%), baboon (25.5%), cattle (23.4%) and monkeys (21.3%), among others.

Farmers say that weaver birds and chimpanzees hinder oil-palm fruit production. Both species rely on oil-palms for nesting (Sousa et al. 2011), and chimpanzees also feed on oil-palm fruits, flower and pith (*korson di palmera*, kl). Also, both bush pigs and baboons were reported to feed on oil-palm bunches that are harvested and stored in the bush. People are neutral towards wildlife feeding on fruits in the oil-palms, but whenever people's efforts are employed in harvesting them, it starts a process of individual appropriation of wild food.

5.3.2 Severity and incidence: ranking crop loss

I present below two risk maps, one based on measurements of crop loss in farms (Figure 27), and the other grounded in people's reports of crop loss during structured interviews (Figure 28).

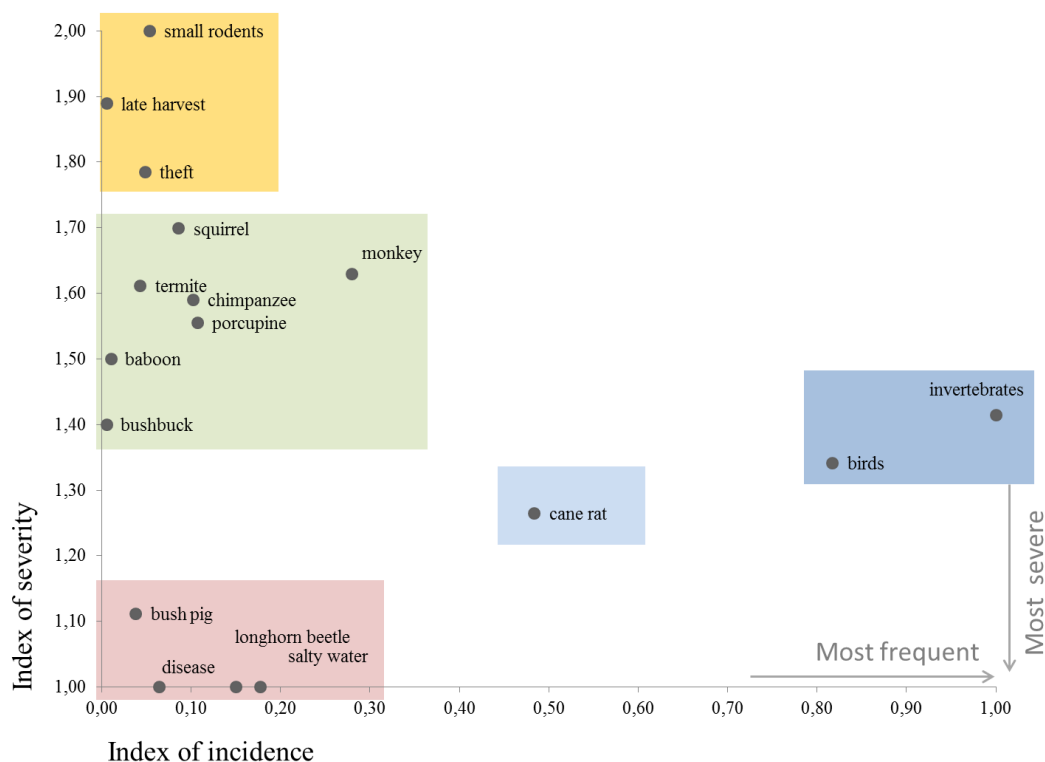


Figure 27- Risk map for measured crop loss (includes sampling in upland rice, mangrove rice, groundnut, cassava, orange, cashew, banana, orange, maize, cowpea and sweet potato).

The longhorn beetle in the cashew, banana disease, and salty water in mangrove rice were the most severe sources of loss. The first two are expected by farmers as their occurrence is generalised (the incidence in the risk map is low because they are crop-specific). Bush pig damage showed a low incidence, but caused important losses per foray. In a like manner, salty water is also devastating when it enters in mangrove rice fields.

Birds, invertebrates and cane rat visited farms/orchards frequently and this resulted in considerable amounts of loss. The pattern of crop loss by porcupine, chimpanzee, monkey, squirrel or termite, was not of high incidence or drastic, although its severity varied considerably among crops. Damage inflicted by baboon and bushbuck was rarely detected, although they caused considerable damage per foray.

The second risk map is shown below and illustrates the indices of incidence and severity as reported by people. This map reveals more complex information than the one based on measured crop loss (Figure 27), namely: (i) ecological sampling could not detect damage by lizards or parrot; (ii) I could not distinguish damage by fowl from that of francolin; (iii) damage by cattle, buffalo or goat were only detected in informal observations; (iv) I could not quantify factors of loss like lack of weeding, work lateness or insufficient rainfall/fog.

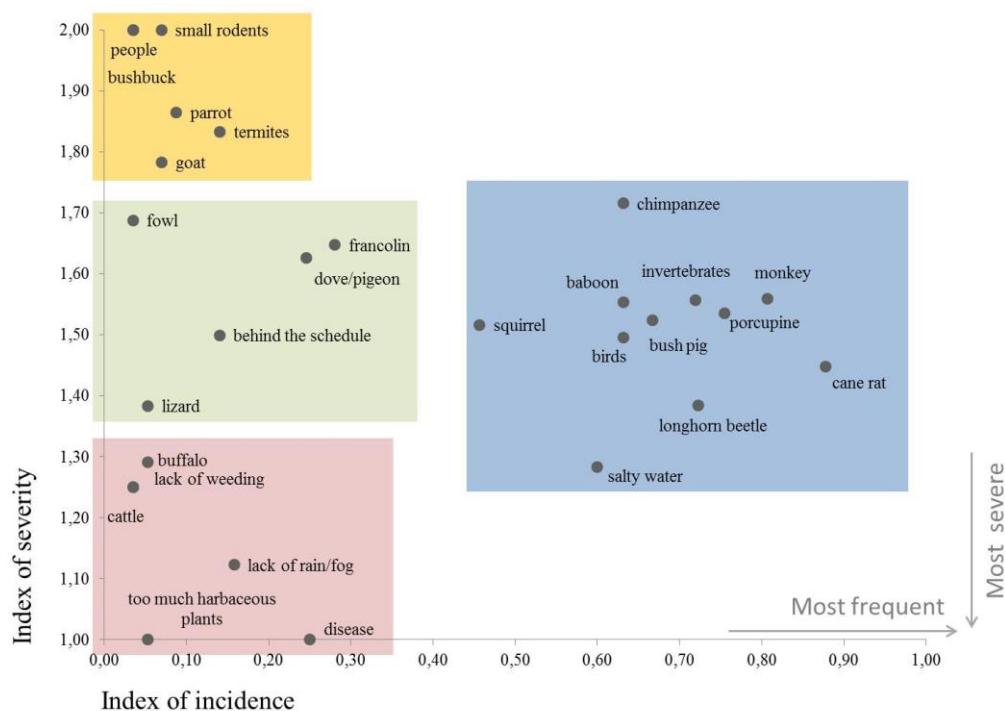


Figure 28- Risk map for reports of crop loss (includes reports about upland rice, mangrove rice, groundnut, cassava, orange, cashew, banana, orange, maize, cowpea and sweet potato).

In Figure 28, damage by cane rat appears as the most severe amongst the most frequently cited vertebrate, followed by that of porcupine and monkeys. Nocturnal species were more often reported as worse crop foragers (60.5%) than diurnal species (39.5% N=129) (Figure 29), as the following reports illustrate:

The worst damage is when you do not find any [crop] at all: this kind of damage is the ‘ugliest’. The damage that just happens a bit (...) and you get what is yours, you can forget about. But the damage that it is all at the same time, uuuuu! that really gets on your nerves, and you cannot forget it^{xlix}.

Those that come during the night, like bush pigs, those are the worst. The others, like monkeys, chimpanzees, baboons, these come during the day... if they see you there they do not damage, but those coming at night, such as bush pigs, porcupines, cane rats... if you're lucky, maybe they will leave you some. If not, well, they damage it all.¹

Ethnic group ($\chi^2=0.12$, $df=1$, 0.73) and gender ($\chi^2=0.45$, $df=1$, $p=0.50$) did not influence references to diurnal or nocturnal species. People frequently elected cane rat, birds and bush pig as the worst crop foragers (Figure 29), which are represented in the same group in the risk map of Figure 28 with similar severity indexes.

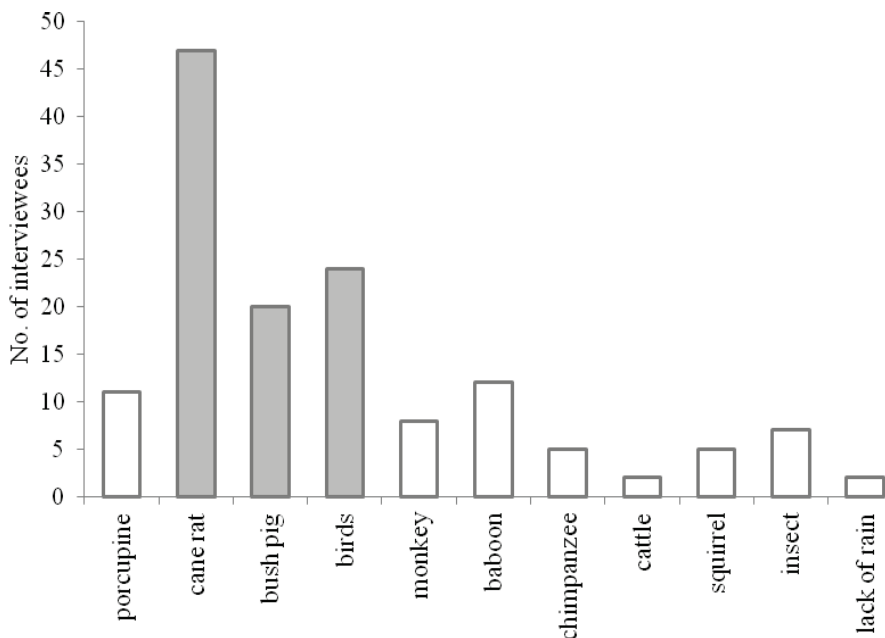


Figure 29- The worst animals/factors inflicting crop damage as perceived by farmers.

In both risk maps (Figures 27 and 28) and in the figure above, people considered damage by chimpanzee to be the least severe of the types of damage inflicted by primates. The chimpanzee was regularly praise as a good neighbour because it is not a major worry in the upland farms. People say that they only forage on roselle and sugar cane, and that very occasionally they feed on millet, maize and sorghum because the “pith is sugary”^{li}. I registered feeding remains of sugar cane and maize pith, probably from chimpanzees, by the farm-forest edge.

In certain contexts, chimpanzees were at the same time reported as ‘human-like fellows that follow a rational use of crops’, and as ‘fearless, stubborn, and harsh crop foragers’. A transition from the former to the latter was evident in a moment of the following interview. My interviewee, a young man in southern Cantanhez, started by providing a very neutral picture of the chimpanzee:

Chimpanzees do not damage banana [...] they damage cashew. If the cashew starts to ripen, up in the trees, it climbs up, grabs the branches, pulls them out, and the branches break. When the cashew starts ripening and falling down, the chimpanzees do not climb up anymore and just eat what they find in the floor. The chimpanzee drinks the liquid, which does not damage. It is the other part, when they break the branches that cause damage.

During the structured interview, he only ranked the chimpanzee as the main cause of loss for the *francis* lime, and it was never reported as the worst crop forager for any of the other crops. Nevertheless, there was a growing resentment directed at chimpanzees as the subject of conservation was gaining significance in the conversation. He explained:

Some people shoot chimpanzees, (...) then wait for the community guard to say ‘you should not shoot chimpanzees!’ (...) If the guard does not know how to speak to him properly, uuuu... When chimpanzees damage fruits, some people give warnings: ‘You told us to leave these people [chimpanzees]. (...) Since the forest reserve started, what have you given me?’

By the end of the interview, this young man vehemently said that the chimpanzee is “the animal damaging the most”. When asked to compare the cane rat with the chimpanzee, he said, “I have to say that the worst is the chimpanzee”^{liii}. This characterisation seems to connect the chimpanzees with trouble, and therefore a kind of damage symbolically associated to the social tension between local people. Throughout the interview, the chimpanzee gradually shape-shifted from a

bush animal to a political character used in an argument between local people. This episode illustrates the heterogeneity of emotions that are navigated during an interview, and how elements are given different meanings according to the contexts that brought them into the discussion. Quantitative analysis does not allow us to understand the meaning and context of a certain report, as it captures isolated and decontextualised information.

5.3.3 Aspects of crop loss that escape quantitative approaches

Quantitative assessments do not inform about subjects that are less likely to be talked about or to involve more complex sense of loss, e.g. the unpredictable and low prices paid for cashew nuts, or the lack of mature forest land to farm, which were a serious concern expressed during semi-structured interviews (see Chapter 4). Crop losses as a consequence of spells or “bad smells” were described very briefly (4.69%, N=64). These usually refer to some kind of criticism or personal accusation more connected with social tensions than with farming. Examples of these are spells used to steal crops from farms^{liii}, reported in upland rice farming and in mangrove rice farming, or the “bad smell of some people” reported to prevent gourd and onion from growing properly^{liv}.

5.3.4 Perceptions of change at the edge

Several farmers reported that a part of the harvest is always for bush animals^{lv}. Other farmers highlighted that at the end of the harvest period much food stays there: “we leave the farm, bush animals take over”^{lvi}. In the Boé, farmers regularly sow some rice in the farms for the spirits, called *simola*, that is eaten by the bush animals. Therefore, crop feeding is not always perceived as negative and in certain contexts, it may be portrayed as fair and usual. However, in scenarios of considerable crop loss and/or lack of control methods, farmers can view crop feeding as highly negative.

Cane rat was not only perceived as the worst crop forager, but many interviewees reported an increase in cane rat numbers^{lvii}. Many related this with a decrease in the number of baboons that are said to feed on cane rats^{lviii}; or with the high reproduction rate of the cane rat; or because savannahs are not burnt as they

used to be⁷¹. Frequently, the interviewees reported rising numbers of porcupines, insects and Campbell's monkeys, and related this to an increase in the crop feeding⁷².

Similarly, all participants said that chimpanzee numbers were increasing because “they are not eaten, and are not threatened”. The process of conservation increased them a lot^{lix}. Also, some people reported that chimpanzees are decreasingly seeing people as a threat^{lx}:

Chimpanzees now challenge people. You are not allowed to shoot them. [...] Before, if they saw people they used to run away, but now they do not run. [...] People are making them habituated to us... they are used to people now.^{lxi}

Farmers explain a supposed increase in the negative interactions between people and certain species due to an increase in the number of these animals that therefore intensifies crop damage, or a change in animals' behaviour in the case of the chimpanzee.

5.4 Discussion

5.4.1 Edges of forests and farms

Researchers studying human-wildlife conflict frequently explain an increase in the negative interactions between people and wild animals through an increase in the area farmed (Else 1991, Hoare 1999, Hockings et al. 2009, Campbell-Smith et al. 2010), or to paraphrase the IBAP, people “transform their habitats into farms that are consequently destroyed” (IBAP no date:16-17). The origin or increase of negative people-wildlife interactions has been generalised in the literature as an outcome of farming expansion. Any version should be rooted in local evidence, although I think it has been treated as rather an article of faith or a theoretical assumption. In opposition to farming contexts, in tourist lodges the interactions between humans and baboons or monkeys emphasises the number of animals and the opportunistic behaviours of these animals (see Else 1991).

⁷¹ Savannahs are seasonally burnt to allow the new growing of the herbaceous plants used for roofing, or for hunting. However, burning the savannahs also put at risk cashew orchards.

⁷² People not only report wild animals to increase in numbers, on the contrary the West African red colobus, and the black and white colobus, duikers and bushbuck, just like the baboons, were reported by several people to have decreased in number.

To offer an alternative view to that reported generally in the literature, crop feeding may be explained by different socio-ecological paradigms. One is that ever-expanding farming areas increases the length of the forest-farm edge and replaces wild food resources by farms, which forces animals to visit farms that consequently enhances negative people-wildlife interactions. Another hypothesis is that the forest-farming edge is a source of nutritious and tasty food and wildlife visits it opportunistically. In support of the latter hypothesis, there are some studies reporting crop-foraging as a result of certain crops being preferred over wild foods (Tweheyo et al. 2005). A final hypothesis is that farms work as “ecological traps” preferred by animal species. Battin (2004:1489) identifies an ecological trap as a “pattern of higher abundance and lower reproductive output” featured by new conditions that animals have not yet acquired the mechanisms to respond properly, an “attractive sink” in the words of Delibes et al. (2001). My view is that despite what makes animals feed on crops, it is likely that there will always be individuals pushed to live on the edge, be it a consequence of farming, other animals’ territories, and/or food opportunities, or a combined effect of these. The edge presents advantages and disadvantages that are very context-dependent.

Several studies have concluded that the proximity to the habitat of a crop-foraging species is a good predictor of crop damage (Hill 1997, Naughton-Treves 1997, Saj et al. 2001, Hill 2005, Cocca et al. 2010, Lemessa et al. 2013). There is probably considerable difference between the ecological and social aspects of human-wildlife interactions in the ‘parks without people’ and in the ‘parks with people’. In ‘parks with people’, the only approach so far implemented in Guinea-Bissau, there is no long lasting limit between forest and farms. The shifting character of agriculture in Cantanhez does not establish a long lasting forest-farm edge, as the landscape is continuously changing.

There are some abandoned villages (such as after the construction of the road in the 1950-60s), and mangos, oranges, kola and baobabs that were left behind are now used by wild animals, particularly primates that can have access to highly nutritious fruit trees in low conflict settings.

Although the policy of Cantanhez National Park aims at freezing the landscape with some divisions, the outcome is still a patchy and temporally dynamic landscape of shifting forest-farm edges. For Cantanhez National Park, I would speculate that probably bush animals foraging on farms is a result of a long term coexistence with agriculture which has shaped animals’ foraging habits and these have influenced farming concomitantly as choosing a farming strategy implies reducing losses (see Chapter 6).

5.4.2 The measured and the reported: comparing knowledge or complementary impressions?

Bell (1984:396) suggests that before discussing control methods it is essential to monitor crop damage; and the method to assess it should be “simple, quick and practical, so that it can be applied to large areas in a relatively short time”. Bell places an emphasis on a quick expert-based approach to document crop loss. Webber (2006) also highlights the importance of crop loss assessments saying, “without measuring crop loss it will not be possible to ascertain if reports of human wildlife conflict are due to actual damage, exaggerations, misidentifications or the increase in media and political interest” (2006:52). Although I agree with Webber’s argument on the importance of gathering data on crop loss, I disagree with it being a reference to classify local people’s reports, mainly because ecological studies are very often, if not always, also subjected to bias.

The methodology considered reliable to study crop loss is one that looks at crop loss as things, “nature as things”, as described by Ellen (1996:105), and therefore composed of elements that can be separated, divided and objectively quantified. This need for objectivity has led ecology as a discipline to struggle with the complexity of natural systems, and there is no reason to assume that crop loss assessments would be any different. Referring to human-elephant conflict, Thirgood et al. (2005:25) say that “the database on patterns of crop damage is poor and burdened by ill-defined methods that limit comparisons between sites”. Similarly, Naughton-Treves and Treves (2005) say that given the great variability of methodologies used to assess crop loss, it is difficult to make meaningful comparisons across studies and sites.

Therefore, it is important to consider that scientific estimations of crop loss are generally incomplete, subjected to several potential biases of identification and quantification, and lack temporal and spatial representativeness. Given that, should researchers’ estimations be referred to as ‘actual crop damage’, and from these estimations the nature of the local people’s reports infer if both are subject to bias? It is difficult to understand how a farmer’s report is influenced by other factors, but it is also difficult to understand the amplitude and direction of the bias implied in ecological sampling. Therefore, both local knowledge and expert-based knowledge are subjected to bias that is more or less likely to be identified and explained.

Following Agrawal's (1995:414) critique of the "validity, even the possibility, of separating traditional or indigenous knowledge from Western or rational/scientific knowledge", it should be pointed out that this study relied on both science-based knowledge and farmers' knowledge to identify crop loss, as explained in the section 5.2.2. Consequently, the already blurred borderline distinguishing knowledge by its provenance is even more subtle. This undermines the presentation of science-based and local people's reports of crop loss as a dichotomy or some kind of opposition. Moreover, it has mainly reproduced a hierarchical organisation of knowledge that hinders the legitimacy of farmers to speak about crop loss in a temporally, spatially and socially comprehensive manner. Instead, local people's reports have to be understood by their connections with socio-ecological factors and, as argued by Hill, these can provide important insights into the social implications of conservation (Hill 2004, 2005).

There is a certain chance that reported damage does not faithfully illustrate farmers' perceived damage and, at the same time, neither the measured damage corresponds entirely to the actual damage, since both constitute approximations and estimations of the reality. A farmer can choose not to tell his/her actual perception but build up a narrative based on the interviewer's expectations or based on a personal view. Furthermore, the goal behind the report may be different from a quantitative precision and be, for example, more related to social injustice.

Another constraint on this comparison of 'measured' and 'perceived' crop damage concerns the spatial and temporal setting each part is focusing on. The researcher had access to information for the period and place the research was conducted. Farmers have accumulated knowledge for up to several decades and have experience of farming in different places, as expected in swidden farming.

Also, as described by Douglas and Wildavsky (1983), perceptions of risks are built collectively. Farmers do not merely report their individual views on crop damage, but rather farmers' collective views on crop damage. Farmers build their reports based on a very comprehensive window of understanding so their reports are an outcome of different landscape and temporal settings, shaped collectively and probably influenced by politicised views and/or social claims. In summary, these two accounts of damage do not seem to be comparable.

5.4.3 Severity, incidence and livelihoods

Crop losses can be analysed systematically in space and time, however their impact on livelihoods is very variable as a certain crop holds a different importance for different households (see Chapter 4). The availability of rice is crucial for the reproduction and innovation of farming systems. Particularly given the importance of rice production for the resilience of livelihoods (as also argued in Chapter 4), the factors inflicting rice loss have an obvious impact on local livelihoods.

Salty water is the most important source of damage to mangrove rice farming, and given the importance of this type of farming both for household security and for the regional vitality of rice-based trade, it could be considered one of the most important sources of damage. The inadequacy of water management in mangrove rice farming is however dependent on complex social circumstances that influence the capacity for labour allocation and knowledge exchange (see Chapter 4; Sousa et al. 2014 in Appendix 1). Wildlife species such as birds and cane rat are also associated with rice loss, and therefore with the loss of staples. Cashew, banana, lime, oil-palm and orange are all important cash crops and therefore their loss is connected to a market-based value. Consequently, damage by chimpanzee, monkeys and invertebrates is associated with a cash loss, which can carry adverse effects to households relying on trade to ensure rice needs.

5.4.3 Animals in Cantanhez farms

As described in other studies (Basili and Temple 1999, Mey et al. 2012), the red-billed quelea (*Quelea quelea*) can inflict considerable rice loss. Notwithstanding the fact that people guard (or claim to guard) their fields, birds are responsible for a decrease of 7.0% in rice production in upland rice farms and 3.6% in mangrove rice farming. Although spatial and temporal variability of crop loss is expected (Mey et al. 2012), my estimation for upland rice loss by birds is similar to the 6.8% of losses by birds estimated for upland rice in Senegal (Bruggers and Ruelle 1981).

Most orange damage is inflicted by the fruit fly and by a disease that might correspond to gummosis (*Phytophthora parasitica*). This disease has ruined orange groves in several countries around the world (Irvine 1969). Both types of damage are reducing people's willingness to invest in orange, particularly because of the fruit fly. In contexts of high orange damage by invertebrates and diseases, monkey

and chimpanzee damage in orange may have different impacts on people's livelihoods. On the one hand, orange damage by chimpanzees and monkeys may represent a considerable loss to an already depleted harvest potential, which in circumstances of insufficient rice harvests and/or low cashew prices is likely to enhance intolerance towards primates. On the other hand, high damage rates by invertebrates can transform orange into a peripheral crop and therefore damage by chimpanzee is seen as irrelevant. Again, the estimation of crop loss by itself is unable to inform us about the relevance of a certain type of damage, as without the social context the estimation is meaningless.

In Guinea-Bissau, the 'banana disease', as it is locally referred to in Cantanhez, was described to result from hydric stress (AD 2006:25) or/and from an infection by the nematode *Helicotylenchus multicinctus*. This nematode was identified in the roots of banana plants in the north of Guinea-Bissau in 1990 (Baujard and Martiny 1995:504) and is associated with a fungus that attacks the root system (Luc et al. 2005). In Uganda, this nematode was reported to occur in association with another nematode species *Radopholus similis*, which is one of the two major banana nematode parasites worldwide (Barekye et al. 1999). However, also in Uganda, Webber (2006:98) mentions banana wilt disease caused by *Fusarium* fungus or *Xanthomonas* bacterial disease. Crop diseases in Guinea-Bissau remain under-studied and more research on these topics would be of great importance.

Cashew apples are probably an important source of water for wild animals during the dry season. Farmers report that chimpanzees eat only the fleshy part of the fruits and leave the nuts, the economically valuable part in the orchard (Sousa 2007, Hockings and Sousa 2012). Hockings and McLennan (2012:e33391) classify a low conflict crop as "non-staple subsistence crops and/or non-important spread commercial crops for which there were no records of chimpanzee consumption" and as a potentially low conflict "important spread commercial crops and/or staple crops not recorded eaten by chimpanzees, or else the part eaten is unimportant to humans". Hockings and Sousa (2012) describe the cashew as a low conflict crop in Cantanhez. The apple is not economically important in Camcoiã, Cabam and Macubé, although this is not the case in many other villages, such as Bdjanf. In Balanta villages, people (mainly women) produce and sell wine and rum. In some villages of Cantanhez, Balanta come to collect cashew fruits during the harvest season and are paid in cashew apples. Moreover, chimpanzees and monkeys cause considerable harm to the cashew nut harvests through the loss of cashew tree branches. Considering this, and building my argument in respect of my

measurements of crop loss, I would question the idea of cashew as a low conflict crop regarding people-chimpanzee interactions.

As described in other studies (Hill 1997, Naughton-Treves 2002, Hill 2004), nocturnal species were considered worse crop foragers than diurnal species since farmers are unable to use adequate control methods to reduce their crop-foraging activity. In the present study, chimpanzee did not appear as the worst crop forager, instead cane rat, bush pig, porcupine, monkeys and birds were more significantly portrayed as problematic. Therefore, this study contradicts the argument of Costa (2010) that chimpanzees “were perceived as the worst crop-foragers in the forest” (:141). Chimpanzees are problematic animals locally but not considered the worst concerns of farmers in terms of crop loss. The most important expression of chimpanzees as a problematic animal appears in the symbolic criticism towards nature conservation, as argued in Chapter 6 and then in more detail in Chapter 7. Regarding crop foraging, it is mainly viewed with the neutrality of a bush animal with human-like habits that feeds on both wild food and crops. However, on other occasions there was a great deal of criticism. The chimpanzee is particularly associated with the debate around the national park and consequently it is an important figure in people’s narratives regarding nature conservation.

This chapter has provided a mainly quantitative approach to the interactions of people and wildlife in one of their conflicting spheres, namely agriculture. It was argued that the goal of detecting knowledge mismatches is a flawed and sterile exercise, and research-based and local knowledge are rather complementary to understand a social and ecologically complex domain of interaction. The following chapter provides an overview of the control methods employed by farmers to mitigate crop loss, which then allows for a discussion about the perceptions of risk and their connectedness to nature conservation policies.

6. Conservation as risk?

“The urgency and existence of risks fluctuate with the variety of values and interests”
(Beck 1992:31)

6.1 Introduction

The previous chapter examined crop loss assessed by independent sampling and reported by local people. These two strategies to assess a common object are both biased and provide complementary knowledge that is relevant to understand human-wildlife interactions. What is perceived and measured becomes impossible to detach from what one refers to as risk, because “risks are risks in knowledge, perception of risks and risks are not different things, but one same thing” (Beck 1992:55). This chapter examines the content of the previous chapters in terms of risk, both quantitative and qualitative, and discusses broader social and political subjects that matter to the perceptions of risk concerning nature conservation.

Studies about conservation biology have delivered a picture of nature in crisis and nature conservation programmes are presented as a solution to the risk of extinction of species and ecosystems. Viewed from this perspective, nature conservation is envisioned to control risk and for exactly the same socio-ecological contexts, nature conservation can be envisioned as risk. Different stakeholders highlight and are concerned about different uncertainties, hazards and dangers, and as such, perceptions of risk are multi-layered, non-linear and subjective. In Beck’s work, *Risk Society* (1992), the author provides several illustrations of the current ‘reflexive modernization’ that argues that science and technology, and all individuals in society, are producers of knowledge and risks whose discourses determine what is harmless, permissible or perilous. He also shows that the *scientization* and *commerce* of risks are growing, and that landscape planning is directed by a “bureaucratic authoritarianism” that guides what to do where, when and how.

The previous chapters illustrated local perspectives of people living in a national park and alongside wildlife. Critical narratives about the rights to govern

social and ecological spaces (see Chapter 3), the uncertainties regarding access to resources required for livelihood (see Chapter 4) and perceptions about sources of harvest loss (see Chapter 5) all contribute to local farmers' views about the risks involved in nature conservation. In this regard, the goal of this chapter is to study the various components of risk that are relevant for the nature conservation debate, a context where nature conservation is recalled as a solution to risks of biodiversity loss, but is itself rarely recognised as a risk. To accomplish this, I discuss the risk of crop loss concerning both the use of control methods and nature conservation policies.

6.1.1 Methods for crop protection

Both farmers and researchers studying human-wildlife interactions mention the need to improve control methods able to prevent wildlife from feeding on crops, and likewise to decrease the perceived risk farmers hold of these animals. The crop protection methods employed are often constrained by monetary costs and labour availability (Ogra and Badola 2008). Possibly because of these constraints, there is considerable homogeneity within the range of deterrent methods adopted by small-scale farmers who choose different techniques out of a common pool of possibilities (Osborn and Hill 2005, Hockings and Humle 2009, Fungo 2011). Guarding is probably the primary strategy to defend crops and has been broadly reported in the literature (Priston 2005, Karanth et al. 2012). Guarding croplands may create labour bottlenecks in certain seasons, poor attendance at school (since it is usually children who are required to guard the fields), increased risk of human injury by wildlife, and increased risk of contracting diseases such as malaria during guarding activities at night (Hill 2000). The amount and quality of guarding varies between farms and does not always prevent losses. A study by Wallace and Hill (2012) shows that guarding without active patrolling did not have a significant effect on primate forays onto farms.

Some external mitigation efforts have been made to alleviate the tension between people and animals. Sophisticated strategies, such as electric fences, were adopted to control hippopotamus damage to rice in the Bijugu archipelago in Guinea-Bissau (González et al. 2009). These strategies require considerable monitoring and maintenance of costs and efforts (Osborn and Parker 2002). In Namibia, O'Connell-Rodwell et al. (2000) show that the efforts to control elephants' crop damage played an important role in improving relations between communities and conservationists. In Zimbabwe, Osborn and Parker (2002, 2003)

assessed the effectiveness of traditional (watchtowers, fires, beating of drums, catapults) and experimental methods (buffer zones, cowbells, string fences, firecrackers, dung and chilli) to deter elephants, and concluded that a combination of different methods is necessary to prevent animals from entering farms. The authors say these can also “shift the responsibility and blame for crop damage away from the local wildlife authority” (2002:37). In this example, the process of experimenting with deterrent methods by conservation-based research worked to reinforce farmers’ responsibility for controlling the foraging behaviours of protected species.

Lethal methods to control wildlife feeding on crops were frequently described for farming contexts. Naughton-Treves (2002) states that at low hunting and farming intensities, swidden fallows offer advantageous opportunities to wildlife species. These contexts also provide meat intake to farmers using hunting as a strategy to protect crops from wildlife (Smith 2005). In fact, at certain sites, hunting was described as the only method capable of controlling the increasing crop damage by wild boar (Geisser and Reyer 2004, Massei et al. 2011) or white-tailed deer (Conover 2001).

Conover (2001) argues that hunting helps to maintain the wildlife populations below the environmental carrying capacity, which is beneficial for avoiding people-animals conflict, as animals also become more elusive. The possibility to hunt can help generate more positive views about conservation strategies (Conover 2001) and it may be perceived as compensation for the damage caused (Osborn and Hill 2005). At other sites, however, the efficacy of hunting to control crop loss remains unclear (Osborn and Hill 2005) or has been described as ineffective for species like elephants (Nyirenda et al. 2011). Fall and Jackson (2002) argue that researchers should focus on providing science based non-lethal solutions as alternatives.

Strategies for coping with crop loss are as important as strategies for mitigating crop loss, as these allow local people to deal with the economic stress resulting from depleted harvests. Social reciprocity is a relevant method for coping with crop loss (Naughton-Treves and Treves 2005), and it is embedded in village, kinship and friendship (see Chapter 4).

6.1.2 The need to think beyond crop loss

Perceptions of risk are a product of collective and social construction (Douglas and Wildavsky 1983), but are not always uniform among people. In

farming contexts, individuals experience different levels of vulnerability that contribute to distinct perceptions of risk, which are likely to vary with age, gender, ethnicity, farm location, crop associations and cultural norms (Hill 2004:280). Perceptions of risk regarding certain species are also deep-seated in social constructions shaped by popular culture; beliefs and mythology that associate a certain species with danger or malevolency may persist even if crop loss is mitigated (Dickman 2010). This is the case in Brazil of the jaguar that is persecuted by people who are not affected by jaguar actions but that perceive them as negative (Zimmermann et al. 2010). In other cases, risk is well documented by negative encounters or even casualties. McLennan (2010) and Hockings (2009) report chimpanzees displaying aggressive behaviours during encounters with local people. In Mozambique, elephants, crocodiles, hippopotami and lions were responsible for the death of 431 people in 2006-2010 (LeBel et al. 2011) and in Uganda hundreds of people have been killed by lions and leopards (Treves and Naughton-Treves 1999). In these cases, perceptions of risk correspond with obvious and dramatic physical and negative interactions between people and wild animals.

Freudenburg (1988) argues that the “dichotomy between ‘real’ and ‘perceived’ risk is less ‘real’ than it is often assumed” (1988:44) and in the end “people factors” dominate real-world risks (Freudenburg 1988:48). Perceptions of risk are social, contextual and subjective, and these perceptions are hugely important when accessing people’s views about their own existence and about the context they live in. In line with this, Beck stresses that the dialogue between disciplines and groups of people is a necessary condition to describe risks more accurately:

Risk determinations are an unrecognised, still undeveloped symbiosis of the natural and the human sciences (...). They are simultaneously neither simply the one nor only the other. They can no longer be isolated from one another through specialization, and developed and set down according to their own standards of rationality (Beck 1992:28,29)

Beck’s call for interdisciplinary risk assessment reveals one of the most important requirements to comprehend socio-ecological systems. Examining people-wildlife interactions in a context of nature conservation demands looking beyond the costs and benefits of their physical-natural interactions and unfolding the various connections and representations that animals have within social tensions growing among people.

6.1.3 Control, responsibility and compensation: a controversy

Most studies concerning the control of crop loss focus on the technical aspects of control methods (Ahmed and Fiedler 2002, Geisser and Reyer 2004, Jindal et al. 2012), but often, the factors driving perceptions of risk are deep-rooted in social constructions (Dickman 2010). Conflicts between people and wildlife have become a local political problem and a critical issue in the debate about conservation worldwide. In protected areas where crop losses are caused by wild species that are perceived as important, local people can become hostile towards conservation programmes (Naughton-Treves 1998), or feel frustrated with park legislation that bans certain types of control measures (Naughton-Treves 1997, Webber 2006). Legal restrictions controlling procedures such as hunting, may enhance the farmers' sense of being in competition with wildlife (Hill 2004). The implementation of conservation regulations contributes to local people's claim that the government is the "owner" of the forests and therefore the damage caused by "their" animals should be compensated for (Gillingham and Lee 1999, Naughton-Treves and Treves 2005, Webber 2006).

In Cantanhez (Sousa et al. 2014) as elsewhere (e.g. in Kenya see Owino et al. 2012), income generated through tourism has been expected as the most notable benefit of conservation programmes. In fact, in certain places it was important and advantageous both for wild animals and people (Fuentes 2010). To fulfil local expectations regarding nature conservation, programmes of crop loss compensation were implemented in various places (Václavíková et al. 2011, Karanth et al. 2012). The success of compensation programmes has been found to depend on factors like transparency, participation, information, and the stakeholders' social position (Ogra and Badola 2008). Where expectations raised by conservation programmes are unrealistic, it is likely that local people will reject policies aiming at protecting wild animals perceived as abundant and that cause significant crop loss (Smith 2005:529). In these circumstances, quoting Douglas and Wildavsky (1983:18), "people will either refuse a known risk or seek additional compensation for assuming it". Nature conservation programmes created a new social-ecological context that is analysed here, particularly concerning chimpanzees and hunting as a control method.

The first section of this chapter provides a description of the control methods employed by farmers to minimise crop damage. The second section shows

the collision of some of the control methods with national park legislation and policy. Finally, I argue that local perceptions of risk are closely related to an appreciation of the asymmetry of power between government/NGOs and local people, and about (the lack of) social equality and reciprocity.

6.2 Specific methods

This chapter was conceived based upon the responses given by eighty-five people (N interviewees) during structured interviews. During these interviews (see Chapter 2 for more details), 895 reports (N reports) of control methods were given for sixty-four different crop types/varieties. Responses were grouped into types of response following criteria based on similarity (see Appendix 19). The total number of reports also includes responses mentioning the absence of control methods. Several semi-structured interviews, informal talks and participant observations were conducted and were of great importance to this chapter. Notes on control of crop loss were also taken during visits to the farms.

6.3 Results

6.3.1 Struggling to control crop loss

The interviewees mentioned 105 different types of strategies (778 responses) employed to mitigate/avoid crop loss (Table 24). There were also reports revealing circumstances in which people claimed either not to know of, or not to use any control methods (13.2%, N=895 responses). Lack of adequate control methods occurred mainly in reference to crop loss by invertebrates (26.3%), cane rat (13.2%), chimpanzee (7.9%), squirrel (7.0%) and termite (7.0%, n=114). These reports suggest that people perceived damage by these animals either as unimportant, or as unable to be controlled. This section starts by showing the most common control methods used by farmers, and then examines the perceived effectiveness of deterrent methods (see section 6.3.1.4).

The strategies for controlling crop loss in farms were grouped into non-lethal and lethal methods, which were described by 94.1% and 89.4% (N=85) of interviewees, respectively. Sixteen people (18.8%, N=85) described ways of anticipating crop loss, and named different methods adopted during farming planning and cropland design. Less frequently, participants reported control methods for reducing post-harvest losses that were based on improving storage conditions or minimising cash losses (9.4%, N=85).

Table 25- Types of control methods as described by interviewees (N=85).

Nature	Percentage interviewees %	Type of control method	Percentage interviewees %
Methods to avoid crop loss	32.9	Biophysical factors	16.5
		- Adding ash	8.2
		- Adding salt	4.7
		- Open the water pumps for the salty water to flood the field	3.5
		- Watering	1.2
		- Open the water pumps for the fresh water surplus to runoff	1.2
		Farming design	7.1
		- Arrangement of crops in the farm	2.4
		- Build a higher dike	2.4
		- Farm further away	1.2
		- Large farms	1.2
		Temporal arrangements	4.7
		- Early sowing	3.5
		- Early harvest	1.2
		Physical barriers	12.9
		- Weeding	7.1
		- Opening a ditch around the farm	5.9
		- Opening a path around the farm	5.9
- Covering the fruits	2.4		
- Clearing the vegetation below the trees	1.2		
Non-Lethal methods	94.1	Chasing away	87.1
		- Human presence (yelling, whistling, hitting on tins, trunks, sling-shot, throwing stones)	51.8
		- Fire/smoke (burning rice husks, tires, oil-palm kernels, old shoes, peanut husks, clothes)	32.9
		- Attracting ants (fibre of oil-palm fruits, remains of crabs)	17.7
		- Dirty clothes or cloth with perfume, soap or gasoline	8.2
		- Shooting to chase away	5.9
		- Run after them	5.9
		- Hang an intestine of an animal up on a stick	2.4
		- Spread its dung in the plant (for goats)	2.4
		- Hanging pieces of zinc up in a tree branch	2.4
		- Burnt oil	1.2
		- Dogs	1.2
		Blocking	30.6
		- Fencing with trunks	21.2
		- Ditch around the farm	9.4
		- Covering (e.g. banana bunches)	5.9
		Magical/Religious	15.3
		- Non-Islamic	9.4
		- Islam-based	5.9
		Lethal methods	89.4
- Shooting*	60.0		
- Hunting*	35.3		
- Killing by hand (e.g. longhorn beetle)	16.5		
- Asking hunter to kill it	11.8		
- Hitting with a stick (e.g. cane rat)	2.4		
Trapping	62.4		
- Snares	61.2		
- Ditches covered with sticks	4.7		
- Fishing nets	1.2		
Hand	12.9		
Chemicals	36.5		
- Poisonous mix (<i>Erythrophleum suaveolens</i> + <i>Parkia biglobosa</i>)	11.8		
- Chemicals products mixed with seeds	2.4		

*Kriol distinguishes 'hunting' and 'shooting', see the section 6.3.1.3 below.

6.3.1.1 Control methods most commonly in use

The four most frequently cited control methods, namely guarding, chasing, shooting, and hunting, are used for different types of crop-feeding species ($\chi^2=183.75$, $df=18$, $p<0.01$, see figure 21). Birds and monkeys were mainly chased with a sling-shot (see Appendix 20), and by shouting or hitting tree trunks to make a noise. Monkeys were frequently reported as shot. Baboons were said to be chased away and shot at with equal frequency. More people reported chasing chimpanzees than reported shooting them. There are differences, although less significant, in the use of control methods (none, lethal, non-lethal) for chimpanzee, monkeys and baboon ($\chi^2=12.685$, $df=4$, $p<0.05$). People reported lethal control methods directed at chimpanzees less frequently than for the other primates. Cane rat and bush pig were mostly reported as being hunted (Figure 30), while porcupine were said to be controlled mainly with snares (Figure, Appendix 21).

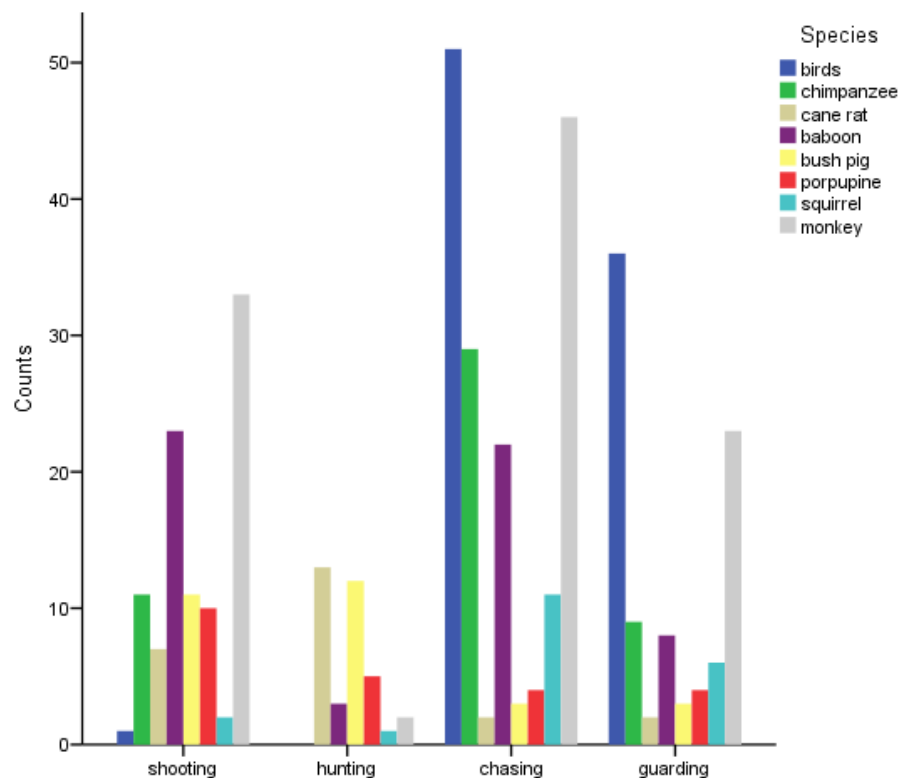


Figure 30- The most frequently used control methods: shooting and hunting (lethal methods) and chasing and guarding (non-lethal methods).

Diurnal species were more often reported as controlled with non-lethal methods, whereas lethal methods were more often cited for nocturnal crop foraging species ($\chi^2=132,399$, $df=4$, $p<0.01$). Mammal body size (small, medium, large) did not explain the type of deterrent method adopted ($\chi^2=8.817$, $df=4$, $p=0.066$). Women more often than men said that they do not have or do not adopt any method to control a certain source of crop loss ($\chi^2=14.555$, $df=1$, $p<0.01$), although they equally referred to lethal and non-lethal methods to control crop damage ($\chi^2=0.018$, $df=1$, $p=0.906$).

People in Cabam more often reported not using any methods to control crop loss. Results from Macubé were very different, with use of lethal control methods being reported most frequently ($\chi^2=26.841$, $df=3$, $p<0.01$).

6.3.1.2 Farming also means avoiding risks

People's appreciation of risk shapes their decisions, and when planning a farming strategy, risk avoidance is incorporated into the decision-making process. Together with this, decisions are also dependent on a range of other factors, including the availability of food, knowledge, seeds, land and labour. This section provides examples that illustrate the connections between local people's perceptions of risk and farm planning.

There are several arrangements for minimising the chances of crop loss. All spaces where crops are grown, such as backyards, villages, humid savannahs, mangrove, fallows and forest, are objects of risk analyses. In Camcoiã, a village with six households, people agreed to allocate village gardens to grow crops that are usually found in farms. The villagers sold their goats and started growing cassava, beans and sweet potato instead. This strategy allowed complementing swidden farming with crops that were not damaged by either goats or wildlife. Because wildlife that feed on said crops (i.e. cane rat, bush pig, porcupine) do not usually come close to the compounds.

Similarly, the mangrove space is characterised in terms of risk. Skilled farmers try to anticipate tidal patterns, study the topography of the mangrove, evaluate the fresh water runoff, and adopt the most adequate design for dikes and ditches. Similarly, the species composition of forests for swidden farming is scrutinised for evidence of fertile soils:

Rice does not like forests of *miseria*⁷³ (kl), the soil burns the rice, but groundnut does not mind that. If you find *veludu*⁷⁴, *po bi bitxo*⁷⁵, *foroba di matu*⁷⁶ (kl), you can cut the vegetation and grow rice, it will give good rice^{lxii}.

Crops are seen as elements having preferences that can or cannot tolerate other elements. The type of soil, vegetation, wild or domestic animals, biophysical conditions, and people's behaviours all interfere with crops' development. For a farmer, the landscape is a map of risks and opportunities in which biophysical variables are indicators of fertility.

The risk analysis involved in farming encompasses interpreting and acting upon the environment. It is the result of accumulated experience and knowledge shared by elders with youths, and horizontally within enlarged family, friends, and migrant networks. I provide several examples to stress that the quantitative information shown in Table 24 does not provide a comprehensive picture about perceptions of risk regarding crop loss. The methods of control based on anticipating crop loss are part of farm planning and therefore the estimate of 32.9% for "methods to avoid crop loss" is a considerable underestimation (Table 24).

The plans farmers make at the start of each growing season involve choosing crops and crop varieties, testing new crops, and determining farms' sizes, the arrangement of crops, and guarding structures. The arrangement of crops in swidden farming can be planned in ways to reduce or avoid losses. Some strategies are highly consensual and result from experimentation and knowledge sharing:

Maize 'eats'⁷⁷ the plants of groundnut, and therefore the maize plants must have considerable spacing when these are associated with groundnut.^{lxiii}

I always sow the millet around the farm because it has large roots and stems that make like a fence for bush animals. Also, I do not mix cowpea with rice. Rice does not like cowpea plants around it.^{lxiv}

In Cabam, people moved their beehives from the trees around the compounds to the mangrove because of losses by chimpanzees that were feeding on honey. Crops such as sorghum and millet were abandoned due to the high losses from birds^{lxv}. Two farmers interviewed used a double-husked mangrove rice

⁷³ *Anisophyllea laurina* (Catarino et al 2006:121)

⁷⁴ *Dialium guinense* (Catarino et al 2006:76)

⁷⁵ *Antiaris toxicaria* (Catarino et al 2006:109), *Milicia regia* or *Morus mesozygia* (Catarino et al 2006:112).

⁷⁶ *Albizia dinklagei* (Catarino et al 2006:79)

⁷⁷ The roots of maize occupy a lot of space and prevents groundnut to develop by the maize plants.

variety that is more resistant to bird damage. Some farmers explained that now it is risky to invest in long-cycle rice varieties due to the instability of rainfall^{lxvi}, and other farmers said the short-cycle varieties are more vulnerable to cane rat damage^{lxvii}. Furthermore, as described by Richards (1987), Temudo (2011) and Teeken et al. (2012), farmers regularly exchange and try crop varieties that permit maximizing harvests and improving household welfare.

Similar to what Hill (2000) describes in the Budongo Forest Reserve (Uganda) farmers in Cantanhez also group farms together. This increases the efficiency of guarding activities and decreases the farm-bush edge length. In addition, farmers say that large farms decrease the impact of crop loss because “animals eat, and you can also eat”. In line with this, Naughton-Treves and Treves (2005) also found that larger farms were less likely to be abandoned due to crop loss in their study in Uganda. However, having larger farms appears to be increasingly difficult in Cantanhez due to the limitations imposed on land access (see Chapter 4).

6.3.1.3 From sowing to harvest

During the interviews, non-lethal methods (48.8%, n=778) were mentioned slightly more frequently than lethal methods (43.8%, n=778). Non-lethal strategies have the advantage of requiring less specialised knowledge, as is required for the construction of snares, and are less costly, since there is no need to buy cartridges for shotguns or wires for snares.

Noisy, smelly and visual deterrents

Making noise by shooting, hitting tins, hanging small sheets of zinc that clang together in the wind (Appendix 22), beating on a tree trunk with a machete, whistling, screaming, or merely speaking with colleagues in the field were all reported as ways of chasing or keeping wild animals out of farms. People usually spend the day in their fields and, even if they do not actively guard their farms, being in the farm allows them to intervene if needed. Guarding is required during the development of crops in upland farms from August to October/November, and until January for mangrove rice. Particularly in Cabam, people had to guard both upland farms and mangrove rice fields at the same time. While adults were very often present in the upland farms, children dominated the mangrove rice guarding.

There are also forms of deterring wildlife that do not require one’s presence in the farm. Fires were used to deter nocturnal animals through light and

smell. Scarecrows were not reported but were observed in the fields (Figure, Appendix 23). People chased wildlife away by using different kinds of strong-smelling items left around the farm, such as fruits of *Spondias mombin* (*mandipile*, kl), sweaty clothes, cloths soaked with perfume or gasoline, rotten crabs, burnt oil, goat faeces (only for chasing goats), and hanging the carcass or stomach/intestines of animals that were caught in traps.

Helpers

Repelling or deterring animals from foraging on crops can be achieved by attracting biting ants to the farm (also described by Temudo 1998, Bock 2001). Ants are attracted by scattering different types of foods, such as crabs, animals' entrails, leftovers of roasted maize or remnants of oil-palm fruits around in the farm. Termite damage in farms is diminished by leaving previously-burnt trunks in the farms, as the termites feed on the wood instead of on the rice and maize (also described by Temudo 1998, Bock 2001). A farmer explained that by anointing the fat of a python on one's feet and walking around the farm, animals will be scared away^{lxviii}. This was explained both by the effect of the smell and the magical power of the python (see Chapter 7).

Physical barriers

The interviewees reported different types of barriers, including burnt trunks laid down at the farm edges, different types of fences constructed by people (Appendix 24), or covering ripening banana bunches with a cloth to prevent monkeys from feeding on them (Appendix 23).

Magical prevention

Elders report that, in the past, ceremonies had to be performed to ensure that enough rain would feed the crops. As described by Quintino (my translation 1947):

The elders gathering around a *poilão*⁷⁸ (kl), have decided to appease the *irã* (kl, spirit). (...) once more showing that without the goat's blood and the traditional formulae (...) the *irã* would continue unconcerned with the human suffering. When the ceremony was over (...) clamorous torrents soaked the fields and flooded the mangrove rice fields.

Carreira (1961), also describes blood sacrifices of domestic animals to the spirits to ensure soil fertility and good harvests. Generally, people report to have

⁷⁸ Cotton silk tree, *Ceiba pentandra*.

ceased these ceremonies; however, the slaughtering of domestic animals at the shrines still takes place to appease the spirits. Whether these have a significant role in farming nowadays remains unclear, however, certain ceremonies and magical procedures were reported as methods to prevent animals from feeding on crops. These methods are referred to as healings (*mesinhu*, kl), even when they are used as a prevention. These healings are usually prepared by Islamic healers (*muru*, kl) who ‘work’ with both God and bush spirits (*irã*, kl). Some healings consist of Islamic writings put into bottles and buried in the farms in the early phases of sowing⁷⁹; these are said to prevent wild animals from entering the farm. Some informants said that the Qu’ran advises people to share their crops with animals and a man explained to me how these crop damage healings should be used:

You bury it...but, who does this will be afraid because it is a sin. You can do it but you would not finish all the crops, afterwards you will take it out so that animals can eat as well.^{lxix}

Some people perceive these healings as ineffective, while for the reciprocal logic with the immaterial world based on Spiritism (term defined by Crowley, see Chapter 3) and Animism, using magic power to prevent animals from gaining access to crops is perceived as greedy. At the same time, and in line with the same rationale, an animal taking too much from a farm is also perceived as expropriation. In the Boé, farmers sow some hands of rice as *simola*⁸⁰ that is planted before the rice crop. *Simola* is an offering to the supernatural, and birds (or other wildlife) eating the rice is equivalent to a gift the farmer provides to the bush spirits or to God as a form of acknowledgment. A similar ceremony was reported by the Balanta who give *bianda di liti* (cooked rice with milk) to the spirits at the *baloba* (altar) as a way of asking not to have bird damage^{lxx}. To give away ensures a future good to be received, and this is extended to other aspects of social life. Reciprocal arrangements among people are similar to those a farmer establishes with the spirits, and giving is a way of ensuring good harvests.

There is a considerable variety of Islamic rituals reported to keep wild animals away. Sand can be “prepared” through Islamic prayers and spread around the field, or a “prepared” cloth can be tied on the farm at a specific place advised by the healer. A handful of rice seeds can be “prepared” by washing them with the water used to clean the ink from a wooden board where a specific Islamic text was

⁷⁹ A farmer was charged 5000 XOF plus 750 XOF that had to be given to the church (Nalu man, Cabam, 19.12.2010, Cm3).

⁸⁰ *Simola*, means as offering given away to animals, spirits or people.

written^{lxxi}. Some Islamic healers were reported as able to “tie the mouth”, meaning block the capacity of animals to feed on crops even if they come into the farm. This was reported for bush pig, porcupine and cane rat. Another method used to control cane rat damage is to mix cane rat faeces with a healing prepared by a *mur* and then put it on the farm^{lxxii}. In the majority of cases, the healer is paid in rice if the healing succeeds, although others require a monetary payment prior to the harvest.

Chemicals

Double-spurred francolin⁸¹, doves and pigeons⁸² were reportedly controlled using a chemical product⁸³ that is added to grains of rice scattered in the field during sowing. The birds that eat those grains die. Together with this remedy brought by traders, people also used a poisonous mix of natural herbs that includes the bark of *Erythrophleum suaveolens*⁸⁴ (*teli*, po) that is prepared with *netetu*⁸⁵ (po, prepared fruits of *Parkia biglobosa*) to kill cane rats. People also have informally described using tobacco powder inside a papaya to make the chimpanzees feel dizzy (Sousa 2007) and sick, which discourages them from feeding on papaya fruits.

Shooting and hunting

Guinean Kriol distinguishes ‘hunting’ (*montea*, kl), which means looking for prey to kill (with a gun or a stick), from ‘shooting’ (*fuguea*, kl), which corresponds solely to the act of shooting. Hunting requires a planned strategy for killing, while shooting may result only in threatening, injuring and/or killing. In data analysis, both ‘hunting’ and ‘shooting’ were considered lethal methods, except when the interviewee reported that shooting was used for chasing away.

Hunting to defend crops may benefit the farmer by providing meat, although this is not always the case. Where the owner of the field does not have access to a shotgun and/or does not know how to shoot, he/she can ask hunters to kill a particular species in their farm. In this situation, the owner of the field does not benefit from the meat, since the cartridge is provided by the hunter, and so the prey is considered his. Both parties may agree that the owner of the field buys the

⁸¹ *Francolinus bicalcaratus*

⁸² *Columba* sp, *Oena* sp, *Pterocles* sp. *Stigmatopelia* sp., *Streptopelia* sp., *Treron* sp., *Turtur* sp.. Genus of Columbidae described for Guinea-Bissau by the IUCN Red List 2013.

⁸³ This can be bought from the small traders (*djilas*, kl) for 1,000 XOF (Nalu woman, Cabam, CF3).

⁸⁴ Tree species of dense forest, open forest and woodland savannah (Catarino et al. 2006).

⁸⁵ The *netetu* is also used by people as a food flavouring.

cartridge and the hunter gives half of the catch to the farmer and/or agrees to sell him/her the meat. In many cases, there is no consumption of meat by the person demanding lethal control, and therefore the killing of the animal is perceived as a benefit in itself. Some species, such as baboons, are reported to have decreased in numbers: “the way we shot baboons made them decrease in number. (...) But the way baboons used to damage our crops... that’s why we hunted them”^{lxxiii}. Baboons were described as abundant in southern Guinea-Bissau in the recent past (Ferreira 1973:145-146); however, both killing to defend crops and the bushmeat trade from rural areas to the capital (Ferreira da Silva 2012, Sá* et al. 2012), have contributed to a decrease in the number of baboons.

Non-edible animal species, such as chimpanzees, require another type of forethought and calculation regarding suitable control methods. Farmers struggle to control animals foraging on banana and orange without the use of rifles. Reportedly, shooting is used for chasing chimpanzees away and is perceived to prevent them from revisiting the orchard anytime soon: “it takes 3 or 4 days for them to come back”^{lxxiv}. However, each time a farmer shoots to chase away chimpanzees it corresponds with the expense of 300-350 XOF per cartridge, which is equivalent to 1-1.5 kg of rice, with no benefit in terms of food or cash. The only advantage of scaring, injuring or killing chimpanzees is a mid-term deterrent effect. When one individual is injured or killed it takes longer for the others to come back, some farmers say. Killing a chimpanzee means undertaking a behaviour locally perceived as immoral and wasteful since people do not eat it, however it does not result in any local punishment.

One day in December 2009, we heard chimpanzees and decided to follow their vocalisations. I wrote the following note:

It was around midday, the chimpanzees were up in trees in an orchard of oranges close by the compounds of a village. At 12.20 pm, we heard a farmer shooting. There was no sign of any injured chimpanzee. Another group vocalised from further down. A male came silently towards us, walking away from the orchard, and did not see us.

While spending cartridges on chimpanzees is costly to the farmer, it may well be worth it. According to my informants, an orange tree may bear 2-3 bags of fruits and each bag can be sold for 2,500-7,000 (see Chapter 4), which totals 5,000-21,000 per tree. Considering that chimpanzees eat all the oranges in a tree that has not been guarded in 3-4 days^{lxxv}, there is a considerable risk of loss.

Whenever the topics of crop loss and control methods were approached during interviews and informal talks, people mentioned the constraints they face:

Now they [local NGO/park] told us not to shoot buffalo or chimpanzee. (...) We, the people, promised to stop killing those species because they have controllers. (...) It is said that if we kill them... the land does not develop... it is said that before the buffalo would come close to the house but since people started to shoot them they stop coming close to villages. But, in my orchard, if I see a buffalo and I have a gun I will kill it. No chance.^{lxxvi}

During a conversation with a farmer, in response to my question about the way he controls baboon damage in cassava, he told me:

Do you know why we do not talk about that?... the State does not allow us to use snares. (...) They say the animals run away. That is why... we keep on doing it, but we hide^{lxxvii}

While setting nature conservation regulations might have made Cantanhez a safer environment for certain wild species, it has made it riskier for farmers.

Snares and traps

Snares built with rope by children and youngsters are used to catch small birds, squirrels, monkeys, northern giant pouched rats (*Cricetomys gambianus*) and cane rats. Whenever small mammals are caught, children roast and eat them on the farms and these are considered “children’s food”. Guarding the farms provides a supplement to nutrition while hunting techniques are improved (Appendices 25-27).

Other kinds of snares are built with wires from old bicycle brakes and are mainly set by youths and adults. These snares are used to catch larger species, such as porcupines, bushbucks, yellow-backed duiker (*Cephalophus silvicultor*) and bush pigs. Although other species, such as chimpanzee, monkeys, baboon, aardvark⁸⁶, and giant ground pangolin⁸⁷, are not targeted as often in these snares, they can also be accidentally caught. There are two variants of this kind of snare: those that catch the prey by the neck, and those that catch the prey by the leg. Old fishing nets and holes hidden under branches are also used as traps, especially for cane rats that are “short legged”, as farmers say. Another strategy to catch cane rats is to trap them by letting a heavy trunk fall on them^{lxxviii}.

Youths prepare traps for the bush pig and it is socially acceptable for young Muslims to eat and sell pork meat. But becoming an adult means starting to fulfil Islam’s requirements, or at least, this is morally expected. An elder explains, “Back in the time I used to eat pork meat but I stopped. Now I just give it to

⁸⁶ *Orycteropus afer*

⁸⁷ *Smutsia gigantea*

people, I do not sell it anymore^{1xxix}. Youths have contact with people who buy pork meat and they sell it for a wide variety of goals (travelling, parties, clothes, school fees, notebooks and cigarettes, among others). Although many people consider it as acceptable for a youth to misbehave regarding religious interdictions, adult and respectful Muslims should not drink alcohol or eat pork, monkey or baboon. These prohibitions are associated with Islam, whereas the prohibition against the consumption of chimpanzee meat was reported as a “thing of the land” and prior to Islamisation (see Chapter 7).

Hunting an edible animal or shooting an animal that one does not eat is an outcome of distinct contexts and goals. Hunting can be a source of meat and/or cash and an efficient solution for an animal damaging crops. Decisions about whether to apply lethal or non-lethal methods in response to crop damage by animal species regarded as inedible depend on individual skills, economic means, and the availability of children or teenage labour, or it may simply result from a sentiment of rage and injustice.

Networks of support

When control methods set in the farm fail, or when the household is surprised by any other kind of misfortune, people cope with the effects of crop loss by means of both “individualist self-insurance” and “social reciprocity between households” (Naughton-Treves and Treves 2005:257). Individualist strategies are often enacted, such as reducing meals, selling domestic animals or taking up daily-wage work. A clear example of a social insurance against risk happened in Cabam where many villagers assisted a household that was unable to farm that year because the household head, Amadu, the only man in the household, stayed for a long time at the hospital with his daughter, who eventually died there. People gathered and carved a large *Ceiba pentandra* into a canoe that Amadu could use to transport and be paid in rice, as a strategy to purchase food (see Appendix 28). No one was paid for building the canoe.

6.3.1.4 Animals in farms: perceptions of control

The effect of all invertebrates, and in particular that of fruit flies, longhorn beetle, and crop diseases, was often reported as uncontrolled, meaning that after testing all kinds of local methods, farmers were not satisfied with the level of control they had achieved. The crop foraging activity of cane rat, chimpanzee, squirrel, monkey, bird, termites and porcupine were also reported as demanding

considerable efforts in testing various types of methods, all with limited success. For these and other species, specific control methods were often described as effective or ineffective for specific circumstances (Table 25).

Table 26- Perceived effectiveness of control methods.

Species	Perceived as effective		Perceived as ineffective	
	Method	n	Method	n
All invertebrates	-	-	all methods*	17
			healings	1
Fruit fly	-	-	all methods	13
Longhorn beetle	-	-	all methods	4
Banana disease	-	-	all methods	4
Cane rat	snare	4	all methods	19
	shooting	3	-	-
	healings	3	healings	4
	attracting ants	5	-	-
	nets as snares	1		
	poisonous mix	4		
	fencing	3		
vegetation clearing	2			
Chimpanzee	shooting	4	all methods	12
	-	-	vegetation clearing	1
Squirrel	-	-	all methods	9
Monkey	healings	1	all methods	6
	vegetation clearing	2		
Bird	-	-	all methods	6
			healings	3
Termite	-	-	all methods	5
Porcupine	snare	4	all methods	4
	shooting	2	-	-
	vegetation clearing	3		
Bush pig	snare	9	all methods	3
	shooting	4		
	healings	2	healings	2
	smelly deterrents	4	-	-
Baboon	vegetation clearing	2	-	-

*“All methods” (third column) refers to animals to which all methods named by a participant were described as ineffective.

For some farmers, guarding is portrayed as a very demanding strategy to control rice damage by birds: “if I do not arrive to the farm before they do, even if it is only once... no... they will eat it, *fep*^{88,klxxx}. Guarding demands time and discipline, and for species like the chimpanzee it also demands “courage”, according to farmers. While a few reports outline some positive control, others reveal farmers’ vulnerability:

⁸⁸ kl, Interjection used to highlight the meaning of something finishing or vanishing very quickly.

If you decide to guard the orchard from chimpanzees... you cannot go home during the day, only at night. A sling-shot can chase them away but if chimpanzees find a place to eat, guarding does not deter them, if you sit here the chimpanzee sits in the limit of the forest and waits. Once you turn away for a moment, the chimpanzee damages and goes back, you see?^{lxxxix} (a man in Cabam)

I try to chase chimpanzees but if they arrive before me, there is nothing I can do. They resist and can be aggressive to people. I have no courage to face a chimpanzee. I stay and watch the chimpanzees eating the fruit^{lxxxii} (a man in Macubé)

Chimpanzee is a person. Some people shoot at chimpanzees, but they do not like to be shot, if you do it, they may well become your enemies, and can stand in your way. In this period [January-March] that they do not have enough food, if you find them in the orchard you can fight but they will not go away^{lxxxiii} (a man in Macubé)

If I have a sling-shot in my hand, I put some stones in it, you'll hear *pau*, the chimpanzee will rush to go away!^{lxxxiv} (a woman in the Boé)

I came from the well, the chimpanzees were there to get papaya, I chased them away... But they did not go far, they went away for a bit and then they sit (...) Chimpanzees are not afraid of women^{lxxxv} (a woman in Camcoiã)

Chimpanzee damages whatever he wants, when he is finished, he goes away. When I go there, I'm afraid. How can I chase them? Would you have the courage? I don't!^{lxxxvi} (a woman in Cabam)

If a chimpanzee feels hungry he will try to fool you (...) He will charge at you to fool you so that you will go away. If you do not have a stiff heart, you will run away^{lxxxvii} (a man in Cabam)

Both women and men say that chimpanzees are not as afraid of women as they are of men. However, both men and women admit to being afraid of this species. In addition, people report a change in the behaviour of chimpanzees after the nature conservation programmes: “now he is shameless because he is protected; now he is famous and fearless”^{lxxxviii}. Moreover, many chasing methods do not seem to work because chimpanzees “know how to wait” and “if they want they will get it”. Therefore, successfully guarding against chimpanzees means that the household needs at least one person available and able to chase chimpanzees for long periods when tree fruits are ripening. This might explain the reason that most oranges trees are planted close to the compounds.

There is no consensus on the best methods of cane rat control. One farmer says, “To decrease damage by cane rat, I have to go out at night to hunt them. In a good night I can kill three or four”^{lxxxix}. Another farmer says that it is dangerous to

hunt cane rat because they walk side by side with pythons and “python is an *irā* [kl, bush spirit]^{xc} (see Chapters 8). Another farmer explains that this is only because regular pythons follow cane rats to feed on their offspring^{xc1}. Five farmers say that attracting ants into the croplands effectively deters cane rats, while one says that using nets as snares is the only effective strategy. The poisonous mix of *Erythrophleum suaveolens*⁸⁹ and prepared *Parkia biglobosa* was reported to successfully reduce the crop feeding activity of cane rat. For other farmers, the only strategy to prevent cane rats from feeding on crops is to fence the farms on all sides. A farmer referring to magic procedures to control cane rat damage says, “Before it used to work for cane rats but now even if you do it they are so many that they will always damage^{xcii}”.

Islamic healings were reported to be effective against some species and ineffective against others, and it probably depends on individual beliefs. A farmer argues that Islamic healers “fool people for money, nothing of that works and that is why I only trust in God^{xciii}”. Additionally, the cooked rice with milk given to the spirits to prevent bird damage in mangrove rice is described by an elder woman as “things of the past^{xciv}”, while a young man says that he still performs it.

Some crop foraging activities were perceived to be alleviated if some individuals are caught in snares: “If I catch a bush pig in a snare it will cry and the others will run away, whereas if I shoot one, the others will come back more easily^{xcv}”. Effective results were also described, however, when farmers shoot individual animals such as baboons, chimpanzees, cane rats, bush pigs and porcupines. When one individual is shot or injured, or when the group feels threatened, they tend not return to the farm for some time.

People regularly use non-lethal control methods and, at the same time, lethal control methods are perceived as effective against some species. Perceiving a certain method as effective does not mean that it is frequently used, but rather that it is suitable to control certain circumstances of crop loss. Local people felt vulnerable about park policies that ban the use of lethal control methods and limit land access, and therefore the institutions perceived as responsible for these policies are represented in the local perceptions of risk. The next section provides a short historical account of hunting legislation, its internal contradictions, the collisions with local farming strategies, and the differentiation of rights of access to natural resources. From this follows an explanation of how the state and NGOs were added to the network of entities perceived as responsible for wild animals

⁸⁹ This same species is described by Brosselard 1889:139-140 as a having poison that was used in the rituals to identify sorcerers.

today. In this framework of responsibility, claims turn towards the state and NGOs because these are perceived to generate revenue through wildlife, but this revenue does not integrate within the local economy. These institutions, like God or bush spirits, are also recognised as the owners of wildlife, at least in circumstantial narratives.

6.3.2 Regulations on nature: the domestication of risk

6.3.2.1 Hunting in farms

The hunting legislation of 1948, issued under the Portuguese colonial authorities (Official Bulletin 1948) and the first hunting legislation after independence in 1980 (Official Bulletin 1980) both subscribed to a similar classification of wildlife. Species were divided into ‘useful’ and ‘damaging’, and species considered ‘rare’ were ascribed as species to conserve. Chimpanzees, the western black and white colobus, elephants and several antelopes have been protected since the hunting legislation of 1948. At that time, lions, leopards and hyenas, and smaller carnivores such as snakes, crocodiles and birds of prey (except for vultures) were considered to be damaging animals (Official Bulletin 1948). In 1980, only snakes were considered damaging or vermin and were permitted to be hunted freely (Official Bulletin 1980). The status of “damaging” seems to have been more connected to species competing with hunting (like predators) and to popular conceptions of fierce animals, rather than to the status of a certain species as a pest in agricultural terms.

The association of farming and hunting has collided with the legislation throughout the past decades. In 1948, the hunting ban period spanned from 1st August to the 31st of December (Official Bulletin 1948), thus including the growing season of most crops and preventing people from using lethal methods to deter crop damage by wildlife. In 1980, the period of the hunting ban was set from 1st May to the 31st of October (chapter IV, article 14th; Official Bulletin 1980) but still covered the growing period/maturing stage of most food crops. Some contradictions are worthy of note.

The legislation of 1948 prohibits hunting in farms (article 3rd, Official Bulletin 1948). Hunting is envisioned as an activity carried out in the wild⁹⁰ and therefore a practice isolated from farming. However, the same legislation states

that “the owners of farmed land are allowed to destroy, using any means, any animal that damages farms or gardens” should the farmer provide evidence of crop loss by the species (article 25th, Official Bulletin 1948). The same law-by-decree declares that present day Cantanhez National Park is a hunting reserve, and “hunting is prohibited for every animal species” (article 7, 2nd paragraph; article 9). However, again, article 11 states, “the owners of farms (...) can shoot any wildlife responsible for damaging crops, being however in charge of proving it”. This legislation seems to classify hunters and farmers separately; hunters are not allowed to hunt in farms, although farmers can kill animals in farms. A farmer and a hunter appear as distinct characters.

The current legislation on ‘vermin species’, recently approved in 2011, does not grant the farmer the same autonomy that the former legislation used to provide. Instead, people are allowed to “destroy the animals considered harmful, without any exception, making use of legal methods and always under supervision of the concerned institutions [state institutions]” (Official Bulletin 2011c:9). Nowadays the state is in charge of controlling what methods to adopt towards wild animals and therefore local people’s views in Cantanhez about who is responsible for wild animals is not an abusive interpretation of the legislation.

6.3.2.2 Different hunting rights for different ‘kinds’ of people

The hunting legislation of 1948 allowed indigenous people to hunt with guns with a maximum gauge of 12 and they had to be in possession of a hunting license, which formally would make local hunters dependent on colonial administrative procedures. Otherwise, the “natives” would be “punished with three years of arrest, forced work, and the gun confiscated”. Local people were allowed to hunt without a license if they met the following norms: (i) to hunt outside reserved areas, (ii) to target animal species that were not under protection, and (iii) to employ hunting techniques considered as *gentílicos* (from the Portuguese ‘*gentio*’, which means pagans and rabble) such as assegais, spears, holes and snares (Official Bulletin 1948). To a certain extent, colonial hunting legislation promoted the use of snares, which were seen as worthless by the authorities and therefore proper for the uncivilised natives, instead of guns, which were considered a more noble means for hunting. This shows that the concerns over wildlife management appear as an extension of one of the greatest struggles of the empire: to distinguish

the colonial master from the natives, so that the former had legitimacy to “civilise the natives” (Mendy 2003) and continue the colonial endeavour.

The latest hunting legislation of 2004 does not make the same distinctions that the previous legislation did. Instead, it privileges local communities at the expense of migrant communities: “in the hunting areas hunting activities are allowed for both nationals and immigrants, but the management plan should protect an area reserved to the locals” (article 25 5th paragraph) (Official Bulletin 2004:132). The same policy of privileging locals over migrants appears in relation to access to forest land for swidden farming (see Chapter 4). This time, the concerns of wildlife management are historically embedded in a major concern of contemporary governments, that of controlling migration of the poorer. Again, legislation about hunting rights mirrors the dominant concerns and ideology of global governance.

6.3.2.3 Herding wild animals

During interviews, people explained the occurrence of damage in different ways. In Islam, God is responsible for wild animals and their actions are God’s responsibility, therefore, crop loss happens according to God’s will. In Spiritism (as defined by Crowley 1990) and Animism, bush spirits are responsible for wild animals – “bush animals are bush spirits’ goats”, as a farmer said. Bush animals eating crops is thus a condition imposed on people using the bush to farm and several times I was told, “we all have to eat”. Furthermore, bush animals can be messengers of spirits or can be the bush spirits themselves, and care should be taken to ensure that the animal hunted is a mundane and physical animal, and not a spirit shape-shifted into an animal that has appeared to punish excessive consumption of resources (see Chapter 7). Reciprocal arrangements with the bush spirits were accounted for by libations and slaughtering of domestic animals in the bush shrines; likewise, founding lineages could manage the access of wild animals, land, oil-palm fruits and other fortunes. Since the 1990s, and with the introduction of conservation programmes, the state/NGO (the park) also became perceived as responsible for wild animals. These three institutions – Islam, Spiritism and the park – do not necessarily threaten each other as systems of understanding nature, people’s place in nature, or people’s access to nature. However, the state/NGOs are perceived in particular terms as they are seen as receiving income from wild animals through nature conservation programs. These institutions do not integrate with the local networks of reciprocity, but impose strict conditions on resources

use. In this scheme, bush animals are seen as herds belonging to greedy and exclusionary institutions, i.e., the state, NGOs and/or conservationists, that are perceived to demand too much and share too little.

In Uganda, issues of crop damage by domestic animals are taken to the village committee and either the owner of the animal has to pay for the damage or the animal is sold to compensate the aggrieved farmer (Hill 2005c). I recorded similar agreements in Cantanhez. In early 2011 in Cabam, the youths' association decided to grow sweet potato. They were aware that the Balanta neighbours were leaving their cattle unattended and they asked them to look after their animals. Notwithstanding this request, youths prepared traps to catch the cattle if they visited the field. This would oblige the owner to pay for the damage caused by the cattle or to agree to kill the animal(s) and share the meat with the owner of the farm. Selling their share of meat would allow the association to gather funds. The cattle caused great damage in the potato field but did not fall into the traps. The case was taken to the village committee who called the owner of the cattle. The owner never answered the call and the village elders asked the youngsters to 'forgive' (*sufri*, kl) the owner of the cattle (21.03.2011). Again, in December 2011, the same cattle damaged the groundnut and the beans of a family. The committee tried to intercede by asking the Balanta people to pay a fine of 25,000 XOF in exchange for the cow that had been caught in the farms, and the fine was paid (12.12.2011). When a person owns cattle and receives benefits from it and their animal damages other people's goods, the owner is in charge of compensating the injured party. Catching the animals owned by the person in charge of paying for the damage is perceived as an effective pressure for forcing one to comply with his/her responsibility.

Damage by 'someone else's' animals can align with broader issues and feed local tensions, as seen in one example provided by Nalu participants. During the period in which Kumba Yala was in charge of the government, damage by cattle was a harsher problem than it is today.

Cattle used to eat people's rice; there was no justice in the land. The Nalu people asked in the bush shrines for the cattle of the Balanta people to become sick and a disease started to kill the cattle^{xvii}.

In this narrative, justice is achieved by punishing the owners of the cattle who refused to compensate farmers for episodes of crop damage. Damage by cattle, when aligned with other social tensions and/or non-reciprocal interactions, can escalate into conflict. There is no reason to assume that wild animals, once

perceived as property, could not be involved in the same kind of social tension and conflict.

The chimpanzee is frequently domesticated in political narratives since it is used in claims for crop loss compensation from the state, NGOs, and from local people perceived to receive benefits from conservation (see also Chapter 7). A local tourist guide explained in a meeting:

Each day we are having fights with people of our own community. (...) If I say, 'Do not harass chimpanzees', people say, 'Give me [a share]'. They fight against you, and we are afraid of that.

All individuals perceived to benefit from wild animals are taken as responsible for them. Another local tourist guide reports:

The community accosts us because of the animals. They say 'This year we do not have anything to eat because the chimpanzee damaged our cashew'.

Tourist guides are paid to go with the tourists to the forests and they perceive this as a payment for a service. Local people perceive it as a benefit that should be shared locally since conservation of forests and chimpanzees is a burden to all people. Community members working for conservation are seen as potential vehicles for a more participative consumption of the income generated by nature conservation. A young Nalu man argues:

Well, the park could be good thing because if my friend becomes a park employee and he receives a salary there, I will benefit because we all eat together... Therefore I cannot say that I did not 'eat' the park's money. When I eat rice, I am 'eating' it. If he buys tea, I will 'drink' the park's money. If I do not have money I can ask him, and he can lend it to me as a friend. Then, I cannot say I did not eat it.

In discussions that go beyond the local contexts of everyday life where perceived benefits are negotiated among local people, the critical views about nature conservation deviate towards larger institutions. In a farmers' meeting, a participant said that the tourists pay fees to be hosted by the eco-hotel built by the local NGO inside Cantanhez National Park, and reported the amount of money that tourists paid to the local hotel. From 23 October 2010 to 4th January 2011, 1.260.000 XOF was transferred to the hotel from the local NGO. People claim this money is generated by the park, and therefore by the forests and wildlife that

people have preserved. Several local farmers present at the meeting claimed access to this fund and to its management. In one of the last meetings I attended in Cantanhez, farmers decided to go to the regional administration to claim “their rights to development” because they felt the NGO had done nothing to respond to their claims. Considering the possibility that the local government would not responding either, a farmer expressed his discontent and suggested a denial of the functional structures of the modern state:

They put us side by side with animals, as if we do not know anything about anything. They denied us road, they denied us the forest. We will deny elections and population census campaigns. (10.12.2011)

Opinions and positions assumed by local people in the local political landscape result from calculations of the individual and/or collective benefits and costs of conservation-related policies. These calculations link crop damage to politically situated views about governance, in particular the role of NGOs and the state. An encounter between a farmer and a wild animal foraging on crops, particularly if this animal is a chimpanzee, goes beyond calculations of crop loss – it is representative of narratives of risk, which are on the one hand the threats to species survival and on the other hand threats to people’s welfare and expectations.

6.4 Discussion

The social and ecological components of nature conservation are portrayed in conflicting narratives about risk. Different people, particularly farmers and conservationists, have access to different means with which to argue about risks. It is important to debate the risk of species extinction, but it is crucial to consider the risks that nature conservation represents to local livelihoods.

Risks of crop loss are broader and more intricate than is revealed by the quantitative analysis drawn in the first part of this chapter. Quantitative approaches are limited by the immediate interpretation that interviewees have of the interviewing context. Asking about crop loss drives the respondent to the most immediate reply, which in this case is crop damage in farms. However, risk of crop loss includes climate conditions, land and labour availability (see Chapter 4), diseases, prohibitions in hunting legislation, and wildlife foraging. Moreover, perceptions of risk are not only connected with the risk of crop loss, as wildlife is also included in symbolic narratives of conflict that are more intertwined in affairs among people than they are connected to the physical interactions between humans and animals.

6.4.1 Animal species: control and risk

People use a wide variety of methods to anticipate and pre-empt harvest losses, which are part of farm planning. Farmers' strategies to avoid and mitigate crop damage are diverse and depend on the labour of youths, economic means, and farmers' skills, knowledge and beliefs. Guarding, chasing, trapping and shooting as methods to deter wildlife were referred to by many people. The first two are often applied towards diurnal wildlife, while the latter two are more often applicable to nocturnal species.

Guarding is the most broadly used control method. It is considered a method that does not prevent animals from feeding on the crops, but it is widely adopted as a mitigation method to limit harsher losses. This strategy is time consuming for both children and adults, particularly for children attending school. It is the first, the cheapest and the most general strategy to control wild animals.

Men are keener to hunt and adopt techniques to control nocturnal crop foragers and this legitimises their place as household heads. As in Sulawesi (Indonesia) (Priston 2005), women in Cantanhez were reported to focus mainly on non-lethal deterrent methods. Women's crops (see Chapter 4) are generally controlled without the use of guns or snares. In this way, women do not depend on hunters or men for growing crops required for local consumption and local trade, or which are sources of cash (see Chapter 4).

The cane rat was frequently described as the worst crop forager (see Chapter 5). Indeed, as in East Africa (Fiedler and FAO/UN 1994), people in Cantanhez have tried several methods to control it but the cane rat remains a very significant crop forager. Some farmers perceive lethal techniques as effective when they are able to annihilate the problematic animals and at the same time discourage others from approaching the farms. This was mainly described in reference to porcupines and bush pigs, and much less frequently and with less emphasis for chimpanzees. People did not report lethal control methods against chimpanzees as much as against baboons or monkeys, mainly because chimpanzees are not edible and are implicated in cultural taboos. The place of the chimpanzee in local cosmologies as a human-like animal discourages the use of lethal methods. However, chimpanzee crop forays could be perceived as robbery, which is very serious since even people can be heavily punished or injured for robberies.

Controlling crop loss by making use of lethal methods provides meat for consumption and/or sale. However, this benefit is not the main cause for adopting lethal methods, as farmers seek the destruction of a particular animal without

having access to the meat. These contexts present challenges for new disciplines such as ethnoprimateology. Drawing from Fuentes (2010:618-619), if human-wildlife interactions are seen as “mutual physiologies, ecologies, social-experiential contexts”, then what is the place of lethal control methods in this “being with other beings”?

6.4.2 A fork in the road of conservation: compensation or sharing

Peterson et al. (2010) challenge the notion of human-wildlife conflict and highlight that “human-human conflict is the primary type of conflict being labelled as human-wildlife conflict” (:79). My informants feel insecure regarding access to land (see Chapters 3 and 4) and regulations on hunting, which have both increased the sense of not being in control of some wildlife. In Cantanhez, the chimpanzee is entangled in argumentative narratives about risks, portrayed by both conservationists and by farmers, and a conflict between these factions is also putting this species at risk.

Constraints on land access will probably lead to smaller farm sizes, which also means that people will have to rely on smaller harvests and will thus be more vulnerable to loss, which tends to decrease tolerance of crop foraging (Webber 2006). Using the notion by Cutter (1996:529), the policy of the park has increased the “social vulnerability” to crop loss by imposing limitations to land access and to the use of hunting as a control strategy. As Douglas and Wildavsky (1983:17) argue that once people are “increasingly deprived of control over their own lives (...) their sense of outrage at involuntary risks will naturally grow more intense. It is difficult to guess what the future holds regarding nature conservation and human-wildlife interactions in Guinea-Bissau; what remains clear is that the interactions among humans matter to the human-wildlife interactions in protected areas (see also Chapter 1).

Natural elements, such as forests and land, are part of local people’s livelihoods; they provide food resources and are central to the production of most goods. At the same time, and since conservation programmes started, these natural elements are perceived as serving goals beyond local livelihoods, namely the goals of conservationists who receive advantage from wildlife through conservation projects. Within this perspective of nature conservation, the description by White et al. (2012:622) is appropriate:

Local producers, distance consumers and many other agents linked in these [commodity] chains all claim a share of the ‘added value’ at various points in the chain, and their inclusion or exclusion and the strength of their claims are highly influenced by the exercise of power at various levels.

If nature conservation is considered a commodity produced by local nature-society settings and consumed locally and abroad in the form of resources, then patrimony, institutional and academic careers, knowledge and leisure are all conservation processes and fundamentally comprise a chain of actors who negotiate costs and benefits (see also Adams and Infield 2003). It should be stressed that this does not correspond to the “commoditisation of nature”, as advocated by several scholars (Escobar 1996; Kohler 2000; Igoe and Brockington 2007) but it surely coheres to the commoditisation of nature conservation.

The reports of the interviewees about nature conservation have been interpreted as a portrayal of a socially asymmetric and increasingly segmented landscape. Local people talk mainly about people’s issues when they address nature conservation. People’s acceptance of the park is not based on environmental concerns, but on social and economic ones. As many people’s expectations about the park fail to be fulfilled, they complain to whoever is perceived to be earning benefits from nature conservation, be they black or white, locals or foreigners. These claims are essentially social claims for equal shares, since people feel trapped in a series of risks which had been accepted by community leaders in the past (see Chapter 3), but which became highly controversial over the passage of time.

After the introduction of conservation policies, particular wildlife species were extracted from the local cosmological schemes and acquired additional meanings associated with international goals. The animism or Islam-animist understandings of wild animals allowed for a certain naturalisation of crop loss which was rooted in reciprocal relations with the immaterial world. What was previously considered as natural in the sense of being part of a cosmos became social and individual and “thereby held to be accountable and subject to decisions, and are so judged and condemned” (Beck 1992:30). The new owners of wildlife – who do not participate in the local networks of reciprocity – will probably become more frequently addressed in local people’s claims for social equality in conservation, which can also be seen as an invitation to integrate their local frameworks of sharing. In Cantanhez, nature conservation institutions are being

pushed to compensate for crop loss or to share conservation benefits, and this seems worthy of discussion with local farmers.

Unravelling the different interpretations of crop losses inflicted by wild animals and achieving a consensus about the legitimacy for controlling wild animals in protected areas would mean that the transcultural issue of people's relationship with nature would have been resolved. The concept of nature is not the same for everyone. In the legislation, nature is portrayed as a discursive extension of the state, which tends to mimic international understandings of nature. Nevertheless, people living at the margins of the networks of centralised power have found ways of reproducing understandings of nature that do not match those institutionalised by the state. In this chapter, the park has removed crop damage by chimpanzees from its natural settings and local people has been used nature as a bargaining chip by for pushing the state and NGOs to share the benefits from conservation. From the interviewees' reports and participant observation, I interpret the park as a synonym of isolation and backwardness, and its wild animals as herds owned by the state and NGOs. The following chapter discusses the cosmological representations of wild animals, particularly chimpanzees, and their connections to nature conservation and the local morality of sharing. This leads to unfolding the deeper symbolism of chimpanzees and other animals, and their social significance.

7. People, animals and 'animals'

“Animal characteristics can be mythic or scientific.
But we are not interested in characteristics; what interests us are modes of
expansion, propagation, occupation, contagion, peopling”
(Deleuze and Guattari 1987:239)

7.1 Introduction

7.1.1 Cosmological entanglement

The previous two chapters have devoted considerable attention to the physical interactions between wildlife and people, and indeed these are inescapable consequences of people and wild animals sharing the same forest-farm landscape. Conceptions of nature are socially constructed (Descola 1996) and largely structured by one's social world (Thayer 1983). Human-wildlife encounters, particularly those perceived as uncommon or transgressive, are interpreted and constructed within circumstantially meaningful narratives. These narratives are flexible, mutable, and often more connected to a people-centred context than to the one of which people and animals share.

Descola (1996:80) has distinguished totemic systems from animist classifications by saying that while in “totemic systems non-humans are treated as signs, in animic systems they are treated as a relation”. For Descola, interactions between humans and non-humans in animism may assume a character of reciprocity, predation or protection regarding exchange of services, souls, food or vitality. According to Halbmayer, in animism all the cosmological elements, including humans, are capable of “communication, mutual understanding and the possibility of transforming into and becoming the Other” (Halbmayer 2012).

In Portuguese Guinea, several authors report descriptions of what was interpreted as totemism among the Nalu, Bijugu (Quintino 1963) and Papel (Quintino 1965). Álvares de Almada reports that the Nalu “have their souls put into animals” and once the animal dies, so does the person. These animals could be lions, leopards, or any other fierce animal (Almada [1594]1964:69). During

colonial times, Mota (1947, Mota 1954) described local animism in the following terms:

The human body includes a more subtle being – the soul – which is susceptible to a temporary separation from the body; everything that exists – animals, plants, minerals, and even human-made objects, all have a soul endowed of similar capacities. (Mota 1947:76, my translation)

Even in strongly humanised places, some animals exist in great abundance as a consequence of being protected by the natives. This is the case of Mandjaco land, where the hyenas multiply freely despite the loss of livestock and human injuries. It is taboo to kill them due to a local superstition of the transmigration of souls. People state that people can transform into hyenas (Mota 1954:188, my translation).

Totemic perspectives, the various forms of animism, and the influence of Islam and Spiritism⁹¹ (see Chapter 3), have all given shape to the syncretic worldview that is nowadays found in Cantanhez. Consequently in this context, and as mentioned by Crandall (2002:293), classificatory systems do not “consist entirely of neat, well-defined categories into which every single natural or social object can unequivocally be placed”. It is also difficult to distinguish Islamic notions from the amalgam of other cosmological visions that define people and witches, God and spirits, mosques and bush shrines, or animals and their multiple social re-creations. As described by Johnson (2009), animist healers (*djambacus*, kl) are locally reported to work with trees, while Islamic healers (*murū*, kl) are said to work with God. However, this difference is seldom found in practice as they both use a wide array of techniques and notions that overlap substantially. The blurred boundaries and multiple connections between beliefs and practices are evident in the difficulty of defining and delineating them. Terms like magic and miracle (Shanafelt 2004), occult, enchantment, ultra-natural and non-human worlds all partially overlap in meaning.

⁹¹ Term presented by Crowley (1990) as a regional cosmological paradigm and decentralised practice based on bush spirits, shrines and initiation ceremonies, which have political, religious and landscape significance (see Chapter 3).

7.1.2 The ambiguity of witchcraft

“Why should the rains fall or be abundant *now* for *us*?
 Why should *my* kinsman and not another have fallen from the tree?
 Why should one man and his wives enjoy prosperity while neighbours sicken and lose their
 children?”
 (Forde 1954:xi)

Among all the various interactions with the immaterial world, probably the most accessible to people is witchcraft. One does not need to be recognised as a seer⁹² to talk about another person being a witch, and everyone can speak about the reasoning of a certain event and create an episode of witchcraft. Discourses of witchcraft are able to produce ever-new meanings (Fisiy and Geschiere 2001), and these can assume so many different forms that authors find it difficult to distinguish between witchcraft and sorcery (Moore and Sanders 2001, Kapferer 2002). For Douglas (1967), the only clear distinction among the two is that witchcraft is enacted through internal magic powers, while sorcery employs external sources of magic forces. For Moore and Sanders (2001), witchcraft is an innate mystical power, while sorcery is generally evil magic consciously practised against others. The practice and function of witchcraft are situated in cloudy realms, and so is its definition.

Several studies have reported an increase in the sorcery accusations and witch-cleansing, explained by Comaroff and Comaroff (1999) as a result of expanding “occult economies”. In this understanding, such accusations appear as metaphorical analyses of exploitation and inequality of entrepreneurs turning people into working zombies, for instance. Douglas (1970) describes witchcraft as more likely to occur in small scale societies with competing social roles. Others highlight the historical meaningfulness of witchcraft, namely in the context of the transatlantic slave trade where people in what is now Sierra Leone saw Europeans as cannibals, while Europeans perceived Sierra Leoneans as consumers of children’s flesh (Shaw 2001). The same reasoning may be extended to the present when the world sends money to the poor and the “big men” accumulate it and consume it, which leaves the rural poor with a feeling of having been predated upon (Shaw 2001). Despite the various contexts, witchcraft connects to consumption, accumulation and predation. It can be a moral shield against socio-

⁹² People having magical abilities that enable them to see and communication with the spirits.

economic change (Moore and Sanders 2001), an indication of disruption and confrontation (Comaroff and Comaroff 1999), or potentially serve both purposes.

This chapter is divided into three main sections. It starts by showing that Spiritism in Cantanhez allows its paradigms to be articulated with modernity, resulting in hybrid Islamic-Spiritistic understandings of the world. Similarly, local epistemologies of witchcraft coexist with Spiritism and Islam; both embrace it, recognise its practice and offer strategies to control it. The second part of the chapter, discusses how this affects the social understandings of spirits and people said to shape-shift into “unclean” animals who appear to pursue “village” agendas. The third part of the chapter then explores the political significance of witchcraft, particularly regarding the chimpanzee, which is the flagship species for the Cantanhez National Park.

7.2 Results

7.2.1 Spirits today

Cosmologies are historically-situated and are ever changing structures of thinking and knowledge. As Kapferer said (2002), “the world is modern everywhere” and encompasses “multiple modernities” (Moore and Sanders 2001). In Cantanhez, Spiritism is an unsettled ontology and people re-create it accordingly. Spirits are included not only in the most fundamental elements of people’s existence, such as the access of natural resources (see Chapter 3), but also in other aspects of people’s lives. Spirits are not restricted to the bush and to the elderly. On the contrary, as a youth explained to me, “spirits have villages like people do, spirits go to discos, have helicopters and trucks”.

Every year, young people from different villages organize a football tournament. Whenever an abnormal or incredible football moment happens, an easy ball that slips past the goalkeeper or a ball that suddenly changes direction, it may be understood as sign that players have brought spirits to the pitch. At one of these championships, when the game was over, the fences built around the football field fell down and a young girl fainted. Reportedly, both happened when the spirits left the pitch. A player from the losing team told me he was actually afraid of winning because it is dangerous to play against the spirits of the opposing team’s village. Spirits thus provide explanations for incredible or undesired events; a defeat is not only an outcome of poor play but also a consequence of spirits helping the other team. Accusing the winners of playing with immaterial and powerful

allies also allows both teams' performances to appear similar, and in this context magic minimised differences among people.

Spiritism is not conceptually stable and it should not be regarded as a structure from the past that has been extended into the present. Instead, it is a practice of everyday-life, reproduced and renovated by local people, in local contexts, by local discourses. The immediacy and nearness of Spiritism enable its resistance to Islamic indoctrination. People who have converted to Islam in Guinea-Bissau use hybrid notions of causality to explain the world phenomena. In Cantanhez, the outcome is a rather varied range of syncretic or hybrid beliefs and practices more or less connected to Islam or Spiritism. Local spirits are often reinterpreted in Islam as jinn (Fisher 1985). Often, local Islam portrays the lesser spirits as malevolent characters. I have often heard Muslims, Fula and some Nalu people, saying that the bush spirits are the devil – “*irã i kusa di diabu*” (kl, spirits are something from the devil). A chapter of the Qu'ran (*sura 7*) denigrates the jinn⁹³ (human-like spirits) in the following terms:

We have created for hell many of the jinn and men, they have hearts, with which they do not understand, and they have eyes, with which they do not see, and they have ears with which they do not hear (Ben-Chanan 2007:371).

The jinn are here treated just like people and judged unfavourably for their capacity to “see”. In Spiritism, however, the jinn are powerful and people's capacity to see the jinn signifies their special abilities and assigns them social roles. The way one “sees” and “hears” defines one's capacity to understand the world in the light of a certain religion, and determines the extent of one's influence in its realm.

According to the interviewees, Allah, or God, is great, one, invisible and inaccessible, while the lesser deities, both spirits of the ancestors and spirits of the bush, are more involved in people's aspirations and (mis)fortunes. Some of these deities have, like humans, converted to Islam, while others are “drinkers”. The presence of Muslim spirits in local cosmologies is further evidence of the syncretism of local animism, Spiritism and Islam. For the Nalu, the abandonment of spiritist-animist notions may signify the disintegration of the Nalu homeland as a cosmological and physical territory (see Chapter 3).

⁹³ The Fula people refer to the bush spirits in Puular as *djina* (sing.) or *djinadji* (pl.).

7.2.1 Animals and the immaterial

“Nature later becomes the idiom by which society deals with itself” (Thayer 1983:116)

In the syncretic cosmologies of the Nalu homeland, animals are not exclusively bound to their physical existence. Certain animals are integrated within narratives about interactions with the immaterial world, or are trapped in affairs negotiated among people. These notions are incompatible with the nature-culture division. Although animals have an existence beyond people, their behaviours and attributes mean they are able to interact with people’s lives in highly subjective and symbolic ways.

7.2.1.1 Animals in wooden sculptures

Nalu masks⁹⁴ reveal the symbolic importance of animals and their entanglement with the secrecy of Nalu society (see Chapter 3). Serpents and birds appear stylised in human figures in these sculptures (*benumbé*, *incauelá* in Lampreia 1962; *koni* in Quintino 1964; *banda*, *nimba*, *ntongmone*). The *nimba* and *banda* are probably the most well-known masks (Lampreia 1962, Lamp 1996) described in the Cacine peninsula (see Figure 1 in Chapter 2), while in Cantanhez the *ntongmone* is held by certain lineages. The *banda* mask pictures a serpent or a chameleon⁹⁵, a bird, and a crocodile. For Lampreia (1965) this mask represents a synthesis of the living forms, and binds the humans with the water and the forest. According to Curtis and Sarró (1997) and Quintino (1964:282), the *nimba* headdress depicts “a mixed being, a human figure and an animal-like snout”. Its long breasts have been described as a symbol of motherhood (Curtis and Sarró 1997) or of human and agricultural fertility (Lamp 1986). Lamp (1986) describes the *ntongmone*, or *ninte-kamatchol* as a wooden head resembling a bird with a long beak, and it is said that it is present during initiation ceremonies. Other sculptures show the figures of birds, like the *koni*⁹⁶, which is classified as the image of a hornbill⁹⁷ by Montenegro (2009) and Lamp (1986).

⁹⁴ See photographs of these masks in Lamp (1986, 1996).

⁹⁵ Chameleons are perceived as dangerous because spit dangerous things.

⁹⁶ The *koni* is described as a totemic bird of the Nalu. See Quintino (1965).

⁹⁷ The hornbills described for Guinea-Bissau include *Bucorvus abyssinicus*, *Bycanistes fistulator*, *Bycanistes subcylindricus*, *Ceratogymna elata*, *Tockus fasciatus*, *Tockus nasutus*, *Tropicranus albocristatus* (See IUCN 2013).

There is an animal feature common to several of these masks, namely a crest/casque which finds its symbolic equivalent in the hair/hat/head in people. The crest/casque and its equivalents are meaningful across spirits, animals and people. These features attribute similar properties and establish a connection among characters. Upon examination, the *banda*, *nimba* and *ntnognome* all appear to possess a crest resembling the casque⁹⁸ of the hornbill. In addition, the sculpture *insondje* represents a serpent with a crest (see Quintino 1964:285). Similarly, as described Montenegro (2009), the very large python that gives rise to the dangerous magical creature locally named as *serpenti* or *ningui-nanga* (see Chapter 3) has a crest on top of its head. Seeing this creature without knowing the necessary magic skills is risky, as one may either die or lose all the hair on one's head (Montenegro 2009). The Nalu people regularly offer chickens to the shrines, another crested animal. A Nalu youth reported that “in all contacts with the spirits, we only give chickens”. The presence of a crest is thus associated with a connection to the deities and the immaterial world. In line with this hypothesis, when a chieftain is empowered during a ceremony in the bush, following acceptance by the spirits, the chieftain is given a hat. A Nalu man reported that the hat is magically prepared. Also, when one has magical power, people say that one “has head” (*tene cabessa*, kl). For the Nalu, it seems that the casque-crest-hat-head all reveal the attachment of animals, spirits and people to the magic realm. As is argued throughout this chapter, certain attributes signify equivalence among people, spirits and animals; others, by contrast, are exclusive to certain characters and are regarded as anomalies when out of place. Symbolic attributes divide what is common from what is singular in a process of differential exclusion and proximity across animals and people.

7.2.1.2 Animals as messengers

Animals are not only significant as iconography in sculpture as their behaviours also bear meanings. Particular animal behaviours or vocalizations are taken as calls from bush spirits for people to visit the shrines (bush spirits' altars). Only some people – the “listeners”, who usually are also “seers” (see Chapter 3) – are able to decode the messages sent by spirits through animals. These people's ability to see, hear and decode specific information give them particular roles in society, and one example of this is the second male initiation, *mantchol*. My

⁹⁸ The casque is formed by horny layers of keratin that cover and reinforce the bill and assist in sound production (see Kinnaird and O'Brien 2007).

interviewees report it to have ceased, and only two Nalu men told me that it is still secretly taking place. The *mantchol* is an initiation to the highly exclusive knowledge of the men's secret society during which the men learn a secret language known only to the initiates. This has been described for other secret societies, like the Bulongic people in Guinea-Conakry (Berliner 2005), but to my knowledge it has never been reported for the Nalu of Guinea-Bissau⁹⁹. The secret language allows *mantchol* initiates to communicate among themselves, and their ability to listen to secrecy makes them privileged interlocutors with the animals and the immaterial world. One Nalu elder suggested that any animal is able to send messages; understanding only depends on one's ability to decipher it. The baseline assumption is that typified animal behaviours and language can inform people's lives.

Nalu informants mentioned that the singing of the bird *nsomkbau* is a call from the spirits exhorting the Nalu to go to the shrine. A Nalu elder described it as:

It is an *irã di tchon* [kl, spirit of the land]... if you hear it at night an elder comes out and asks: 'something wrong?', it replies 'chéeu', 'should I go?', 'chéeu'.

If the bird calls once and then stops singing, it is a sign of death.

Interviews reported that another bird, the *massebak* (na, the bird of the Beafada, an ethnic group) warns that a funeral will soon take place. Barn owls¹⁰⁰ (*buguré*, na; *kikia*, kl) can also call people to meet at the shrine.

Unusual behaviours by certain animals also have symbolic meanings. Usually the western green mamba¹⁰¹ (*cacuba*, kl) lives up in the trees, and if it is seen on the ground it means that something will go badly. The same was described for a black snake¹⁰² (*bida*, kl), which mainly lives on the ground: if it is observed in the trees it also means that something bad is going to happen. Also, if for the black and white colobus, is seen on the ground it means "a death will happen before long". Animal behaviours thus carry an underlying message that can be analysed metaphorically.

⁹⁹ I was recording music in Nalu and an old man who had "eaten" *mantchol* sang me a few songs. When I was translating them a young Nalu who had completed *ntchaper*, the first initiation, told me that it was not Nalu, and that he could not understand it; "this is the language of the *mantchol*", he said.

¹⁰⁰ This was reported in southern Cantanhez where savannah prevails over the forests and barn owls are probably common.

¹⁰¹ *Dendroaspis viridis*

¹⁰² This dark coloured snake might correspond to *Lycophidion albomaculatum*, *Lycophidion semicinatum*, *Naja katiensis* and *Natriciteres olivacea*.

Through observation, interpretation and storytelling, people build their knowledge and a relationship with the other living beings living around. In 2007, working in the Quinara region, I saw a black snake eating another black snake. At that time I was with a Guinean man whose sister had died from a snake bite and he was very distressed by the encounter. In 2010, in Cantanhez, I told this story to two Nalu men, and they interpreted it as an explanation of what had happen to my friend's sister. Someone in her family had "eaten" her through witchcraft and therefore the black snakes eating one another were "telling" my friend what had happened, "*kumpanher na kume kumpanher*" (kl, comrade eating comrade). Thus, animals and people do not exist independently of one another, animal behaviour can carry messages about particular episodes in people's lives, and there is an underlying reason why a person might see one thing in animal behaviour and not something else.

Montenegro (2009), in her book *As enxadas do rei*, reports the symbolic meanings of several animal species, and some of these are also observable in Cantanhez. For example, the left front foot of the armadillo is described as having malevolent power that can be used against others. Montenegro says that this magical empowerment of the armadillo is due to its behavioural and aesthetic marginality:

It lives in holes like rodents but does not have hairs as rodents do, has the snout of a pig but eats insects, has breasts, a chameleon's tongue, and is nocturnal and rarely seen (:33, my translation).

Particular animals' behaviours, such as the examples of the black snakes' above, or a combination of animals' attributes, as in the example of the armadillo, are locally portrayed as anomalies. In the words of Mary Douglas (1966), an anomaly is an "element which does not fit a given set of series" (:38). An anomaly is tightly bound to ambiguity since it allows possibilities for interpretation. Douglas defines ambiguity as "a character of statements capable of two interpretations". Every society has found various provisions for dealing with anomaly and ambiguity (Douglas 1966:40). The following section explores local narratives of transgressions that implicate animals and people in ambiguous and anomalous combinations.

7.2.3 Shape-shifting

Animal figures, from insects to great apes, may be made up of more than that which is expected by their physical appearance. According to my informants, the same may apply to trees, plants, light and the wind, and probably everything. There is some physical or behavioural feature that announces that a certain animal is “not simple”, as people say, but an intentional humanised form. There are several possible metamorphoses; for example, spirits can present themselves in the form of a person, and both spirits and people can appear in the form of animals or any other natural element.

Spirits are able to harm or please people through shape-shifting. They can “present themselves [*mostra*, kl] as someone you know and who will do something good for you”. Care is needed however if one meets with certain animals in the bush that show signs of being spirits shape-shifted into animals. It is not wise to kill the leopard or the python if it shows these signs, for instance: “powerful spirits can turn into leopard, crocodile... if a hunter tries to kill these animals... he dies instead”. Spirits shape-shifting into animal figures do not die when shot, but do express suffering. Spirits can also turn into dangerous animals to punish people who abusively consume resources not previously agreed in contracts (see Chapter 3).

Besides spirits, both men and women may shape-shift. People with these abilities can harm other people or escape from a dangerous situation. Cases of the latter were very common during the independence war (see Chapter 3) during which, reportedly, some people could shape-shift into termite’s nests, a tree or even become transparent (*mina*, kl): “there are some men who could not die easily, they were not scared of the war, they could shape-shift into flies, snakes, and anything they wanted”, a Nalu man told me. In Cantanhez, this kind of witchcraft was described as an ability from the past, when people were more magically skilled than today. A similar phenomenon has also been noted by Berliner (2005) in Guinea-Conakry, where people shape-shifting into fierce animals is frequently associated to bad witchcraft, which together with magical shootings, were both reported to have increased.

7.2.3.1 Historic account of the transmigration of souls

The Balanta are known for shape-shifting into crocodiles, the Mandjaco into hyenas, the Fula into hyenas and barn owls, the Beafada into chimpanzees and

hyenas,¹⁰³ and the Nalu into chimpanzees and leopards. The Balanta, who specialise in mangrove rice farming, live by the coast, which is also where crocodiles mostly occur. The Fula people occupy savannah dominated landscapes where barn owls can easily catch their prey. Likewise, chimpanzees are present in the southern area of Guinea-Bissau, at considerable densities in the Beafada (Carvalho et al. 2013, Sousa et al. 2014) and Nalu homeland (Sousa 2009, Sousa et al. 2011), where reports of shape-shifting are also common. In addition, a market seller in Bissau told me that people can shape-shift into vultures, a very common species in the capital. In Cantanhez, people also mentioned other species in reference to shape-shifting, like buffalo, snakes, and even spiders that expel a burning liquid. Therefore, in a given ecology, the physical presence of certain animals, particularly the dreadful ones, provides elements for narratives of shape-shifting. In the end, it seems that ‘magical animals’ make use of their fellow ‘natural animals’ to exist in witchcraft. In Cantanhez, in the past, leopards played an important role in the reports of witchcraft (see Chapter 3), however nowadays shape-shifting narratives mostly refer to chimpanzees, and people also perceive chimpanzees to have increased in number, in contrast to the number of leopards. The following section focuses mainly on people shape-shifting into animal figures for the practice of witchcraft.

7.2.3.2 ‘Eating’ one another: Bad witchcraft

There is an entire politics of becomings-animals,
as well as a politics of sorcery,
which is elaborated in assemblages
that are neither those of the family nor of religion nor of the state
(Deleuze and Guattari 1987:247)

Transforming into animals is often attached to notions of sorcery, *futucerundadi* (kl, sorcery). The sorcerers (*futuserus*, kl) are perceived as people who “eat people in the spell” (*kume pecadur na futiss*, kl) meaning that they are able to kill someone and eat him/her through magic. This is not a literal eating, but a distant symbolic one or “cannibalism at a distance”, as described by Walker (1980:110). However, locally, these sorcerers are locally believed to actually kill people. A sorcerer’s soul can either abandon his/her body, which “stays at home

¹⁰³ A Balanta living in Beafada traditional land told me that “the Beafada people frequently shape-shift into hyenas that sometimes attack the Balantas’ cattle”. People shape-shifting into hyenas to attack cattle has also been described in Tanzania (Dickman 2010).

but does not move”, while the soul enters the body of an animal (*entranda na um limaria*, kl); or the sorcerer’s body is able to physically shape-shift (*bida*, kl) into an animal figure.

The word *futiss* refers to the ability of using magic efficiently. A *futuceru* (kl, witchcraft practitioner) who does not eat people and heals victims of sorcery is not considered *medunhu* (scary), “Those that want to ‘eat’ people... those are *medunhu*”. The two meanings of *futucerundadi* described here indicate a connection to Kapferer’s (2002) distinction of witchcraft from sorcery, the latter being ill-intentioned witchcraft.

My interviewees say there are sorcerers in every village and family, and sorcerers are generally recognised when eating members of their own family. This was described in Cameroon by Fisiy and Geschiere (2001), among the Baga people in Guinea-Conakry by Sarró (2009), and among the Balanta of Enxalé in Guinea-Bissau (Bivar and Temudo 2014). Sarró describes the “ambivalence of the descendent group” as follows:

Belonging to one [group] offers protection and identity to its members, but it can also annihilate them if they do not act in a way conducive to the well-being of the group (Sarró 2009:36).

People describe sorcerers as acting transversely to institutions like kinship, forming close societies of sorcerers. Members of a sorcerer’s society are permanently in debt to one another: “if we eat my child today, you’re obliged to give us your child tomorrow”. Ironically, these societies are as secret as the initiation societies of the Nalu, but while the latter are socially accepted and aim at control witchcraft, the former are considered transgressive and are said to take advantage of the young initiates in the bush. Chapter 3 showed that *mbantchum* (the being of the male initiation) is reported to be responsible for fighting sorcery and protecting the village from lineage’s cannibalism. Sorcerers are a malevolent representation of mutual help systems in which reciprocal arrangements are established between a restrictive and secret circle of consumers of people. Instead of acting for the benefit of a lineage, sorcery consumes a lineage’s members instead, for the benefit of others.

Another type of witchcraft, also perceived as negative, is enacted by “shooting people by magic” (*uaga corte*, kl) at which the Fula are known to be particularly good. People capable of *uaga corte*, “shoot, don’t eat”, but they do kill. These people are also referred to as *futucerus* (sorcerers), but everyone can learn to

uaga corte, “it is like being a hunter”. People generally learn within their own family and can shoot people beyond their family. This seems like a more individualistic and liberal approach to witchcraft, also referred to below.

7.2.4 Political sorcery and negotiating sociability

For my informants all beings were created by God but they are not equally capable; God provides abilities to certain people that are not shared by others. The ‘seers’ are able to see and communicate with the spirits, the ‘listeners’ are able to understand messages from the spirits; and the sorcerers are able to eat or shoot people through spells. Seers and listeners interact with the immaterial beings, while sorcerers interact with other humans through invisible means.

7.2.4.1 Gossiping and rumours: grievance and envy

When person X is afflicted by misfortune and accuses Y of practicing witchcraft against him or her, X is expressing dissatisfaction with some aspect of his or her relationship to Y. Nothing in the nature of the misfortune itself could lead to the conclusion that Y is responsible for X’s troubles. The conclusion that Y is responsible is comprehensible only after an analysis of the history of the relationship between X and Y, and of the nature of the social cleavages that divide them. (Simmons 1980:447)

In a Fula village in Cantanhez, young people were gossiping about an old woman being a witch who could shape-shift into a snake and attack people on paths. In November 2010, the rumours in the village led to her being accused of having attacked a young boy, causing paralysis of his foot. This boy was managing his father’s cashew orchard because his father was living abroad. The injured foot forced him to abandon the responsibilities his father had given him. At the time, his father had not received his teaching salary for five months and did not possess the necessary money to take care of his son’s foot. In February 2011 the boy died from an infection reported to have started in the swollen foot. It was said that the old woman, also child’s aunt, had killed him because she wanted to manage the family’s orchard he was taking care of. Interestingly, the woman who was accused of witchcraft was the one person in the village who regularly asked me for gifts or small amounts of money. I never gave her any money although I did once buy her flip flops. Although she was unsuccessful every time, she would not stop asking me for money.

I followed two cases of Nalu people who were shot through magic (*uaga corte*): a Nalu trader woman and a Nalu elder. Both went to the Nalu traditional healer (*djambacus*, kl) who diagnosed them as having been shot through a spell. Being a trader, the woman regularly travelled to the capital to sell bananas and palm oil. The healer told her she was “shot” in the foot by someone who envied her and wanted her to stop working. He treated her by removing pieces of plastic from the back of her leg, which was what she had been shot with, and by giving her a medicinal cocktail of plants to drink. She did not pay for the service and was advised to return and pay when she recovered.

The elder’s case was more dramatic. The Nalu elder was feeling sick and went to the hospital but did not get better. His family took him to a healer who said he had been shot through magic and that was why the hospital medicine could not cure him. The healer took out three magic bullets from the elder’s chest that were causing him the sickness and pain, and gave him a medicine of plants that made him vomit blood. This was said to be the blood inside his body as a consequence of having been shot. The healer warned that the old man was already very “tired” and that anything could happen.

In the first case the woman got better and is still trading products between Cantanhez and Bissau; in the second case the elder died a few days later. The woman had a suspicion of who might have “shot” her. She told me a man from another household in her village envied her and did not want her household to succeed. He was a mechanic who did not participate in the collective work in the fields probably because he had other sources of income. Again, he was the only person in the village who tried to ask me for more money than was appropriate. An incident occurred during which I had a flat tyre on my motorcycle. I was tired of pushing it, it was getting dark and I had to proceed with my travelling. This man tried to charge me the highest price I have ever heard for fixing a flat tyre. I first laughed at the price and said to him that it was not a fair price. He said because I was white I had to pay more. I tried to bargain, we had an argument and I had to pay him twice the normal price. Although I had lived in this village for a long time, we were never able to establish any kind of relationship after this incident. Indeed, metaphorically, I felt I could perfectly relate to the accusations of witchcraft against him; I felt he was ‘consuming’ more than he should; I felt like he had ‘consumed’ some of me.

In another case, I interviewed a Nalu healer who identified two Fula ex-fighters who joined the Portuguese side of the independence war as leaders of the witches’ society in that area. This interlocutor was a Nalu man from a village

where people supported the PAIGC. One of these men, besides shooting people through spells (*uaga corte*, kl), was also accused of spying during farmers' meetings and then recounting what he had heard to the local NGO technician. These gatherings were often used to discuss and criticise the park (see Chapter 3).

Witchcraft constitutes a means of action and discourse. As stated by Ashforth (2013), only very few sorcery accusations turn to killing people as a means of "violence against witchcraft violence". Usually, accusations are limited to raising awareness about a desired morality. "Eating a person through magic" or "shooting a person through magic" are metaphors for something that is perceived to be taken from the victim for the benefit of somebody else. Witchcraft rumours are used as a social tool to raise awareness towards any kind of perceived expropriation or abuse. The intensity and motives behind the accusations seem to vary widely. The same word "*futuceru*" was used in a very simple context in Bissau. A youth went to his aunt's house to receive a package from a parent living in Portugal. When the package was opened his aunt claimed the cookies that were supposedly for him. He could not deny them to her because she was older than him, and he gave them away. On the way out he commented: "look what she did, the old woman is a *futuceru*".

It seems that witchcraft accusations are insinuated towards people who ask too much, take too much from others, or keep too much for themselves. In Cantanhez livelihoods depend on mutual help systems (see Chapter 4). In a context where there is a social obligation to reciprocate, asking too much is as troubling as accumulating too much, and both fall outside the accepted social calculation of sharing. Sometimes people pretend they do not have much to avoid sharing with others or to ask for more from others (Davidson 2004). Denying help without reason or asking for help without an understandable purpose can damage the effectiveness of the mutual help systems and the trust in which it is based. Giving and receiving are to some extent social taboos that are not discussed directly but expressed as an inherent norm of a social order; witchcraft accusations work as a discourse to argue about the limits of that social norm.

7.2.4.2 Magic counteracts magic

Witchcraft and accusations of it have been analysed by different authors in different contexts. As described by Simmons (1980) in Senegal, belief is used as a political tool for social struggle and as a "folk theory of misfortune". Witchcraft is inextricably rooted in moral judgments and Nyamnjoh (2001) argues that it is best

understood as a matter of diagnosis rather than belief. Paul Richards (2001) refers to chimpanzee cannibalism in Sierra Leone as a “weapon of the weak” and “a carefully calibrated tool of protest directed towards distinctive egalitarian and youth-oriented political ends” (:79). West (2007:4) says that in Mozambique, witchcraft is also used to secure common goods and is therefore a way of fighting individualism and accumulation. Witchcraft remains a controversial topic, portrayed as an indicator of social struggle and disruption, or as a conservative force and weapon against change.

In Cantanhez, then, witchcraft can be understood to operate as a social tool to challenge non-sympathetic attitudes that risk damaging mutual help systems and settled sociability. It seems to exclude those defying the moral calculation of reciprocity and it is used to express concerns about envy and grievance. Therefore, it also works as a form of domination over misaligned livelihood strategies and ways of living.

People adopt various strategies to find and prevent sorcery. People can meet with skilled people, like *djambacus* and *murus* who decide whether a certain health problem or misfortune is a result of witchcraft. The diagnosis of witchcraft is often derived through *bota sorte*, a ritual of diagnosis during which a certain episode or context is interpreted from a display of shells, duiker (*Cephalophus* sp.) horns, and other objects. The processes of identifying sorcerers are very consistent, and different people and individuals have different ways of dealing with it.

During my fieldwork, a famous Fula healer came to a Balanta village in the region where I was living and was able to identify an old woman as a sorcerer. People in this village, including members of her own family, consequently murdered the old woman, or so I was told by several people. This is reminiscent of Comaroff and Comaroff’s (1999) analysis that although those suspected of witchcraft are often healthy people, willing to accumulate and consequently deprive others of goods perceived as commonly owned, those physically attacked are older and often socially isolated and defenceless. The healer who identified the old woman as a sorcerer was paid a sum of money that allowed him to buy a motorcycle. While reporting this, the Nalu youths of Cabam made fun of the situation, jeering at both the Balanta and the healer, and condemning his dishonesty. They told me that the healer uses a plant that causes people to lose the notion of reality and makes people speak in such a way that someone ends up confessing to witchcraft.

In 1886, Costa reported people in the Guinean coast used to cure diseases associated with witchcraft with toxic plants which could be lethal (Costa 1886:114

in Havik 2008:15). Brosselard (1889 in Havik 2008:2) described people on the Portuguese Guinea carrying out rituals to identify sorcerers *Erythrophleum afzelius* (*mancone*, kl),¹⁰⁴ the bark of which is toxic and used to prepare the “red water”, which is also described by Almada ([1594]1964). The Nalu informants in the current research challenged the truthfulness of the judgement by the witch-doctor, “Sorcerers are born. God creates them. If someone says the another is a sorcerer, either he is a liar or he is a sorcerer as well”. This accusation was similar to those made against Pentecostal preachers and witch-doctors in Ghana who converted “their spiritual prestige into ostentatious consumption” by buying cars and planes and were afterwards accused of witchcraft themselves (Ciekawy and Geschiere 1998:8).

The scepticism of these youths in Cabam is in line with the role attributed in some Nalu villages to *mbantchum*,¹⁰⁵ who is described in Kriol as “the owner of men’s sacred bush” (see Chapter 3). *Mbantchum* is the one in charge of finding and fighting sorcerers magically forcing them to declare their acts publically or become sick and die. Identifying sorcerers is connected to the secret society of men in some Nalu villages or to individual healers in other villages, who are usually also men. Hypothetically, this is one of the reasons women maintain their second and powerful initiation, *nhandu*, surrounded in secrecy, feared by men and regarded as resistance to Islam. *Nhandu* is *medunhu* (kl, fearful), men say, and might also protect women from witchcraft and witchcraft accusations, as this institution holds considerable magical power. Both witchcraft accusations and the forms of coping with witchcraft are pathways for negotiating sociability. Witchcraft is built on attitudes and discourses that inevitably negotiate the role and status of groups and individuals in society.

7.2.4.3 Accusations of wealth

Foreigners, migrants and new comers are not readily accused of witchcraft in terms of “eating people” through magic, mainly because they do not usually belong to a local family. White people are often perceived to have magical powers and this, is in itself an accusation. Particularly during colonial times, whites were thought to have magical powers and be able to “see” the bush spirits. They were

¹⁰⁴ Mancone (kl) is described by Catarino (2006) as equivalent to *Erythrophleum suaveolens*, which is described in the literature as producing red water and being toxic (Akinpelu 2012). *E. suaveolens* is also used by the Fula (*teli*, kl) as a poison to kill cane rats on their rice fields (see Chapter 7).

¹⁰⁵ *Mbantchum* is the being of the male circumcision ceremony (see Chapter 3).

reported to have made agreements with some spirits and taken them in bottles to Europe (also described in Temudo 2012). Portugal's pursuit of a development based upon abusive consumption of Guinea-Bissau is thus represented by the robbery of local bush spirits, which I interpret as a metaphor for the usurpation of resources, slavery, and forced labour during colonialism. In this narrative, the immaterial world of the bush spirits is bound up within a globalised perspective on inequality that ties the Western technological expansion to the forests of Guinea-Bissau, and therefore claims a place for them in world history.

Nowadays, white people are perceived as having both magical powers and, coincidentally, also a great deal of money. During this study, I sometimes felt I was being accused of being rich and therefore pushed to share my supposed wealth. I explained that I was a student and that whites have different economic statuses, much like in Bissau. As a way to build my place within the social framework of exchange I made use of local modes of exchange and gifting, and indeed, I managed to give and receive considerably. Many times though, I felt I was being tested, and I wondered how many witchcraft accusations are mere tests of sociability or claims against undesired stances.

Once, a Balanta man accused me of witchcraft during a very brief conversation which clearly had that very purpose. I measured crop loss in his mangrove rice fields in 2009/2010 with his permission and always accompanied by a youngster from his household. However, in 2010/2011 we met in a Nalu village he said: "I do not know what you did last year to my fields but my rice did not grow properly this year". I was surprised and replied that if he thought so it would be better for me not go to his fields again. I met with the head of the village committee in the Nalu village to seek advice and he told me calmly: "Don't worry. He said that because he has no rice at the moment and he is desperately looking for it". After a few days, the man came to me to say that I should visit his fields again. I took it as an apology and I said that maybe I would, but I did not. In spite of the incident, we managed to have a few friendly conversations afterwards about other issues. While I came to see the accusation as very interesting and enlightening, I was conscious that this was only possible because I was not from the south of Guinea-Bissau, or I would not be able to cope with the accusation so optimistically.

Witchcraft exists in different forms: it can be simple or complex, entail smooth or drastic consequences, it can be a quarrel or a relief from an anxious moment, a reproduction of prejudice, a claim for social engagement, and/or an expression of grievance or envy. It is bound to a social context of interaction and can act in both directions; a socially/economically weaker person can accuse

another perceived as greedy, or a person trying to accumulate goods/cash can accuse another of envy or jealousy. Witchcraft is thus a means of negotiating equality, differentiation and difference, and thus may equally lead to either social disruption or stability.

7.2.5 Grievance and conservation: the chimpanzee

Tourists, tourist guides, conservation NGOs, community guards, researchers associated with chimpanzee conservation, and IBAP technicians often used to be nicknamed “chimpanzee’ people”. These people were urban and rural, black and white, from different ethnic groups, Bissau-Guineans, locals or foreigners. Sometimes local people use the term “*bo parentis*” (kl, your family) to name people involved in chimpanzee conservation, as if they were more affiliated with chimpanzees than with people. Generally, people defend kin members. Those perceived to benefit from and defend chimpanzees, and often at the expense of people, thus seem to behave as a member of a chimpanzee’s kin/group. Labelling chimpanzees and people as kin is a critical assertion that addresses people who present chimpanzees’ interests above those of people. As described by Paleček and Risjord (2013:12) “cultures are identified with populations of people, animals, and objects that are connected in a particularly dense network of relationships”. In Cantanhez, what one is and what one becomes depends on its/hers/his relationship with something else, and reciprocity becomes crucial in determining kinship and identity. In this case, reciprocity (or its challenge) builds the idiom of kinship, where transgressive relationships transform humans into chimpanzees. The chimpanzee-human blurredness is well explained in Viveiros de Castro’s (2013:492) expression: “they are people like humans are, but are not exactly human like people are.

Proximity between chimpanzees and people reveals itself in different forms; the two species share a physical space, have an intermingled past in oral history, often become the same figure in witchcraft, and their interests are generally in opposition whenever ‘development’ or ‘conservation’ are emphasised. I present below a summary of people-chimpanzee interactions and people’s perceptions about chimpanzees, a historical and regional account of chimpanzees in oral history and a discussion of the relevance of witchcraft to chimpanzee conservation.

7.2.5.1 Close proximity between chimpanzees and people

“As the Muslims say that it is forbidden to eat monkey meat because they are our cousins, then I advertise that I am selling cousins’.
And then she shouted again: Cousin, cousin!”
(Sarró 2009:183, my translation)

In Cantanhez, monkeys are said to be humans punished by God because they went fishing on a forbidden day. In Guinea-Bissau, there is a rich heritage of animal transformation stories, riddles and songs (e.g. Indjai et al. 2013), which are charged with symbolism, judgement and morality. For example, Couto (2009:60) reports the story of a smith who was able to transform a badly behaved boy into a hyena and therefore condemned to live in the bush. Similarly, in Cantanhez and in the Boé, it is said the chimpanzee was once a human, a very lazy smith condemned by God to live in the forest with a non-human appearance: “We do not eat chimpanzee. They were smiths in the past but were transformed into chimpanzees. Our elders told us this.” My interviewees considered the chimpanzee the animal most like humans (Sousa 2007, Sousa et al. 2014) and people do not use them as a food source (Gippoliti and Dell’Omo 2003, Karibuhoye 2004, Costa 2010). The taboo against eating chimpanzee meat thus derives from before the conversion to Islam, and is common across the Nalu, Susu, Fula, Balanta peoples.

Blacksmiths are part of a symbolic complex in West Africa that associates blacksmiths with magic, pollution and impurity (e.g. Kodji 2009), fertility, sorcery and initiation rites (e.g. Childs 1993), all of which ascribe complex social, spiritual and political roles to blacksmiths (McNaughton 1993). There is regional evidence of the association of chimpanzees and smiths in the oral history of Mali, Guinea-Bissau and Guinea-Conakry. According to Zeltner (2012), in Kita (Mali), the Malinke (Mandinga) say the first smiths were captive apes that wore iron earrings (:248). In Ghana (Herbert 1993:155) and also in the Boé of Guinea-Bissau, blacksmiths are also described as intimately associated with fertility. Chimpanzees have often been said to abduct people, which is often associated with sexual usurpation (Richards 2000, Giles-Vernick and Rupp 2006), and at the same time there are medicines made out of chimpanzee body parts which are associated with fertility (Sá* et al. 2012).

The Kuranko people who occupy the western and north-western areas of the Guinea highlands also associate chimpanzees with smiths. In Guinea-Bissau, people who identify themselves as Kuranko are descendants of captives, and, although they identify themselves as Fula nowadays, they also report belonging to

the Kuranko lineage (*lenhol*, po). In Guinea-Conakry, Kuranko society is divided into different clans with smiths belonging to a lower caste. Cobblers, blacksmiths or praise-singers are not allowed to marry members of the ruling clans (Jackson 1974:400). Each clan has a totem, an animal they cannot injure, kill or eat (Jackson 1974:401). The totem of the clans Kamara and Yaran is the chimpanzee; the Yaran are often smiths, therefore these clans are related to one another by their totem (Jackson 1974:403,404). In southern Guinea-Bissau, there are several Kamara people and many in the Boé are descendants of Kuranko people. In Cantanhez, there are many Nalu and Sussu people with Kamara surnames. For the Kuranko people, the chimpanzee is regarded as in both its appearance and behaviour (Jackson 1974:412), just like in Cantanhez.

7.2.5.2 Being “medunhu”

For Deleuze and Guattari (1987:239), “Society and the state need animal characteristics to use for classifying people”. Costa (2010, 2013) says that people perceive chimpanzees as “ugly” and “bad”. In Cantanhez, people told me very often that the chimpanzee is the “ugliest animal”. Often satirical remarks compared people perceived as ugly with chimpanzees, which represent the ugliest “human” possible. A *rap* singer from Buba (Quinara region), Masta Tito, mentions the ugliness of the chimpanzee in one of his songs. This music is broadcasted on all rural and urban radio stations, and everyone understands it:

Governantes feo, e parce son dari
Governantes di Guine e tipo tripa di lubu

Ugly government rulers look just like chimpanzees
 The rulers of Guinea are like a hyena’s intestine

Masta Tito’s lyrics do not use the chimpanzee to describe something aesthetically ugly, but rather something socially ugly. The physical features of the chimpanzee and hyena are metaphorically used to critically evaluate the political elite of Guinea-Bissau. Both verses refer to physical characteristics understood in terms of a moral judgement and an aesthetic is used to illustrate social discontent. Political judgements are implied in an aesthetic discourse. Moreover, chimpanzees are also *medunhu* (kl), which means dreadful, powerful and frightening. Hyenas are *medunhu*, and some shrines and ceremonies are *medunhu*. Unsurprisingly, like hyenas, chimpanzees are suitable figures for shape-shifting.

7.2.5.3 Chimpanzees and ‘chimpanzees’

Encounters between local people and chimpanzees occur along paths, in orchards, in backyards, in natural springs and in different kinds of forest and bush. In spite of the difficulties of controlling chimpanzee crop feeding, the interviewees stated they have never had an antagonistic encounter with a chimpanzee and have never heard of chimpanzees attacking people. During my fieldwork, two exceptions to this occurred in the north of Cantanhez. One was in December 2009 when a man lost his finger to a chimpanzee bite. The man never came back to the village but several people recounted the episode: he tried to defend his oranges with a gun and shot a female chimpanzee. At that point, a male chimpanzee charged, took the man’s gun, beat him up, and tore off a finger with a bite. The man stayed in hospital until the end of January 2010. Indeed this episode was reported as a chimpanzee’s retaliation to harassment. Another incident took place in 2011, when a chimpanzee attacked a hunter known for his abilities to call wildlife. When I passed the place where the attack occurred the man had already been taken to Quebo’s hospital, and his nephew was telling the story to his colleagues, making jokes about the supposed ability of his uncle to call wild animals¹⁰⁶. This incident was thus explained as the result of a man attracting and teasing a chimpanzee.

Besides these straightforward reports of chimpanzees attacking people, chimpanzees are involved in another type of interaction. To understand this it is necessary to distinguish “clean chimpanzees” (*dari limpu*, kl) from “shape-shifted chimpanzees” (*dari bidadu*, kl). The former may also be referred to as “bush chimpanzee” and the latter as “house chimpanzee”. Reports of chimpanzee attacks on people increases when these “shape-shifted chimpanzees” are discussed.

A “clean chimpanzee” is distinguished from a “chimpanzee *bidadu*” by an assessment of their violent or all-too-human behaviours, such as the ability to speak people’s language. While “clean” chimpanzees are perceived as harmless, chimpanzees that do not run away from people are suspected of being “unclean”. Chimpanzees that attack people without being harassed are not actual chimpanzees: “They are people who shape-shift into chimpanzees for *criminalidadi* [to commit crimes]”. In Guinea-Bissau, a chimpanzee *bidadu* is described as intentionally “getting people” on paths, in the forest or on farms. Below are three short extracts of some of these reports (see others in Appendix 29):

¹⁰⁶ Baka hunters in Equatorial Africa were also reported to lure apes by imitating their calls (see Giles-Vernick and Rupp 2006).

Report from the colonial period (Cacini):

In that time women used to go to collect oil-palm kernels in oil-palm groves. Kernels were traded at that time. A woman had her grandchild on her back. A chimpanzee came and took the child, despite the grandmother attempting to fight the chimpanzee off. The chimpanzee bit all his body and it took out one testicle.¹⁰⁷ An airplane left Bissau and came to Cacini to take the child to the capital; they took him to the hospital, but he died.

Report from late 2011 (Tombali di Bas):

This last month a chimpanzee killed a person in Tombali, during the groundnut harvest. A shape-shifted chimpanzee went to fight with a man. The man was harvesting groundnut at eight o'clock in the morning. The chimpanzee and the man met, the man got up and talked to the chimpanzee, he asked where he was going, the chimpanzee replied I came to fight with you, and straight away he went over to him, it beat him until he was cold, it killed the man. People found the body, but they did not see the chimpanzee, only its signs.

Reported by a Nalu woman in 2011 about a previous episode (Cubucare di Riba):

I was cooking in the backyard...Once in a while I would see a chimpanzee seated on the balcony of the house next to ours, which is part of a compound belonging to my family. At that time, I already thought that it was not "clean". A few days after, I was looking after the chickens and a chimpanzee was hiding behind the goats, the goats moved away and the chimpanzee grabbed my leg. People came to chase it away and nothing happened in the end, but I was scared. It was a not a clean chimpanzee, it was *futucerundadi* [witchcraft].

Report by a Fula (northern Boe):

We do not know what got the boy. It happened in the morning. We looked for him for three days. He was with other children, they were looking for *fole* [fruits of *Landolphia* sp]. The others said that something like a chimpanzee appeared, something black, but they do not know for sure what type of thing it was. The authorities came, 'people that know' [magical abilities] were asked, they discovered that the boy's mother knew about what had happened. People decided that since his mother knew what killed her son, they could not do anything, since the law does not say that the mother should be killed." His mother ended up leaving to another village away from the region.

¹⁰⁷ The extreme and transgressive character of this sorcery attack involving physical-sexual destruction has also been described by Burbank (2000), Bemdt and Berndt (1989) and Warner (1937).

The first three reports are from the Nalu homeland, while the last is from the Boé region (see more in Appendix 29), also in southern Guinea-Bissau. From Cantanhez to the Boé, it seems there is a consensus regarding the symbolic meaning behind chimpanzees' actions, and not all behaviours are recognised as those of chimpanzees as animals. Looking at these examples, animal chimpanzees are perceived as unable to harm a person without a reason. In the literature, there are reports of chimpanzees acting with aggression towards people, for example chimpanzees killing children and babies in Sierra Leone (Richards 2000), chasing people in Uganda (McLennan and Hill 2010), injuring children in Guinea-Conakry (Hockings et al. 2009), and lethal attacks on children, also in Uganda (McLennan and Hill 2013). Accordingly to the scientific literature, chimpanzees may attack people without being harassed but in southern Guinea-Bissau people say that if an animal is really an animal "it goes away when it sees you, it will not attack you just like that; if it does, it is because it is not clean (*limpu*, kl)".

As suggested by West (2007), people worry gossip and whisper most about witchcraft, and therefore violent incidents with chimpanzees are not commented on much as they are seen as belonging the intimate sphere. The aggressor is not perceived as a chimpanzee but as a person who is trying to harm his/her kin. As such, these incidents are not portrayed as something that would affect chimpanzee conservation; they are understood as intimate problems and are therefore under-reported. At the same time, the expression and coordinates of witchcraft may emerge and shift while witchcraft articulates to the spheres where it manifests itself. The work by Comaroff and Comaroff (1999, 2003) has shown that discursive and material expressions of witchcraft change according to conditions where there is a "crisis of social reproduction", "dearth of work" and an "impossibility of securing the future" (2003:168), which have led to the appearance of "postmodern zombies and unemployment-related witch killings" (:171). The anecdote below refers to an ambiguous interpretation of a chimpanzee attack in which what was first represented as chimpanzee witchcraft shifted into a narrative in which an NGO was made responsible for the attack of a bush chimpanzee.

Report by a Nalu woman of an episode that occurred in 2010:

After saying that it was not a "real chimpanzee", the woman described what she had heard about the incident:

Aua [fake name] went to get bunches of oil palm fruits and had her child on her back. She placed the fruit bunches into a bowl and placed it on her head, when she turned around a chimpanzee suddenly appeared. It attacked her and she screamed. There were

people who came and so the chimpanzee ran away. However the chimpanzee had scratched her badly.

The same incident was related by Aua herself in early 2011:

I went to get bunches of oil-palm fruits, and my son saw the chimpanzee in a tree. I thought we should avoid it by going a different way. However, surprisingly, there were many chimpanzees there too. A chimpanzee hid behind a tree and grabbed me, it scratched my neck and I thought it would take me to the forest. A man was cutting bunches nearby and he came to help me out. When the man came the chimpanzee let me go”.

I asked Aua if it was a real chimpanzee and she answered that it was like a chimpanzee, but she did not see its legs. She said that she thought maybe it was a chimpanzee bidadu, or maybe not, and that she was going to send a message to the head of the NGO to say that his chimpanzees were harming people.

Thus, an incident of chimpanzee aggression was initially perceived as the outcome of a sorcery attack by a human who had shape-shifted into a chimpanzee, but was later viewed with some uncertainty after the victim suggested that the attack had been led by a clean, bush chimpanzee. However, the naturalisation of the chimpanzee’s behaviour did not dismiss it from social meaning. Instead, it became an accusation against the head of the “people’s chimpanzees” who is probably not vulnerable to a declared accusation of witchcraft. The conservation of chimpanzees is perceived to increase the social risks put on local people and is described as a form of harm inflicted upon people for the sake of chimpanzees’ welfare. As shown above, these ties with chimpanzees are transgressive and work for the good of persons (chimpanzees) beyond the expected kin (humans), and as such are a form of witchcraft. In this sense, different natures – the chimpanzee (as a chimpanzee) and the unclean chimpanzee (as a human) are both critical assertions of usurpation and abuse.

7.3 Discussion

As reported by Turner (2009:36), nature is an “integral component of human social bodies and thus of social persons”. Quintino (1965) states that in Nalu cosmology, the bird represents the “spirit of good”, while the serpent represents the “spirit of evil”. This study argues that this good-evil distinction is actually not so clear, with everything in the cosmologies of Cantanhez having both healing and destructive properties, and being equally capable of good or evil.

Animal figures are vehicles, messengers or envelopes for humans and spirits; they are subjects of communication and interpretation that enable interaction between people and with the immaterial world. Although spirits and humans embody animal figures in a fashion that is mechanically very similar, these are ontologically distinct. In the words of Ben-Amos, “the human becomes both man and animal: the identity between them is no longer metaphoric but substantial” (Ben-Amos 1976:248). When a spirit kills a person, however, it is for the sake of punishment for some moral deviance, but when a person adopts an animal form for cannibalism, it is an absolute transgression.

In early times, leopards were the most frequent agents of sorcery in witchcraft reports (see Chapter 3), but, probably due to a decrease in their population density, they have been replaced by snakes and chimpanzees. Turner’s analysis of Amazonian animism seems to make sense in this context: “The spirit of the entity is the form considered as an image or pattern that needs material content to exist” (2009:35). For Richards (2001:168), a similar “migration across species” in witchcraft took place in Sierra Leone when the leopard became extinct and was replaced by the chimpanzee. Different natural forms can thus manifest the same cultural narrative.

Nowadays, leopards or pythons are more frequently used by spirits as agents of justice and as reminder that the spirits and the Nalu’s *nfoth* (see Chapter 3) are the ultimate owners of resources and a major authority. Conversely, chimpanzees most often appear associated with witchcraft in Sierra Leone (Richards 2000).

Monkeys, baboons and chimpanzees previously belonged in the human world and have been condemned to live in the “bush” and the “wild”, as a form of punishment. As has been described by Douglas (1954) for the Lele of Congo, and by Thayer (1983) for the Susu people of Sierra Leone, in southern Guinea-Bissau, a distinction is frequently made between bush and village. Nevertheless, this does not refer to an opposition of bush-village nor of society-nature. Instead, people’s reports distinguish an environment with more familiar and accessible natural-social elements, namely the village, from another with multiple, tiring and unexpected natural-social elements, namely the bush. As described by Descola (1994:324), this bush-village distinction is a continuum in which some combinations are considered as aberrant, anomalous and out-of-place. Thus, in witchcraft, animal figures from the bush have a village-based agenda and these are understood as “unclean animals” or “village animals”.

In this ontological view of nature, an unclean chimpanzee is the form of an animal embodied by a human that sees other humans as prey. For Descola (1996), “reciprocity and predation constitute dominant schemes permeating the ethos of a culture” (:90). Therefore, violent wild animals are not considered to exist naturally and are perceived as shape-shifted people who prey on other people. Although the distinction between witchcraft and sorcery is not easily defined (Douglas 1967, Moore and Sanders 2001) witchcraft refers to the internal ability to use magic, while sorcery refers specifically to a person who consciously uses magic to “eat other people” through witchcraft. Witchcraft explains crises in kin reciprocity as sorcery, which takes the form of a secret, cannibal society that predates upon kin members. In Cantanhez, accusations of sorcery were mainly directed at people who were thought to refuse or abuse the mutual help systems.

7.3.1 Witchcraft and its implications for conservation

“At issue in these panics about corporeal free enterprise is a fear of the creeping commodification of life itself”
(Comaroff and Comaroff 1999:291)

In Cantanhez, becoming animal requires a physical transformation, and the animal figure is the vehicle. The transformed animal does not necessarily represent a shift to animality of a person’s inner character; it is rather a human, with human motivations and desires, dressed in an animal’s body. People shape-shifting into animals to harm other people does, however, represent a shift to brutality. Deleuze and Guattari (1987) say that “becoming an animal” has been particularly articulated with hunting, crime, war, and myth. These transformations rarely engage with the state, but are intimate with sorcery.

In a paper about Cantanhez, Costa et al. (2013:6) report that “chimpanzees in other areas are thought to attack women and children”. Hockings and Sousa (2013) report no negative interactions between chimpanzees and people in southern Cantanhez. Nevertheless, care should be taken, as there is a possibility that chimpanzee attacks on people are regarded as a people-people matter rather than human-animal conflict. Where there is great ape tourism, as in Cantanhez, it is important that all people-chimpanzee interactions are monitored, as well as those reported as people-people.

Chimpanzees are ugly human-fellows who were lazy smiths in the past, but now feed on both wild and cultivated foods; they are figures in the machinations of

cannibal sorcerers; and they have become famous because of nature conservation. Whether understood as punished smiths, the proxies of sorcerers, or the kin of conservationists, chimpanzees are unavoidably protagonists of the human social world, where chimpanzees have become a metaphor for power and greed. Richards (1995, Richards 2000), warns conservation entities that in Sierra Leone the chimpanzee is a stigmatized animal. This is also the case in Guinea-Bissau, where Costa et al (2013:6) argued that for a conservation initiative seeking to use local people's perspectives to galvanize their enthusiasm for biodiversity protection, "chimpanzees might not be a good flagship candidate". Yet, since at least 2009, chimpanzees have been regarded as the flagship species for local conservation. This study argues that the species itself is not as meaningful as the social context in which conservation takes place. Animals are not essential forms but rather a means of communication and interpretation through which to argue about the present. As has been shown in this chapter, a range of locally occurring animals are used to negotiate justice, access to resources, and reciprocity, and also transform and/or reinforce local morality. Considering this, it is suggested that the discussion should not be centred on what is the best flagship species for the park, but crucially on how the park should integrate the local morality of reciprocity and avoid being perceived as greedy and "unclean".

Scholars have defined witchcraft as "modern" not "traditional"; "wide-ranging" not "local"; "historical" not "static" (Moore and Sanders 2001). Witchcraft is a discursive practice about the contexts, elements and constraints of the present, and projections and expectations about the future. As Simmons (1980) mentions, even when grievances originate from outside they can only be negotiated internally. Local people involved in chimpanzee conservation and perceived to receive benefits from it are pushed to share their supposed incomes, and if perceived as greedy may well be labelled as sorcerers. It is unlikely that witchcraft narratives will incorporate foreign conservationists or institutions. Nonetheless, they might respond to other types of narratives involving chimpanzees. Witchcraft discourses are plastic, and narrative of "unclean chimpanzees" and sorcery can potentially shape-shift into naturalised reports of attacks on people by chimpanzees, which are much more effectively aligned with the scientific notions behind nature conservation. As no animal taking human lives is tolerated (Naughton-Treves and Treves 2005:266), and if "chimpanzees" shape-shift into chimpanzees, then conservation stakeholders will be held responsible these animals' actions, as is already the case with crop loss. If this naturalisation does not occur, and if conservationists try to prevent people from shooting the "shape-

shifted chimpanzees”, they will be perceived as members of a witches’ society, leaving local stakeholders vulnerable in, for example, local people’s struggle to access local resources, such as farming land. Therefore, it is likely that the future of chimpanzees in local narratives, either in their unclean form or in their physical-animal existence, depends of their finding a place within commoditised nature conservation. Nature conservation is perceived locally as an occult economy and, following the reasoning identified by Comaroff and Comaroff (1999), is thought to generate income for others who do not live alongside wild animals. Witchcraft and other magic practices are intimately related to people’s views about production, exchange and consumption (Moore and Sanders 2001), and, in line with animism, mainly address issues of predation, exchange and protection (Descola 1996). If one is interested in the social aspects of nature conservation and one accepts the view presented here of the reasoning behind witchcraft in southern Guinea-Bissau, one should ask oneself who is asking too much from others? And who is accumulating too much at the expense of others? The plastic discourse of witchcraft has been shown to make use of ecological elements in a fragmented and socially meaningful fashion, and such meanings are not bound to species as much as they are embedded in local negotiations of power, reciprocity and access. In Cantanhez, local conflicts with nature conservation seem to be less connected to gender, animal aesthetics, crop loss or any specific species, and more embedded in the symbolic and political claims implied in narratives about animals.

8. Shape-shifting nature

The central idea from which the main arguments of this study stem is that nature conservation and people-wildlife interactions are strongly embedded in social contexts, processes and endeavours. Story-telling shapes and provides grounds for both engagement in nature conservation and its contestation. Biologists and conservationists, anthropologists and other social scientists, as well as local people who engage with or challenge conservation, all shape and negotiate their views of conservation through narratives. Scientific outputs are a story in the sense that they focus on a particular perspective of a complex system. In fact, as distinct fields of knowledge, both the natural and social sciences offer partial perspectives on this complex lived reality. Perhaps for this very reason, a dialogue between the social and natural sciences as to what separates or unites the human and the natural is essential.

In my research I sought for this engagement and adopted a multi-disciplinary perspective, using qualitative ethnographic tools alongside quantitative ecological and interviewing approaches. I aimed for an in-depth study that provides access to multiple views about nature and nature conservation held by local people. The compilation, analysis and discussion of ecological and social information revealed the subjectivity of both qualitative and quantitative information, and the possibilities for their articulation. The conceptual framework presented in Chapter 1 guided the construction of my narrative that aimed at representing the blurredness of nature-society.

Nature conservation is portrayed here as a social process that mediates people's attitudes towards wildlife and other natural resources. Consequently, local people's responses to nature conservation policies are complex, multi-layered and diverse. During the investigation into local perceptions of nature conservation and people-wildlife interactions, territory (Chapter 3), livelihoods (Chapter 4), crop loss (Chapter 5), risk (Chapter 6) and witchcraft (Chapter 7) were found to be important lines of analysis. This final chapter revisits the different aspects previously discussed and examines them in the context of nature conservation in Cantanhez. The final section of this chapter provides suggestions for strategies which may be worth implementing in the socio-ecological landscape of Cantanhez.

8.1 The bush: a dynamic and multi-layered concept

In various parts of this text (see Chapters 1, 3, 6 and 7), it is demonstrated that for my informants nature is understood in terms of a mosaic landscape in constant flux that embraces people, bush and lineage spirits, wild and domestic animals, and where each of these occupy both exclusive and overlapping spaces. Villages and orchards entail the longest types of soil use, but are not completely permanent. Farms, fallows and forests rotate both spatially and temporally. Thus, and as discussed by other authors (Harley 1988, Fairhead and Leach 1996, Monroe and Ogundiran 2012), the landscape is not passive, but rather constructed alongside social history.

In Cantanhez, the 'bush' and 'village' are dissolved into a continuum that entails encounter and confrontation, and a measure of negotiated reciprocity between animals and people, people and spirits, and people and people. On the one hand, the bush belongs to this continuum and is a place of interaction, sociability, cooperation and confrontation between its elements, including people; on the other hand, the relationship of conservation actors with the bush is that of measuring, planning, and dividing. As described by West (2006), the concept of a protected area became the pillar of the dominant Western cosmology of the natural, which is strongly embedded in the division between nature and culture.

For Descola (1994) and Viveiros de Castro (1996), animism does not reveal the neat nature-culture dichotomy as advocated by structuralism, which makes it antithetical to modern scientific knowledge, the latter based on that opposition. However, Rival (2012) rejects the separation of animism from biological and scientific knowledge, and adds that in animism there are elements of the environment that are not humanised or personalised. The blurred boundary defended by Rival supports the idea that science is also unable to completely separate nature and society as more connections between them are observed. Ultimately, physics, chemistry and biology provide evidence for these ties and Willis states that in Western culture, the notion that everything is ultimately connected with everything else is creating a neototemism (Willis 2005 [1990]). Our recognised evolutionary ties and behavioural similarities with animals underpins our affinity and sympathy towards what is envisioned as the vulnerable wilderness, which provides a basis for human attachment to distant wild others. It is in the rationale of nature conservation that the dichotomy between society and nature becomes more distinct. Furthermore, the kind of interaction (protection) advocated

by nature conservation is mainly virtual, conceptual and symbolic, and frequently does not address the costs and gains of sociability and physical interaction, as animals are appreciated for their physical existence and attributes, rather than for their interactions with humans.

In Cantanhez, relations with animals are tightly bound to physical and social contexts. The animic interactions of reciprocity, predation or protection are not as bound to species as they are to contexts. For example, the green mamba is associated with justice but also with witchcraft; the chimpanzee is a fellow human but also a frightening character associated with witchcraft; the porcupine and cane rat are consumed as food but also consume people's crops; and the baboons that are perceived as terrible crop foragers also chase away the cane rat from the farms. Animals are neither good nor bad, but are involved in episodes perceived as good or bad and therefore contextually perceived as such. In Cantanhez, human-animal interactions are rooted in behaviours rather than in taxonomy. As with the term 'bush', the attributes of animals are also relative, mutable and multifaceted. Cantanhez is connected to a physical space that encompasses many things; Cantanhez National Park by contrast denotes very limited and specific relationships and meanings.

8.2 Oral history portrays contemporary tensions

The reinforcement of particular lines of oral history is, for the Nalu, an instrument of resistance and more recently a way of highlighting rights over nature. As suggested by Nujiten, "discourse is itself a form of practice, entailing the active production of interpretations" (1992:205). As explained in Chapter 3, especially for the Nalu people, Spiritism/Animism provides grounds for narratives of settlement and autochthony. As an ethnic minority struggling to defend rights over a territory they consider their homeland, the Nalu people have made use of two weapons to highlight their rights over a physical and magical territory. One is their acceptance of other systems of governance and religion, providing there is a transposing of Nalu political predominance into a new form of rule, which seems to avoid major tensions and ensure the partial re-creation of the group's identity without giving away its singularity. Secondly, the Nalu veil of secrecy is used to keep other ethnic groups unsettled in their pursuit of land and other resources. The Nalu recount past and modern narratives that portray the violation-punishment inflicted upon those challenging the norms of the *nfoth* by the "bitterness" (magical power) of the Nalu

homeland. The Nalu magical territory enwraps the landscape with social spaces of accessibility-inaccessibility that reinforce Nalu authority.

Expressing the past in the present is a pathway for representing one's identity in particular accounts and determining one's right of access to a particular space/resource (see Chapter 3, 4 and 6). Overlapping identities offer several opportunities for social positioning that are highly context-dependent. With regards to nature conservation, the line of identity highlighted by local people is farming as a profession, which situates their arguments of criticising and confronting the national park's policy. However, when there is a limiting condition at the village level, such as the limited access to farming land, narrower identities are adopted instead. In these cases, nationality, ethnic group or lineage are highlighted in order to mark a division between owners of resources and those who are resource-poor. In summary, a particular identity not only situates the actor in relation to others, but also situates a particular argument that is relevant to a particular condition and that illuminates a particular claim, all of which become significant in the face of conservation policy in Cantanhez.

As shown in Chapter 3, the re-construction or enhancement of certain identities can become more important when aligned with broader tensions. In Cantanhez, a volatile issue arose with the ethnic targeting of punishment actions perpetrated in the name of conservation, which were usually directed against migrants from Guinea-Conakry or Balanta people. Nature conservation became an even more strongly politicised issue at one point when the State forestry guard arrived, armed, and supported by a group of young leaders who were all determined to make sure the "law" was enforced. The alignment of these actions with the national political context before the April 2012 coup, headed by mainly Balanta military elites, deserves careful consideration. Thus, local power asymmetries within nature conservation cannot be detached from a wider political scene where rights, obligations, opportunities and constraints are in play.

8.3 Livelihoods, conservation and beyond

Nature conservation is about managing resources and it therefore has an impact on local livelihoods, which in Cantanhez centre around the staple, rice production. As shown in Chapter 4, trade in rice is not able to free farmers from rice production, the capacity to supply rice for one's household from farming is crucial. When rice commands a high price it becomes a valuable commodity to be sold to traders; when rice prices are low this is a disincentive for farmers to invest

in mangrove rice production. I refer to this as the ‘rice price dilemma’, as both low and high rice prices lead to a decreased amount of rice in the region. Therefore the dependence on rice production for rice security has major implications in Cantanhez, particularly regarding the access to forest land for upland rice farming.

Rice is the main food crop and cashew is the main cash crop; both are integrated in the market as commodities alongside many other crops. Cashew and rice are not mutually exclusive. Although several arrangements are possible, in general, the dependence on rice production for household survival mitigates against exclusive investment in cashew and consequently prevents specialisation associated with a one-crop strategy. Together with a diversified strategy, land access and active mutual assistance systems were identified as the main pillars of resilient livelihoods, and conversely those which could strangle livelihoods’ resilience (as defined in Chapter 4). Provided there is land available, farmers are able to grow the crop types that are most suited to a reduced labour force and/or certain types of soil. Similarly, provided there are reciprocal systems, households with a depleted labour force can rely on village work groups and have access to food and seed loans during bad harvests. In other words, land availability ensures opportunities to experiment, and mutual help systems respond to the risks of that experimentation.

In Cantanhez, land is the most important means for a farmer to secure a livelihood, yet conservation policies have decreased farming rights in forested areas, especially after the zoning of ‘forests to farm’ and ‘forests to conserve’. As described for other West African countries (Berry 2009), there is rising anxiety over land access in southern Guinea-Bissau, especially land to grow upland rice and/or produce cashews. Removing land from reciprocal networks by registering individual formal land entitlements or by reserving forests for the national park both represent major constraints for resilient livelihoods.

Probably influenced by the decreasing importance of bush initiations, young Nalu labour has been difficult to allocate for mangrove rice farming and there is a current depletion of skilled labour to assist in the complex techniques mangrove rice farming implies. In Cabam, the effect of skilled labour depletion was mitigated by giving away upland land to the Balanta people who offer a reciprocal counterpart in expert knowledge in mangrove rice farming. This informal mutual help mechanism has assisted the Nalu farmers of Cabam to recover mangrove rice production (see Sousa et al. 2014 in Appendix 1). In Macubé, the outmigration of youths have led to labour scarcity for upland rice farming, which has been mitigated by providing access to land for migrant farmers

(see Chapter 4). Therefore, in different social situations of Cantanhez, land access has been relevant for labour allocation, knowledge transmission, and household food security. In these contexts, and drawing from Gudeman's (2001) concept of embedded economies, land is socially entangled and enables the reproduction of other livelihood elements. This indicates that as long as land is kept accessible it functions as an element of resistance against the process of economic debasement that enmeshes land, labour and knowledge in pure market realms.

Cantanhez as a place of production and trade in food and commodities collides with Cantanhez as a place of charismatic fauna to be conserved. This misalignment is also evident in the moral rationale behind these notions. While the revenues and benefits brought by production and trade of food and commodities are subjected to considerable pressure to be shared locally, the benefits created by nature conservation are perceived to escape local networks of reciprocity, which brings considerable livelihood and moral distress to local people, as discussed in Chapter 4, 6 and 7 above.

8.4 Commoditisation of nature conservation

Systems of production and international trade of food and cash crops have been important in the Nalu homeland since at least the first written records of European travellers. Natural elements have been integrated into international markets as commodities in several historical periods. Timber, ivory, leather and bush meat have all been traded in international markets. Even people have been traded as slaves. For many authors (Escobar 1999, Kohler 2000, Igoe and Brockington 2007) nature commoditisation and modern conservation strategies are outcomes of neoliberal policies rooted in capitalist economies, which constrain both nature conservation goals and local livelihoods. In Guinea-Bissau, several natural elements were commoditised long ago; the most recent change is the commoditisation of nature conservation processes and institutions, which is distinct in regard to the effects it has on local social structure. The risks of commoditisation do not affect natural elements as much as they affect institutions; while commoditised natural elements can be harvested and shared, commoditised institutions, such as those of nature conservation, can become acquisitive and corrupted and ultimately make natural resources inaccessible to local people.

Locally, the Nalu people say that they have bought their homeland with children (see Chapter 3). The symbolic power of these terms of trade has allowed them to engage in calculations of whether to concede or deny access to natural

resources to guests, often through magically mediated procedures. The idea that the conserved forests are the same as sacred forests has been used by nature conservation discourse to re-create local people's identity towards alignment with conservation goals. This is similar to the idea expressed by Li: "intervention was needed to teach (or oblige) natives to be truly themselves" (Li 2007:15). Although local conservation-aligned discourses are often interpreted as pure environmentalism, they are also, and probably essentially, claims for sharing the benefits perceived to be created by conservation.

8.5 Animals and animal conservation in farming

Since the 1990s, discussions about conservation have triggered new perspectives of people-wildlife interactions. A new concern with the costs and benefits of living alongside wildlife came about because of the need to understand the views of people living in places prioritised by conservationists. This knowledge has been very useful for understanding local views of for example, crop losses.

Chapter 6 described how every livelihood strategy implies a calculation of risks of loss and misfortune. Farmers continuously adapt farming strategies to mitigate the probability and effect of crop loss. Patterns of crop damage shape farming strategies in the sense that crops vulnerable to uncontrolled damage are likely to be partially abandoned or assume peripheral roles within livelihoods, such as in the instances of orange and banana crops. On contrast, palm oil, chilli and lime, as well as many other crops mainly grown by women, are low-loss crops that constitute a considerable network of livelihood security. Women do not use lethal control methods as regularly as men do and the crops women are usually responsible for do not require these control strategies. Rice, banana, orange, cassava and groundnut all suffer from considerable crop loss. Rice is the most important staple and an important commodity, so rice loss has obvious impacts on livelihoods. Birds and cane rats are the most significant rice foragers; the cane rat is perceived as the worst crop forager in the upland farms. These species are tightly associated with food loss. Chimpanzees and monkeys are reported as a threat to cash crops, such as oranges and cashews. These species are thus more likely to affect people who depend on cash from orchards to purchase rice.

Chapter 5 has shown that crop foraging can be troublesome in cases where an animal is perceived as immoral for wasting food or for causing large amounts of crop loss. This animal is likely to be destroyed for causing disquiet. Decisions on how to act are often made upon behavioural patterns of a specific animal/group.

Sociability with animals is the basis for action, and animals' behaviours and farmers' social contexts affect decision-making. Nocturnal animals, such as the porcupine, cane rat and bush pig, are said to be harder to control than diurnal animals, but lethal methods were often reported as efficient in mitigating bush pig and porcupine damage. For baboons and chimpanzees, shooting was described as a temporary deterrent, although the human-like status of chimpanzees discourages lethal control methods.

Risk of crop loss by wildlife used to belong to the local cosmological sphere, and the spirits were largely perceived as the owners of wildlife. Nature conservation and the park, as newcomers, were added as institutions responsible for the misbehaviour of animals. Chimpanzees engage in conflict with people in farms, backyards and orchards; however, the main manifestation of conflict appears in the local critical narratives about nature conservation. Due to its association with the national park, crop damage by chimpanzees was denaturalised and its foraging behaviours gained political connotations. My interviewees often portrayed the chimpanzee as the key species causing overarching claims that go beyond crop loss, and within which several risks and hopes were implied in relation to nature conservation. These are the risk of crop loss, the risk of losing rights over territory management, and the risk of less resilient livelihoods, and as opposed to these, the hope of ameliorating quality of life through nature conservation. Chimpanzees have metamorphosed into a political subject that is frequently used to formulate critical arguments about nature conservation (see Chapters 6 and 7).

8.6 From the natural to the social and back again

In southern Guinea-Bissau, the chimpanzee is a multi-faceted species. For conservation projects it is both a flagship species and a species at risk. For scientists it is an interesting topic for research. For tourists it is a great attraction. For local people it is a crop forager, a fellow human, ugly and *medunhu* (frightening), and a character in local witchcraft. Magical territories and the role animal figures play in witchcraft portray an intricate socioecology. On one hand the role of animal figures in witchcraft illustrate the intricate connections and relationships between human and non-human spheres. On the other hand, when discourses emphasise nature conservation initiatives, people and nature appear as opposites and are almost considered natural and social enemies.

The village-bush continuum is peppered with transgressions and this is the case for the “village animals” (see Chapter 7) that correspond to bush animals which are considered to have a village-based agency. By contrast, “village animals” are perceived as people using the power or fearful abilities of certain animals to harm other people. Descriptions of chimpanzee attacks on people are often portrayed as witchcraft that results from conflict between human parties, therefore actual attacks of chimpanzees on people are underreported. Four descriptions of attacks from chimpanzees, of which three resulted in human deaths, were interpreted as witchcraft. Animal aggression can thus be denied, and animal-human conflict downplayed as an extension of human-human conflict. Accusations of witchcraft are used by local people to negotiate social morality and censure grievances, usurpation and perceived selfishness. However, if social tensions with nature conservation institutions became more important, chimpanzee attacks on people could be reinterpreted by the local people as evidence of heightened chimpanzee-human conflict, and thus used to make claims against conservation agencies.

This state of affairs is not exclusively associated with the flagship species of the park, the chimpanzee, as the conservation of any other animal or natural element that constrained farmers’ livelihoods would probably spark similar struggles. Nature conservation literature has paid considerable attention to reflections about the best flagship species, aesthetics and mythological meaning of different species, and local perceptions across social categories, which are all relevant to inform nature conservation strategies. In the case of Cantanhez, I argue that more than the species targeted for conservation, the key issue is local social mechanisms that control consumption, access and use of natural resources, and the collision of these social mechanisms with the institutional rationale of nature conservation. It is fundamental that proponents of conservation understand local concepts of justice, reciprocity, grievance and usurpation (including the high level of competition over land). Local people express their views about these topics through witchcraft, protests and meetings to which nature conservation organisations seem not to give the required attention.

Witchcraft, protests and meetings should all be seen as demands for “conservation people” to integrate local mutual help systems. Nature conservation remains dependent on a shape-shifting nature constantly transformed by people’s claims for a share of it. Allowing local people to participate and be responsible for the management of funds for conservation and of the benefits that are produced by ecotourism that have thus far been controlled by the local NGO would not ensure a

reduced exploitation of natural resources. This would be a simplistic assumption. Nevertheless, it could build trust and potentially lead to a more inclusive, participative and fair division of the conservation-related benefits.

8.7 Missing complexity provides a part of the story but what to do with complexity?

While scholars like Kleiven et al. (2004:1649) point out that local people's values and attitudes "are parts of a wider socio-political complex," 'nature' conservation is still frequently reduced to a province of the natural sciences. Too often still, scientists and conservationists perceive people-wildlife interactions in a seemingly objective context that can be measured and fully understood through quantitative analysis. This is a limited approach, however, and does not provide the detail and "thickness" (Geertz 1973) that a more ethnographic approach can offer. In contexts where people and animals live alongside each other, they are both part of a landscape experiencing continuous change that can hardly be divided into discrete pieces, quantified or even fully described.

Many state institutions and non-state actors that work in conservation are multi-sited, have few people working on the ground at any given time, or do not seem to be willing or able to understand the other side of conservation stories – particularly where this may undermine a pre-agreed agenda with funders. There is a sense of universal morality around the intrinsic value of animal and plant species in respect of biodiversity or the like. However, conservation cannot be achieved by adopting universal goals and replicating them in local contexts. Local contexts make sense in themselves, and although there are many ecological and social similarities, there are also always important specificities. Ultimately, any project defined as community-based has to understand local complexity in order to be locally meaningful. In too many cases, it seems that the "local" has boiled down to a mere location in physical space, not in social space. Allowing a project to be constructed locally means challenging the adequacy of the project as it was perceived externally, which may consequently threaten the chain of international funding. Although this may seem an impossible task, without challenging the unfair, the unequal and the inadequate in conservation programmes at the human level, nature conservation is unlikely to be sustained without trampling on local people's rights or encouraging local resistance and conflict.

The set of activities an individual undertakes leads him/her to physically interact with the landscape in a certain way, and exposes him/her to a certain set of

risks and opportunities. There is little agreement on how nature should be interpreted and communicated and it is clear that terrains of difference are being navigated; nature is not one thing to all people. Although this seems a very simple and almost common-sense idea, it has nevertheless been ignored when environmental projects have been implemented. In Cantanhez, the Union of Management Committees has made efforts to discuss their concerns about the park, and the inability of the government and non-governmental institutions to respond to these calls, is striking evidence of this inability to engage meaningfully.

If on the one hand, it seems that the cosmological reciprocal system that constructs the people-nature continuum does not ensure the survival of all natural elements, on the other hand it provides a meaningful strategy for management (mis)fortunes, costs and benefits that might interest nature conservation. As Long argues, the nature conservation process should worry about “reaching the voices, practical knowledge and strategies of local actors that include the ongoing transformation and interpenetration of local and external models and experience” (1992:275). A process of nature conservation in Cantanhez is likely to promote local conflicts, dismay and outrage if it continues to be centred on a few wild animals and forests.

Although local people-nature cosmologies and livelihoods do not ensure conservation of forests and wild species, ignoring the social embodiment of nature conservation keeps nature conservation within the borderlines of a Euro-centred, scientific and/or protectionist understanding of nature (Goldman 2003, Agrawal and Gibson 2004, Sullivan 2006). Nature conservation ideology relies on a protected nature-nature cosmos that values nature contemplation and nature’s own existence. In Cantanhez, this version clashes with the local people-nature relational continuum that allows for natural processes to happen independently from people but also encompasses the influence that one has on the other, which is therefore important for what one and the other become.

Recently, Costa et al. (2013) reported that Cantanhez National Park “only exists theoretically”, which means that Cantanhez National Park as a ‘nature’ sanctuary has not been a success, and yet the park’s policy affects local people’s livelihoods. It should be questioned whether this model of conservation is the most appropriate to Cantanhez. Ribot and Peluso (2003:153) define ‘property’ as “the right to benefit from things”, and ‘access’ as “the ability to benefit from things”. Both can be established by law, custom and/or convention, and are frequently contradicted, manipulated and/or challenged. As Wily (2011) highlights, the legal status of communal land rights in Sub-Saharan Africa is considerably frail.

Although the land legislation in Guinea-Bissau recognises the customary rights of local peoples in protected areas (see discussion in Chapter 1 of Article 4 Official Bulletin 1998), these provisions are rather ambiguous and contradictory. Given that land is an important element of livelihood resilience, there are grounds for the re-classification of Cantanhez as an area of community management.

8.9 Concluding words

The people I met and interacted with over thirteen months in the south of Guinea-Bissau are neither noble savages, poor defeated people, nor environmentalists, university educated or otherwise. Local people know very well “what money is” and what capital accumulation means. They have institutions, opinion-makers, assemblies and meetings. They have defined and meaningful territories, a very rich history of interaction with other peoples, ideas for projects, and a willingness to propose strategies and solutions for conservation problems. The assemblies that already take place and the calls for meetings from the Union of the Management Committees would be a good start to re-plan conservation in Cantanhez. If people are interested in keeping the status of Cantanhez as a national park then they will have to find strategies to maintain the biodiversity. If funds for conservation are to be accessed by local people, then the Union of Management Committees should suggest strategies for its management and choose how and where to spend it. NGOs, partners and conservationists have expert knowledge and some wider experience of these matters and could first identify problems and discuss the strategies put forward by the Management Committees, but by no means should be the main or final decision-makers.

In this study, ecological and anthropological methodologies were used in complementary ways. For this work, the connections and articulation between disciplines seemed necessary to understand local complexity, which cannot be handled from within pre-determined disciplinary divisions. Drawing from this interdisciplinarity I encountered variability in the forms of representing nature and society present both in local knowledges and in scientific knowledges. Sillitoe (2010) puts an emphasis on trust regarding different forms of knowledge by saying that people “may differ in how they evaluate the reliability of the knowledge on which claims for action depend”. Therefore, understanding different knowledges and their connections with the power asymmetries of different constructions of nature is crucial to depict how different stakeholders make use of science, nature conservation and local cosmologies to represent the social world.

In Cantanhez, the bush-village represents a cosmological space of exchange of resources, bodies and fortunes where reciprocal and patron-client relations can continually be reworked, both among people and with the spirits. Among people, some more settled asymmetries of power enable reciprocal networks to transform into patron-client relations. Those not embraced by these relations may try to undermine them, and in what concerns nature conservation, there have been some efforts exerted in that direction. Through gossiping, meetings and protests, many people have been critical towards those establishing patron-client relations at the expense of prohibitions imposed on other people. These may intend that local and foreign nature conservation stakeholders integrate local reciprocal systems, or may pressurise them to extend the patron-client relation so that the critical voices can also be encompassed. While the more anthropological concepts and morality discussed through witchcraft narratives are relevant to understanding the locally acceptable forms of consumption, accumulation and distribution, these ideas are also highly relevant to nature conservation. In its turn, ecology or environmental science is bound up with ecological notions, scientific and quantitative thinking. In reality, it seems that interdisciplinarity is the only way forward to understand and work in socio-ecological systems, and therefore in nature conservation. Interdisciplinarity is the only space in which witchcraft can work alongside ecology. This space has still to be built in academia and in nature conservation, but already exists in the bush-villages of Guinea Bissau.

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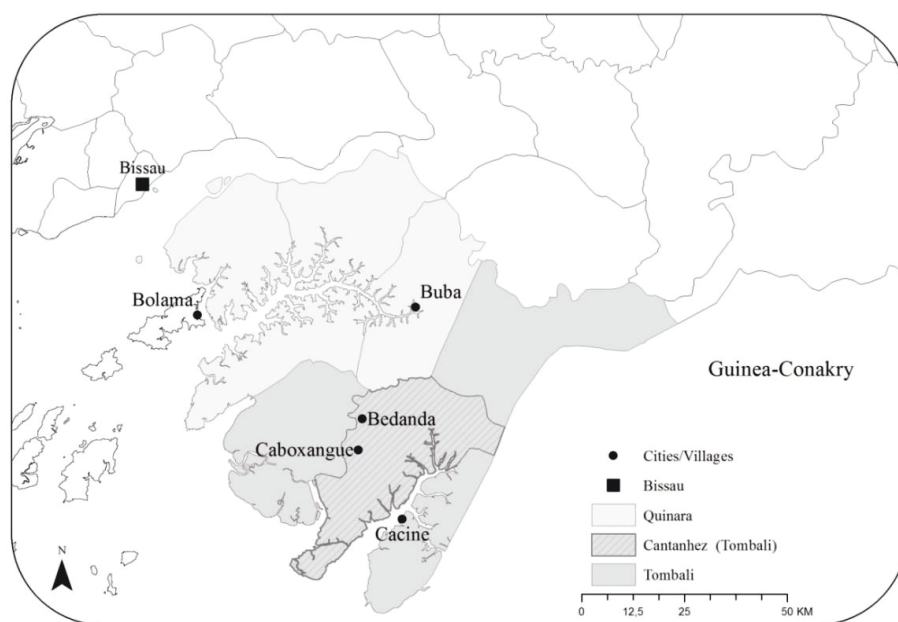
Appendixes

Appendix 1 – Changing elderly and changing youth

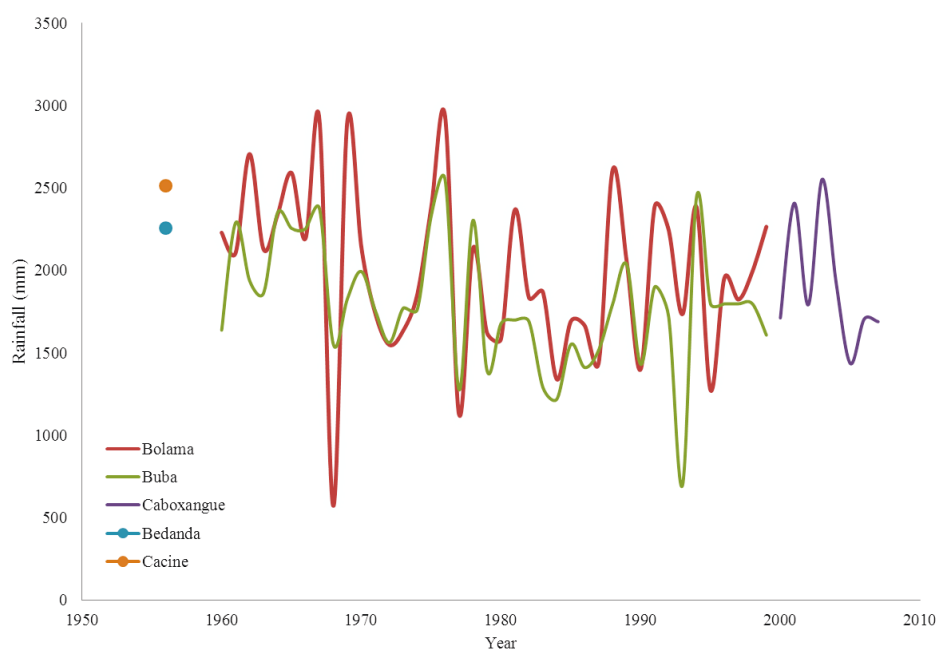
Sousa J. Luz AL. Dabo A. (2014) Changing elderly and changing youth: knowledge exchange and labour allocation in a village of southern Guinea-Bissau. Future Agricultures Working Paper Series.

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Appendix 2 – Rainfall



Places in southern Guinea-Bissau with rainfall data available: city of Buba and Bolama (capitals of Quinara and Bolama regions, respectively), Bedanda and Cacine (capitals of sectors with the same name), and Caboxangue.



Rainfall in the sectors of southern Guinea-Bissau: Bolama, Buba, Caboxangue, Bedanda and Cacine for the period of 1950-2007 (data from Guimarães 1955, DCLAH-GA 2008, Embalo 2008) [Rainfall data in Bedanda and Cacine are restricted to one value each].

Appendix 3 – Structured interview

Question	Notes
1 What do you grow/produce?	I produced a list of crops during the pilot study and from the literature (namely from Temudo 1998a), that I used to as a check list.
2 What do you sell?	
3 What do you exchange for rice?	
4 What decreases the production of crop x ?	being x the types of crops named in question 1
5 How do you minimize the effect of y in your crops?	being y the factors named by interviewee in question 4
6 Is method w able to minimize losses?	being w the methods named by interviewee in question 5
7 In the crop x what is the worse loss-inflicting factor A, B, C or D?	A, B, C and D being previously named by the interviewee.
8 Why is A worse than B?	

Appendix 4 - Preliminary report

Preliminary report

Joana Sousa

Contents:

1(I) – Literature review about nature conservation strategies;

1(II) – Literature review about interactions of farmers and protected species;

2 – Preliminary results on the interactions of farmers-wildlife and farmers-protected areas in southern Guinea-Bissau: Cantanhez National Park and Boé province.

This preliminary report is part of a PhD thesis that is now in its third and last period of fieldwork (October 2009-January 2010; October 2010-May 2011; October 2011 until the present). The report is structured in three parts: (i) literature review about the conservation strategies in a historical perspective and in different contexts; (ii) literature review about farmers' perceptions of wildlife, especially crop raider species in a context of conservation; and (iii) preliminary results concerning conservation in P.N. Cantanhez and Boé. The aim of this document is to contribute to the discussion about conservation by giving a breakdown of examples from several contexts.

1 - LITERATURE REVIEW: CONSERVATION INITIATIVES

1(I) - A brief overview of conservation throughout the last century

In 1900 took place the first international conference for the preservation of African wildlife (London Conference). Despite the strategies agreed between the colonial countries for species preservation, there was no actual interference of the colonial administrations in their possessions regarding the conference commitments. It is after 1940 in the Post-Second World War that the first natural parks were created, in what were at the time the English possessions in Africa. Following Neumann's view (2002) this initiative was in reality rooted on the British aim of expanding the colonial economies. Likewise once population is prevented to have access to bushmeat and other natural resources together with the displacement of people from certain areas the manpower availability increases, which was needed to promote the desired economic growth (Neumann 2002:39). Around the 1950s the establishment of organizations such as UNESCO , IUCN , WWF and AWF diverted the environment management from the responsibility of the colonial control to the global governance. From then on international organizations for conservation have been deeply involved in the technical assistance related to conservation, as well as on land management and in the identification of areas to be defined as parks (Neumann 2002:41).

Expulsion, dispossession, displacement

The first strategies for conservation were based in the abrupt division of people and parks, from which is understandable that by this perspective: (i) people are not part of the nature to protect, and (ii) nature is more important than some groups of people. Like this in USA by the creation of Yellowstone National Park the Nez Perce were displaced and prevented from entering in the lands that previously used (Jacoby 2001:82). In this same country the Glacier National Park prevented the Blackfeet people from entering in an area that was previously part of their territory (Spence 1996b); or the Havasupai people that were dispossessed of their land when the Grand Cañon Reserve was established (Jacoby 2001:149-170); or even the Yosemite National Park that went through a gradual program of "Indians removal" in 1930 (Spence 1996a:28). In Canadá the Stoney were displaced from the area they were living since it became the Banff National Park in the beginning of the XX century (Binnema and Niemi 2006). From 1973 until the present, in India the displaced people from reserves due to tiger conservation were officially estimated in 80 villages and 2900 families (Rangarajan and Shahabuddin 2006). In Tanzania the farmers and pastoralists were not involved in the debate related with the conservation of the area where they lived, not in the colonial period nor in the post-independence, and loose the rights over land access (Neumann 1992). The Masaai were displaced out of what was transformed into the Serengeti National Park (Nelson and Makko 2005). Others cases in Africa were described, such as: Dja Biodiversity Reserve in Cameroon from where the Baka people were removed, and other cases in Dzanga-Ndoki in the Central African Republic, Equatorial Guinea, Gabon, Nigeria and Republic of Congo (see Schmidt-Soltau 2005).

In the 70s since the Stockholm Conference the aims of conservation were link to those of development and therefore throughout the 80s and the 90s the concepts of "sustainable development" and "community-based conservation" became key-words to the nature conservation narratives. The social impacts of protected areas were recognized and the conservation discourse embraced the idea that parks should be more socially inclusive (Adams and Hulme 2001, Carruthers 1993).

However, from this period on several studies have revealed privation, social injustice and impoverishment of populations living in areas where conservation programs have been developed, and some result in displacement to depopulate protected areas (Brokington and Igoe 2009). These authors argue that the formal change of the discourse did not produce real changes and people continue to be displaced. Rangarajan e Shahaduddin (2006:373) add that "arbitrary and unjust displacement without a care for the aspirations of those who are moved is not only ethically unacceptable. It also goes against the grain of a more effective approach to nature conservation". These authors raise other relevant questions: when and how should displacement take place? What methods could be used to analyze the efficiency in terms of conservation and social justice? Is displacement acceptable at all?

Community-based conservation: the present controversy

«a strategy that is successful in a given scenario at a given time is not necessarily replicable to other situations.» (Ancrenaz, Dabek, and O'Neil 2007:2448)

Community-based conservation as a new central concept of the conservation remotes to the World Strategy for Conservation built on the beginning of the 80s and to the debates and outcomes of the World Parks Congress in 1982 . In 1993 IUCN listed approximately 10 thousand protected areas, corresponding to 5.5% of the earth terrestrial surface (Swingland and Russell 1999). This illustrates that the general conservation strategy has been based on defining specific areas where certain measures are applied. It seems consensual that the definition of a natural park involves consequences to the local population. A community who has maintained a certain type of resources use that allowed the existence of a certain biodiversity that justified the recognition of their residence area as a protected area, may or may not continue to perpetuate the type of resources use after the protected area is set. The way people relate to the environment is dynamic and not always resilient to changes, such as economic opportunities, migrations, rural exodus, manpower variations, conservation initiatives, among others. Not only the community, but also conservation initiatives affect positive or negatively what is desired to be conserved. People clearing forests because of land access uncertainty (Hulme & Infield 2001 in Adams & Hulme 2001) or ecotourism serving as vehicles to disease transmission from humans to great apes (see Macfie and Williamson 2010) are examples of this. Therefore, the community, the natural resources and conservation initiatives, as well as other factors that constrain these, relate to one another and influence conservation of a certain natural resource or patrimony.

Several authors discuss the entanglement of poverty reduction and nature conservation (Ancrenaz, Dabek, and O'Neil 2007, Hill 2002) and their ethical concerns (Hill 2002). As was described by Drumm and Moore (2002) to link nature conservation to poverty reduction actions that promote human well-being, a sustainable relation with the environment and ensure conservation are needed. Actually these made the paradigm of “community-based conservation” that relies on the idea that both parts – local communities and conservation goals – benefit from conservation initiatives (win-win scenarios). As a consequence the integrated conservation and development projects (ICDPs) and community-based natural resource management projects (CBNRM) were created (Adams and Hulme 2001). In fact, the mechanisms developed by conservation initiatives may lead people out of poverty, others generate small benefits that contribute to poverty alleviation, or build up networks that prevent poverty increment, or on the hand may even work as poverty traps (Leisher et al. 2010). These types of outcome are different to distinguish and define but some examples will be given in the following sections.

Narratives of success

Becker (2003) describes the rapid success of Loma Alta Ecological Reserve, a community-owned protected forest in Ecuador based on communal land tenure. The author names as essential to this process the following: (i) a local institution representing the community, (ii) a tradition of collective decision-making, and (iii) consensus being achieved between many different families and forest resource users.

Ancrenaz et al. (2007) present a project that a NGO together with the community funded a profit platform to the community through orangutan watching and therefore part of the territory is for tourist activity that are exclusively of community benefit. This platform functions within a transparency mechanism in which the benefits from tourism reach not only the platform employees but also the community.

Better attitudes were described by Mehta and Heinen (2001) for Nepal to contexts where people realize tangible benefits from intervention programs in the course of time, in contrast the poor attitudes around parks and reserves managed under the “fences and fines” model of conservation. Management training and access to tourism revenues showed to be the more important consideration for local people (Mehta and Heinen 2001).

Some efforts have been made to alleviate the tension between people and animals thorough crop loss mitigation. A project for elephants and orangutans conservation in Borneu (Indonesia) has been trying to mitigate crop losses using non lethal control measures and allow the microcredit to acquire fences (Ancrenaz, Dabek, and O'Neil 2007). These authors describe a decrease of 80% in crop losses and on the lethal methods used by the farmers.

In the same way, other descriptions of crop losses mitigation are given by O'Connell-Rodwell et al. (2000) about people and elephants in Namibia. The authors describe that the coexistence of these animals with subsistence agricultural put the farmers in great vulnerability. The deterrent efforts to control elephants crop damage played an important role in improving relations between communities and conservationists (O'Connell-Rodwell et al. 2000).

In Kibale National Park (Uganda) it is argued that the park does not work as a poverty trap since it avoids the poor to become poorer, although it is not able to remove people from poverty (Naughton-Treves, Alix-Garcia, and Chapman 2011). On the other hand, the output of a national quantitative study taking place in Costa Rica and Thailand was that the national parks alleviated poverty. However it is also described an improvement on the national stability and economy, which may be related to the given outcome.

In fact, national and international events can deeply influence local projects. Since the 90s until recently the CAMPFIRE nature conservation project in Zimbabwe was reported to benefit many households through tourism revenues sharing with the State. However changes have recently taken place due to economic and political instability the lead to a decrease on the revenues. The traditional chief and his family had taken over the reduced but still significant revenues from safaris and lodge receipts, which are not reaching the community (Balint 2006).

On the other hand, what is not going well...

Several community-based initiatives have been described as unsuccessful (Ferse et al. 2010), or have been described as myths that justify the activity of NGOs or conservation projects (Brockington 2004). However, the reasons that lead to lack of success vary. Bellow some examples are given:

(Des)empowerment of local governance: the way some conservation projects have guided their intervention diminished the negotiation power of the communities and threaten the legitimacy of their leaders (Fay 2007), creating new poles of control outside of the community (Laudati 2010a, Neumann 1992);

Community as an isolated factor: taking the community as a separate entity that is not entangled in a social, cultural and economical matrix lead authors such as Berkes (2004) to question the concept of community-based conservation. This author as others (Shackleton et al. 2010:1) , highlight that the process of conservation varies temporally, it is not static, and therefore the initiatives of conservation have to be constantly readapted to new circumstances;

Lack of effective participation: instead of perceiving conservation as a process that changes over time it is demanded the community to act accordingly to previous agreements (that sometimes occurred a longtime ago). This blocks an effective participation and adequacy (Adams and Hulme 2001). These authors distinguish “decision made by the community” from “decision made for or about the community” (Adams and Hulme 2001:198). Some authors have reported the community sense of forgetfulness based on the idea that wildlife is more important than themselves (Ancrenaz, Dabek, and O'Neil 2007, Hill 2005a);

Lack of commitment: When income or benefit expectations were created and are not fulfilled the sense of betrayal may arise. In the Budongo Forest Reserve a project that included State and local community co-management established that local people would receive 40% of the income. This was abandoned because the income did not reach the farmers suffering crop losses from wildlife raiding (Lauridsen 1999);

Asymmetry and inequality: the costs of biodiversity are not distributed in proportion with their benefits, people suffering the costs of conservation (local community) are not

the ones receiving the direct or indirect benefits of it (conservation projects, NGOs, researchers);

Policing and Patrolling: are present in various contexts of nature conservation, however various studies showed that there are a few benefits to the local population when conservation initiatives are implemented with a patrolling policy (Knight 1999, Sitati et al. 2003, Sodikoff 2009). In some situations this policing involves violence perpetrated by park trained staff that are justified in the name of a global good (Forsyth and Walker 2008). Violence during patrolling was also described and criticized by Laudati (2010b) and Infield & Namara (2001);

Land access uncertainty: recognizing land rights to the communities participating in conservation is essential (Adams and Hulme 2001, Gillingham and Lee 1999). This may avoid what happened in Uganda where a community deforested large areas as a way to deviate the interests of the government from the area they claimed as theirs (Hulme & Infield 2001 in Adams & Hulme 2001). Also in a national park of this country other community feels that the forests are now property of the Government and therefore are not owned by them anymore (Webber 2006). It is convenient to highlight though that by land rights recognition it is not meant the bureaucratization of land access, which may enable local actors to respond to the local situations.

In spite of what is described above Curran et al. (2009) discuss the negative trend of the studies been made about community-based conservation. The authors distinguish direct expulsion (physical displacement) from the displacement provoked to the loose of access to natural resources (economic displacement); meaning that the way conservation is being made has improved. Moreover, these authors also argue that the number of people been displaced by conservation or negatively affected by conservation “has not been collected either by those that criticize conservation, or by conservationists themselves” (Curran et al. 2009:42). Others state that the debate is premature (Adams and Hulme 2001) or that the attempt of combining development and conservation should not be abandoned (Adams et al. 2004).

Tourism and benefits sharing

Several activities have been numbered as able to generate benefits in a sustainable way that could improve the livelihoods of those living alongside wildlife in protected areas. There are other activities but I will mainly discuss the tourism because is one of the strategies adopted in the regions of Guinea-Bissau where I have been working. Leisher et al. (2010:8) relying on a literature review about the different studies and conservation initiatives, highlights that nature tourism can contribute to alleviate poverty if the area (i) has characteristics able to attract people that are aiming to pay for visiting; (ii) is of relatively easy accessibility; and (iii) ensures the direct benefit to the local community.

There are a few positive results regarding the great ape tourism that have raised the support of the local community towards conservation (Ancrenaz, Dabek, and O'Neil 2007, Archabald and Naughton-Treves 2001). However, other studies raise the alert to the fact that if the benefits are reaching only a few inhabitants (in several occasions only a very small number) it can lead to negative perceptions towards conservation, especially if at the same time general resource use limitations are established for the all population of that park/reserve.

In cases which the tourism is successful and the revenues theoretically designated to the local community (given the principles of community-based conservation) should not be replaced by private (Horowitz 1998:399) or State management (Laudati 2010a, Neumann 1992). When the participation of the communities is not achieved frustration takes the place of expectations (Adams and Infield 2003, Drumm and Moore 2002, Laudati 2010a). There are various examples that describe situations in which the external groups are those benefiting from protected areas (Gillingham and Lee 1999, Sitati et al. 2003).

Moreover, in places where tourism benefits reach the local community, the richer and more educated members of the community are easily the ones receiving the benefits (Leisher et al. 2010); therefore care should be taken to adequately share the benefits according to conservation efforts, guarantying they reach the more vulnerable members of the community (Belsky 1999, Blomley et al. 2010:49,51, Macfie and Williamson 2010:18). In other cases tourism have been negatively impacting the welfare of local people, constraining people's access to their land (Laudati 2010b).

The possible way forward

«Conservation interventions require evaluation to understand what factors predict success or failure.» (Waylen et al. 2010)

Regarding the positive and negative descriptions of nature conservation initiatives, the reasons that make them succeed or fail are into some extent common: (lack of) participation and costs/benefits tradeoff. These are determinant to the long term and should be monitored and understood in order to continuously adequate the policies depending on what is failing. Balint (2006), who followed the recent history of CAMPFIRE in Zimbabwe, says that “outcomes will improve if project leaders pay closer attention to four development indicators—rights, capacity, governance, and revenue—that are often taken for granted”.

1(II) - PEOPLE AND WILDLIFE INTERACTIONS

Probably in several agricultural contexts people have been living together with wildlife since ever. This relation is dynamic - human practices produce short to long-term changes in the landscape, people's community in itself also changes, and the way people and wildlife relate to each other has probably varied with these changes. In the

end nature conservation depends in a large extent on the perceptions that people living in protected areas have about wildlife species and conservation initiatives. Hill (2004) argues that the perceived risk concerning a certain species is more important to understand and take into account for conservation purposes than the actual risk represented by the species.

Several studies look at people and wildlife living in close contact, and lately several researchers look at people and great ape interactions (Dunnett, Orshoven, and Albrecht 1970, Duvall 2008, Hill 1997, Hill and Webber 2010, Hockings 2009, Hockings and Humle 2009, Humle 2003, Leciak, Hladik, and Hladik 2005, McLennan 2008, Naughton-Treves 1997, Sept and Brooks 1994, Webber 2006). As well, in Guinea-Bissau chimpanzees live in close contact with people. Therefore for these kind of contexts and for the sake of conservation there is a need to understand the behavior and ecology of chimpanzee (Hockings et al. 2009, McLennan and Hill 2010, Naughton-Treves 1998, Tweheyo, Hill, and Obua 2005) but also there is a need to understand the way people perceive and act towards the chimpanzee (Hill 2000, Hill and Webber 2010, Kohler 2005, McLennan and Hill under review, Nyanganji et al. 2010, Richards 1995). Both types of information should contribute to a better adequacy of conservation planning.

In places where crop losses are perceived to be important people can become hostile towards conservation programs (Naughton-Treves 1998) or feel frustrated due to park legislation (Naughton-Treves 1997). Farmers can also consciously increase the crop losses as a way to search for compensation (Priston 2005, Siex and Struhsaker 1999) or these biased reports can also be a consequence of social tension (Knight 1999).

In Uganda, and also in Guinea-Bissau, when domestic animals damage crops the problem is taken to the village committee and the owner of the animal as to pay for the damage or the animal is sold to compensate it (Hill 2005b). In the same way, in other places and after the implementation of conservation measures the government is perceived as the “owner” of the forests and therefore the damage caused by “their” animals have to be compensated (Gillingham and Lee 1999, Webber 2006). In Uganda the local community feels frustrated because it is forbidden to kill species that crop raid and the official entity responsible for wildlife is reported not to show interest on the issue (Webber 2006).

A decrease on access to land leads to smaller cropland size. This also means that people will have to rely on shorter harvests and be in more vulnerable situations, which will consequently tend to decrease the tolerance towards crop raiding (Webber 2006). People and wildlife conflict have become a local political problem and an issue of debate in conservation (Hoare 1999).

PRELIMINARY RESULTS

Notes considered relevant to IBAP/IUCN/ONGs

The goal of these notes is to transmit some of what I have been following through my fieldwork. What is presented bellow aims to represent farmers' perspectives

together with my interpretation of the initiatives of nature conservation in the Cantanhez National Park and Boé sector. Conservation is often approached by the urgency of biodiversity preservation; this report aims to give farmers' perspectives when they face that urgency. I would like to highlight that a great part of what is written below corresponds to my analysis of what I have been having in touch with and I recognize that it may not be the "full story". Therefore it would be interesting to know your view about what I describe below, as well as other aspects that are probably missing. I believe that by sharing perspectives both conservation planning and our experience as actors can be enriched. I would like to add that I am completely available to participate in meetings and discussions that your institution thinks would be relevant.

CANTANHEZ NATIONAL PARK – preliminary findings

In Cantanhez people and wildlife live in close contact. The success of a certain species conservation deeply depends on (i) the way farmers perceive the species, (ii) species' role on farmers' livelihoods, (iii) how farmers interpret and judge conservation initiatives and (iv) the benefits and sacrifices involved. In this region, the existence of chimpanzees and patches of dense sub-humid forests have been giving rise to NGOs projects, conservation projects, and attracting researchers and tourists. All these groups need and/or generate capital and goods (tourism revenues, research equipment, per diem payments, and so on) that arise from the relation established with the emblematic species and/or the forests. The local community is aware of it, they know chimpanzees attract funding and tourists pay local guides and hotels, and several people, that are not from the community, improve their livelihoods with the "help of chimpanzees". Referring to myself as an example, since it is the easiest to talk about: local people describe me as someone who is "searching for a living", they know that some benefit I may have with my research – and it is true that my thesis may enrich my curriculum, which may give me some benefit in the future. Well, from my example to several other types of examples, the general perception is that "others", but not the major part of the community, receive benefits of some kind but almost all community members are constrained by conservation, especially concerning farming. This relation is locally perceived as unequal and generates a feeling of frustration and forgetfulness.

Moreover community participation to define conservation measures is reported to be limited to leaders' acceptance, such as kinglets. This could perhaps be mitigated with more frequent meetings or long term programs to discuss relevant issues. Also, the fact that the park does not have a headship is often referred by the ones involved in conservation as a handicap for solve conservation problems.

Recently, the management committees of Cantanhez and State forest guards had had more logistical means and power of intervention. While some initiatives were viewed as positive for a large part of the community, others were described as abusive by several participants of my study: burning houses and physical violence divided participants' opinions. It is convenient to look carefully at these kinds of measures since they can be negative to conservation on itself; and moreover may generate local

conflicts between those who benefit and those who do not benefit from conservation or between ethnic groups that use more or less eco-friendly practices. Finally, for a farmer, land access uncertainty also means survival or welfare uncertainty, which may lead to defensive or rebut attitudes.

GENERAL CONSIDERATIONS

Given the different set of actors involved in conservation (community, local leaders, NGOs, projects, researchers, state offices and officers) many interpretations are possible, and maybe inevitably different stakeholders have different perspectives; however, despite the relevance of the “single stories” that are given by different actors all are important to understand a certain context.

From my point of view the main causes of lack of success of conservation initiatives are, as was approached in the literature review section, inadequate communication between stakeholders (Adams and Hulme 2001, Ancrenaz, Dabek, and O'Neil 2007, Hill 2005a) and the lack of transparency (Balint 2006, Laudati 2010a) These problem occur in different contexts and are not specific of certain places or organizations.

Communication and transparency as a way of building reliance

Both in Boé and Cantanhez communication have a strong face-to-face component, through which people base their agreements, communicate knowledge and manage conflicts. In the same way, people’s reliance to one another is negotiated and mediated orally. Therefore, transparency between what is told and what is effectively done builds the trustfulness profile of a certain person/entity. Tolerance towards something that was not achieved is also mediated and negotiated orally through gatherings and advising.

Considering the importance of face-to-face communication it is important to think about how the communication with the community has been lead. Occasional meetings are not sufficient to build up the trust that is needed for an open discussion and effective participation – these so essential to community-based conservation. Instead, those who are or feel to be more vulnerable follow principles towards occasional meetings that are not the same as those of the organizations visiting them; especially when people feel to be inferior in some way try to find their strategies to cope with the sense vulnerability. For building trust it is essential a long lasting, frequent and intense contact, as those that technicians of projects in the terrain may establish, being thereafter essential transparency, namely regarding expectations given to people.

The importance of transparency reveals itself also in the apparent lack of consistency in adherence to rules and protocols whereby some individuals are reportedly able to access certain natural resources that are not available to others; or reported situations of leaders or empowered members of the community or outsiders receiving some benefits while others that have followed a more eco-friendly behavior do

not. These problems are common around the world but from my point of view it will be a benefit for conservation if those are monitored.

Crop raiding and crop raiders – a brief description

Farmers in my study report the cane rat as a species having a great impact on the crops and describe an increase of cane rat's density. Others, such as baboons (especially in Boé) can occasionally put a household in a situation of vulnerability. Bush pigs may have the same effect, being more difficult to predict and control. Mitigating birds' damage seems to depend on manpower availability, especially of young children that still did not start attending school. In general farmers describe nocturnal animals as the most difficult to control. Chimpanzee damage is described in different ways and their reports cannot be isolated from the fact this species gave rise to new local reality through conservation interests. In general, different species have different crop raiding behaviours that are more or less predictable and more or less easy to control. These factors, together with what was mentioned above, influence the way farmers relate to a certain species. A more deep analysis on this will be sent to your organization after a more detailed data analysis. I would like to highlight that this report was based preliminary results, since data collection is still ongoing.

Appendix 5 – Cantanhez National Park through a camera

The pictures below were taken by a Nalu young man who is a community guard and a member of the management committees of the Cantanhez National Park.

Image removed from electronic version



Ntchapter initiates.

Image removed from electronic version

Image removed from electronic version



Shrine close to the village.



Researcher collecting chimpanzee faeces.



Image removed from electronic version

Gathering at the shrine. The healer is dancing.



Local market



A man who wanted to steal the chieftaincy



Maize





New high school.



Image removed from electronic version



Death of an elder.

Elder who has been the translator to the President of the Republic.



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Image removed from electronic version



A theatre play by a health project



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Image removed from electronic version

These other pictures were taken by a Nalu young man who is a tourist guide and a member of the management committees of the Cantanhez National Park. He is also a farmer and a member of the founding lineage in his village.



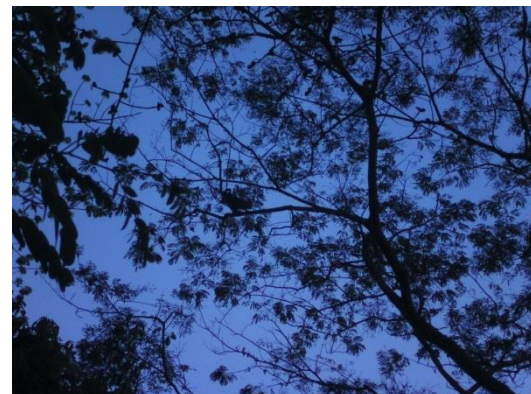
A dead monkey.



Mandjambe



Mampufa







Dead otter.



Chimpanzee nest.



Resting place of a hunter.



Deforestation for upland farming.

Appendix 6 – Crop prices

Local prices for several crops in Cantanhez during the period 2008-2011 for December to November, respectively (see Table 6 for information about the most frequently traded crops).

Products	Gender		Price (XOF)	per	Months ⁽¹⁾											
	♀	♂			d	j	f	m	a	m	j	j	a	s	o	n
Coco yam	X		1000 3000-4000	Large tin ⁽⁵⁾ Bag 60	Depends on availability											
Honey ⁽¹⁾		X	500-1.000	Litre	Depends on availability											
Kernel palm oil	X		500	Litre	Stable price											
Bean (<i>congo</i>)		X	200-300	'Kg'	Depends on availability											
Bean (<i>mancanhe</i>)		X	250-300	'Kg'												
Maize		X	1000-2.000 200	Large tin 'Kg'	Stable price											
Millet	X		1000	Large tin	Stable price											
Sorghum	X		200	'Kg'	Stable price											
Potato		X	3000 1000	Bag 60 Large tin	Stable price											
Cucumber	X	X	25-50	Unit	Depends on size											
Pumpkin		X	100-300	Unit	Depends on size											
Okra	X		50	2-6 unit ⁽⁷⁾	Stable price											
Bitter aubergine	X		100	3-8 unit ⁽⁷⁾	Depends on size											
Roselle	X		25-100	Pile ⁽⁸⁾	Depends on size of the pile											
Tomato	X		25	Cup ⁽⁹⁾	Stable price											
Cashew wine	X		100	Litre	Stable price											

⁽¹⁾ Beehives produce 5-15 L of honey. During the rains Balanta buy it regularly because they use it to produce wine and pay workers for mangrove rice farming.

Fruit-tree seedlings are also traded. People exploit wild honey or produce honey in traditional beehives, both for consumption and for sale. Less important crops were occasionally described as sources of income: custard apple (250 XOF), papaya or mango (only the *mango di faca*, kl, variety is occasionally sold, 100-200 XOF), pineapple (100 XOF), sesame (25-50 XOF), fonio (500 XOF/kg). Fishing and hunting catches are also locally sold: fish (250 XOF/kg), duiker or gazelle meat (500 XOF/kg), bush pig meat (250 XOF/kg).

As described by Devereux (1993) for Ghana, people avoid selling goats, cattle or other assets to ensure future security. Meat consumption from domestic animals is mainly restricted to important occasions (Almeida and Cardoso 2008), such as when important guests visit the compound, marriages, funerals, baptisms. Small livestock, such as goats (minimum 7,500 XOF each) and chickens (1,000 XOF each) are frequently traded when rice stocks are depleted. Fish is consumed every day when available, bush meat is consumed less frequently and whenever a hunter caught an animal it was rapidly sold out. Both fish and bush meat are exchanged by rice.

Appendix 7 – Fixing a dike



Dykes and ditches in mangrove rice farming are essential to good rice harvests since these are responsible for sea and fresh water management.

Appendix 8 – Trade by women

Products manufactured/traded by women in local markets and villages.

Products manufactured/prepared by women	XOF/unit
Mainly traded in the village	
<i>panquetes</i> ⁽¹⁾	25
fresh oysters	100/cup; 500/L
3 cigarettes ⁽²⁾	100
2 cigarettes ⁽³⁾	50
ashes ⁽⁴⁾	500/L
Also regularly traded in local markets	
mangrove fried fish	25
black soap and <i>soda</i> soap	100
salt	100
brooms	100
'mampufa' ⁽⁵⁾	1000
'balai' ⁽⁶⁾	1000
baskets for storage	1000-1500
cassava (4 tubers)	200
banana (3 fruits)	50

(1) fried dough of flour with sugar (400 XOF of profit out of 1,000 XOF invested)

(2) 2,500 XOF profit in each volume of 10 packages of cigarettes

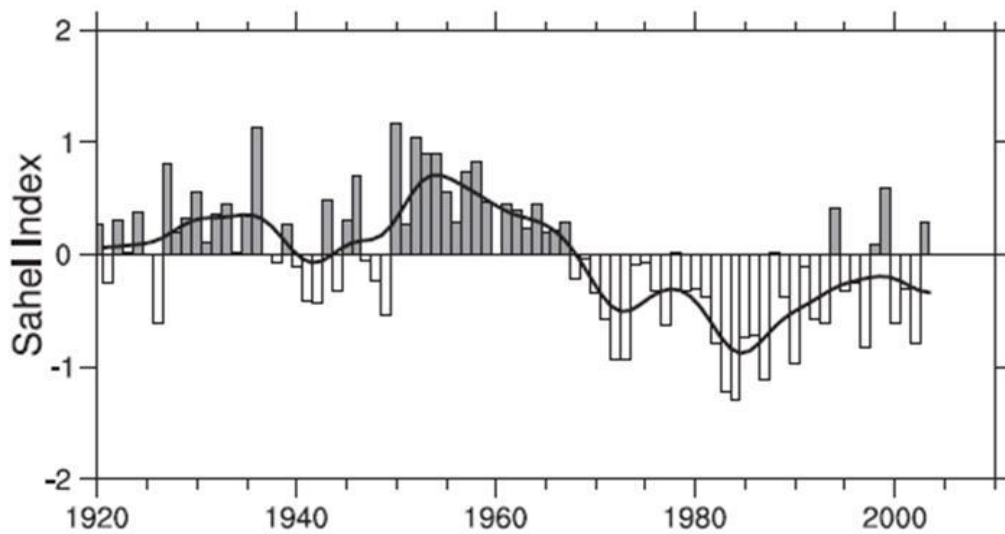
(3) 4,100 XOF profit in each volume of 10 packages of cigarettes

(4) "bitter ashes" from burning certain plant species (groundnut plant, banana pith) and suitable to cook soap

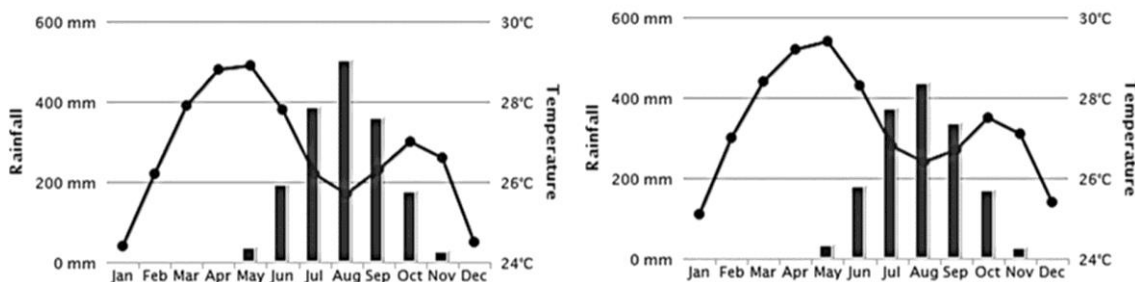
(5) mat made of a Cyperaceae plant

(6) flat basket used to sieve the rice grain from the husk

Appendix 9 – Variations on rainfall and temperature



Region rainfall for the Sahel (10°N-20°N, 18°W-20°E), including Guinea-Bissau, from 1920 to 2003, “derived from gridding normalized station anomalies and then averaging using area weighting” (imported from Trenberth et al 2007:297).



Average monthly temperature and rainfall for Guinea-Bissau from 1900-2009 (in the left) and from 1990-2009 (in the right) [source: (The World Bank Group 2013)].

A study by Dai et al. (2004), which included weather data from Guinea-Bissau, confirmed the occurrence of droughts in the Sahel since the \approx 1970s (:1327), and found that multi-year oscillation of precipitation appears to be “more frequent and extreme after late 1980s than previously” (:1329). Likewise, a study by IPCC (Intergovernmental Panel on Climate Change) says that “The largest negative trends [at the global level] in annual precipitation were observed over western Africa and the Sahel” (Trenberth et al. 2007:256). The linear trend of this decrease in West Africa for 1900 to 2005 was calculated as 7.5% (significant for 1%) (Trenberth et al. 2007:256), and was marked by fewer events of significant rainfall (:299). Even though, there is little capacity to predict changes in the climate in the Sahel and Guinean coast (Christensen et al. 2007:866). Moreover, Dai et al. (2004) report a recovery on rainfall in the Sahel after 2003, and similarly my informants say that the rainfall in 2011 to 2013 was “proper” (*tchuba tchubi diritu*, kl).

Appendix 10 – Categories of crop loss

Description of crop loss categories: market, litter, belief, farmer's performance, other people's behaviours, environmental factors, protected area, disease (the category of wildlife crop raiding was not described in this table).

Factors	Description	Categories	Associated with
Price	The prices of cashew nut are unpredictable and it was described to be equivalent to crop loss	market	
Plastic bags and batteries	Plastic bags thrown out as being bad to soil fertility. The informant reporting this said "they are right, I've tested", regarding environmental awareness campaigns	Litter	
Touch in salt and then tough the crop	Touching blood of an animal and then touching cocoyam will make them to rot or they will not be able to grow when planted	Belief (Contamination)	
Touch the crop with the hands with animal blood	Touching blood of an animal and then touching cocoyam will make them to rot or they will not be able to grow when planted. The same may damages papaya trees	Belief (Contamination)	
People snot	People's snot makes the papaya tree to die.	Belief (Contamination)	
Bad smell	Some people are reported to have bad smell and this is not good for some crops	Belief	
Women climbing on trees	Kola trees do not 'like' women that climbing on them. Women should get a long stick and harvest them	Belief (gender)	
'Robbery'	"Kola trees do not 'like' robberies". When someone steals kola fruits the tree will not bear in the next year	Belief	Farmer's responsibility (lack of guarding)
Robbery	Stealing crops	Other people's behaviour	
People	This might be associated with the above. It regards people eating crops; the participants did not report it as a robbery but as 'people' benefiting from the crops.	Other people's behaviour	
Children	Children can damage crops while playing around or misbehaving	Other people's behaviour	
Fire	Only regards to cashew orchards. During the dry season uncontrolled fires can reach cashew orchards.	Other people's behaviour	Farmer's performance Workforce
Stomping Getting late	If people walk around in the croplands Getting late with slashing land, ploughing, weeding	Other people's behaviour Farmer's performance (agriculture schedule)	
Late harvest	Getting late with harvesting can cause the crop to rot or dry out	Farmer's performance (agriculture schedule)	
Rot	Some crops are reported to get rotten (late harvest, diseases, infections as possible causes)	Farmer's performance	Environmental factors

Inappropriate spacing	Leaving inappropriate space between plants reduces yields	Farmer's performance	
Lack of water level control	Only regards mangrove rice farming. Lack of checking the fresh water level inside the rice polders during the rainy season or lack of checking the sea water during the dry season to adjust the dykes' height.	Farmer's performance (agriculture schedule)	
Lack of proper dykes	Only regards mangrove rice farming. If dykes are not built or their maintenance does not take place the rice is damaged by sea water	Farmer's performance	Workforce
Presence of other crop	The plant of cucumber or beans (<i>mancanhe</i> variety) can prevent the growing of other crops	Farmer's performance (farming design)	
Burning	Only regards upland farming. After slashing and drying of the vegetation it has to be burnt to proceed to seeding. Insufficient or 'too much' burning have negative consequences for the cropland.	Farmer's performance	Environmental factors (unexpected rains can wet the vegetal material and limit the effect of fire)
Lack of manure	Lack of manure with dead plants	Farmer's performance	
Lack of weeding	Both mangrove and upland farming requires more or less intensive weeding	Farmer's performance	Workforce
Lack of guarding	People guard their croplands from crop raiders	Farmer's performance	Workforce
Lack of money to hire workforce	Other farmers are hired to perform certain agricultural tasks, such as weeding, harvesting and ploughing.	Farmer's performance/condition	
Lack of stake	Yams need a stake to grow	Farmer's performance	
Salty water	Only regards mangrove rice farming. In case the sea water is able to enter in rice polders the rice is damaged. The flooding of sea water happens due to different reported causes: reported sea level rise and/or lack of workforce to build proper ditches and dykes.	Farmer's performance	Environmental factors Workforce
Too much manure	Some crops do not like 'fatty' soils, such as the cocoyam	Environmental factors (soil type)	
Lack of water in natural springs and wells	In the late dry season many springs and wells dry out which prevents the women from watering their nurseries and gardens	Environmental factors (weather)	
'Bad ashes'	There are ashes from the burning of a specific tree (<i>bube</i> in Polar, <i>Anthonothena crassifolia</i>) that damages the rice	Environmental factors (forest species composition)	Farmer's performance (choosing the plot to farm)
Sahara dust (<i>Quaresma</i>)	Dry winds that appear around April/March that dries out the cashew flower	Environmental factors	
Wind	Associated with the above it regards very hot and dry winds that damage fruit tree flowers	Environmental factors	
Dry soil	Lack of humidity in the soil	Environmental factors (soil type)	

Lack of flowers	Constrain the production of honey in the beehives	Environmental factors (biological production)	
Lack of rain	Shorter, unpredictable and discontinuous period of rains	Environmental factors	
Too much rain	If there is too much rain the certain growing stages of some crops farmers report that it can lead to reduced yields	Environmental factors	
Lack of fog	Lack of fog, humidity in the air	Environmental factors	
Fog	Too much humidity in the air	Environmental factors	
Sun/high temperatures	Sun and high temperatures are describe to damage some crops	Environmental factors	
Lack of cold	Lack of cold was described to limit the bearing of fruit trees	Environmental factors	
Seasonal river level rise	If upland rice is cultivated nearby the river intense rains may lead to a river level rise that can flood the upland rice and damage the rice plants	Environmental factors	
Strong tides (<i>iagu sibibu</i>)	Only regards mangrove rice farming. People report stronger tides that burst the dykes. This category is similar to the “salty water” (see above) although here the emphasis is put in a change in an environment condition. However, this may also be due to weaker dykes.	Environmental factors	Farmer’s performance Workforce
Lack of ‘good land’/Lack of mature forest	Good soil to farm rice is associated with the availability of mature forest	Access to land	Lack of mature forest Protected area
A lot of weeds	This is reported to be a consequence of lack of mature forest, which is often associated with the constraints of access to land	Access to land	Lack of mature forest Protected area Farmer’s performance Workforce
Disease (“<i>something that burns it from the inside</i>”)	Some croplands losses were described to be a consequence of diseases	Disease	

Appendix 11 – Mangrove rice field



Mangrove rice field (prique, kr) in Cabam.

Rice plants are organized in ridges. Fresh water fills the ditch. The dykes, ditches and pumps allow for water management between fields within a same row of fields (*corda*, kr) and the sea. This is a mangrove rice field in a very good condition. The water lilies grow exclusively in fresh water, which means that the sea water has not entered this field.

Appendix 12 – Rice development



Rice panicles in different stages of development: [left] end of the heading stage; [middle] grain filling stage: a milky substance starts to accumulate and form a thicker texture; [right] the grain is formed.

Before heading is completed and the rice panicle is covered, farmers say that rice is pregnant (*aruz prenhem*, kl). When heading is completed, farmers say that “rice came out” (*aruz sai*, kl), but “rice did not drink yet” (*aruz ka bibi inda*, kl; photo in the left). Local farmers call the milky substance as ‘milk’ (*liti*, kl). When the grain is formed they say the rice ‘has drunk’ (*I bibi*, kl).

Appendix 13 – Invertebrates



Several invertebrates were observed while we were measuring rice damage. Some of them seemed to be only seating on rice panicles or leaves and we did not know whether they were actually feeding on the plant. There was a considerable invertebrate biodiversity using rice fields. The lowest photo is the invertebrate responsible for the ‘wind’ damage (literally from the Nalu). This invertebrate develops inside the rice stem.

Appendix 14 – Crop loss by invertebrates



Damage inflicted by invertebrates on rice panicles is diverse. It was not possible to understand what type of insect inflicted each type of damage and only some damage patterns were determined. The panicle can be completely eaten [upper photos] or insects can sting the panicle and suck the milk, which makes the grain become black and bitter [lower photo]. The upper left photo corresponds to grasshopper damage.



Rice panicle with bird damage.

Birds damage rice very frequently. In an upland rice field it is not good to mix a lot of maize with the rice because birds seat on the maize leaves and eat rice grains.

Appendix 15 – Groundnut damage



Groundnut damaged because of unexpected rains in December 2011. The green seedlings in the centre of the circle are newly grown groundnuts.

After groundnut harvest in October/November the plants are left in the fields to dry out. When plants are properly dried they are then piled and the fruits are ready to be taken out from the plant by thrashing the plants against a horizontal stick. By then farmers build a small shelter and a wooden structure to thrash the groundnut. The upper part of the plant is left in the field and only the fruits are transported to the village, which was then prepared, piled and stored. The upper part of the plant can be burnt to make ash to prepare soap or it can be used as manure is cassava stalks. Unexpected rains in late December 2011 caused a lot of people to lose considerable amounts of groundnut.

Appendix 16 – Chimpanzees feeding on cassava



Except for very rare reports (Sousa 2007) I have not heard about chimpanzee damaging cassava and also my field assistant was quite surprised with the evidences we found. Chimpanzees seem to twist tubers to take them out [upper left photo] and shake the branches [upper right photo], maybe for trying to uproot the plant [below on the right]. These behaviours might be associated with the introduction of the Guinea-Conakry cassava variety that has stronger stalks.



Appendix 17 - Chimpanzees feeding on banana

Evidences of chimpanzee feeding on banana pith: internal layers of banana pith [upper photo], boluses with banana pith fibers [lower photo].



My field assistant did not know chimpanzees fed on banana pith. He was aware of baboons feeding on banana pith but not chimpanzees. He described that the thinner parts inside the pith is what they might be looking for when they tear the stalk. He also says that they look for pith when there is fresh water scarcity, such as bush pigs to.



Appendix 18 – Theft of kola nuts



Kola nuts robbed in a kola orchard.

I was with a field assistant and the owner of the kola orchard when this pile of kola nut shells was discovered. The person who harvested and took the kola nuts did it twice - there are capsules at different decay stages. They were convinced that the culprit was a youth from the village.

Appendix 19 – Methods to control crop damage

Criteria of similarity for post-grouping interviewees' responses regarding the control methods used by local people we as follows:

STORAGE:

- Dry in the sun before storage;
- adding lime tree leaves in the container where it is stored;
- Preparing it properly before storing.

MINIMIZING COSTS:

- Keep an eye on the price;
- Selling early.

AVOIDANCE:

Place

- Chose a parcel of land away from the village and from the places that are usually exploited;

Time

- Prepare the field early;
- Make speedy farming;
- Harvest early;

Vegetation clearing:

- Clear beneath the trees;
- Weeding;
- Clearing the place where the animal enters in the farm;
- Clearing the vegetation around the farm;

Design:

- Cultivate a large area;
- Plant cucumber in the farm edge;
- Open a trail
- Associate it with lime;

Biochemistry:

- Open the dyke to remove the water surplus;
- Watering;
- Add salt;
- Sprinkling ashes;
- Salty water.

NON-LETHAL MITIGATION:

Chasing using noise:

- Shoot to chase away;
- Hit in tins;
- Pieces of zinc hanged together that shake and make noise with the wind;
- Screaming and whistling;

- Hitting in trunks with a machete;
- Talking;
- Three pieces of rope tied to a stick; rotating energetically the rope around the stick in circles.

Chasing using smell:

- Sprinkling their own dust;
- Sweated shirts;
- Cloth suffused with perfume, soap or gasoline;
- Burnt oil;
- Hanging in stick intestines of a dead animal;
- Rotten and stinking crabs.

Chasing with light:

- *Ligaçon* (kl);

Chasing with light/smell

- Fireplaces in the farm;
- Burn rice husks;
- Burn tires;
- Burn fishbones under fruit trees (for fruit flies);
- Burn palm fruits kernels;
- Burn weeds (for fruit flies);
- Burn old shoes;

Chasing with the human presence:

- Guarding and chasing;
- Guarding during the night;
- Hunt down the animals back to the forest;
- Use a sling-shot;

Visual:

- Scarecrows;
- Cloths;
- Cassette tapes tied in branches around the farm which move with the wind;

Blocking structures:

- Fences made of palm leaves;
- Fences made of burnt trunks;
- Other fences;
- Build high dykes and deep ditches;
- Block the entrance with millet around the field;
- Cover the harvested rice;
- Cover the banana bunches;
- Hang the harvested rice in trunks that were not attacked by termites;
- Dig ditches around the farm;

Magic:

- Islamic healings;
- Ceremonies to the spirits in the *baloba* (kl, altars);
- Others.

LETHAL:

- Shooting;
- Hunting (with fire weapons and sticks);
- Kill with a *machete*;
- Kill by hand (for insects);

Chemicals:

- Mix the product with some grains of rice that are scattered in the farm;
- *Erythrophleum suaveolens* (teli, fl) + *Parkia biglobosa* (netetu, fl)
- Add products in storage containers (bags and jerry cans);

Snares and traps:

- Fishing nets (especially for cane rats);
- Holes covered with branches (especially for cane rats). This can be put in open spaces left in between fences;
- Snare of palm fruits (for small birds, monkeys, squirrels). Chili can be added to the rope to avoid animals from chewing the rope and escape;
- Sticks with sticking glue (*binhale*, kl) to catch birds.

Appendix 20 – Guarding



During crop development and maturing people spend a lot of their time guarding the fields from wildlife and birds. They build temporary structures for guarding [upper left] and to cook and rest [upper right]. Children play an important role on chasing birds and monkeys during the day. They are equipped with sling-shots and use them constantly in a never ending task.

Appendix 21 – Hunting porcupine



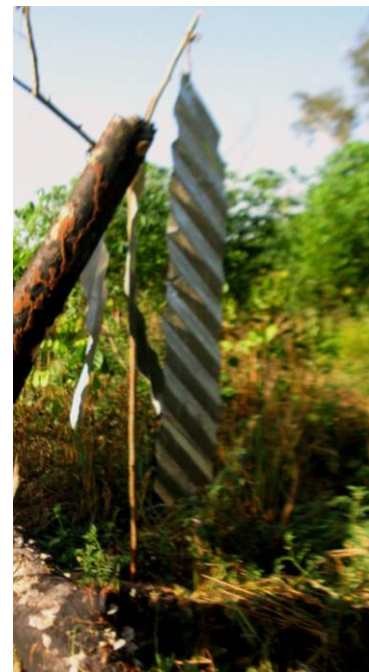
A porcupine was caught by a youngster – a friend of the owner of the farm - in a wire snare by the edge of a rice farm. The youngster is also a hunter and said that it is easier to catch wildlife in snares by the croplands than in the forest. He added that it is more likely to catch bush pigs near to potato and groundnut farms. At that time, he had four snares installed: one close by a groundnut field and the others close to rice farms. In this agricultural year he had caught two porcupines, one cane rat and one duiker. The cane rat was caught in a rope snare. He sold this porcupine meat by 500 XOF a kilo and he also distributed some meat as gifts in the village. The porcupine had 90 cm length. He sells the meat in the village – it is forbidden by the elders to sell abroad.

Appendix 22 – Noisy deterrents



Noise is an important aspect of control methods. Devices are built and used as a noisy-chasing method. These provide different patterns of noises to avoid wildlife and birds to become familiar with a single pattern.

Ropes are tied together and then tied to a standing stick. Children swing the stick making the rope to energetically rotate in circles around the stick. This makes a continuing and strident sound [upper left]. For nocturnal species people prepare devices hanging small sheets of zinc, tins and an old bicycle pump [see upper right] that clang together in the wind, which hopefully are suspicious to bush pigs and porcupines [right and upper right photos].



Appendix 23 – Scarecrows



Visual signals can mitigate crops raiders' attempts of visiting the field. Colorful cloths are used to cover banana bunches which works simultaneously as a warning and to hide the maturing bananas [left].

Scarecrows are used in the mangrove and upland rice farms and are also used as visual warnings to diurnal wildlife [photo below].



Appendix 24 - Fencing



Fencing is an unavoidable technique to keep domestic animals away from plantation. Fences are built with standing sticks and bamboo stripes interspersed. [Upper photo] Fencing was built by the men helping the women's association in the village. Women were growing onions, okra, lettuce, tomatoes, aubergines, bitter aubergine, carrots, and chili. Women were using goats' feaces to avoid goats from damaging the crops in case they could get in. Women were also scattering ashes to avoid insect-inflicted damage. In spite of these efforts goats got in to the field and made considerable damage.

A type of fencing corresponds to standing sticks and oil-palm leaves interspersed [lower left photo].

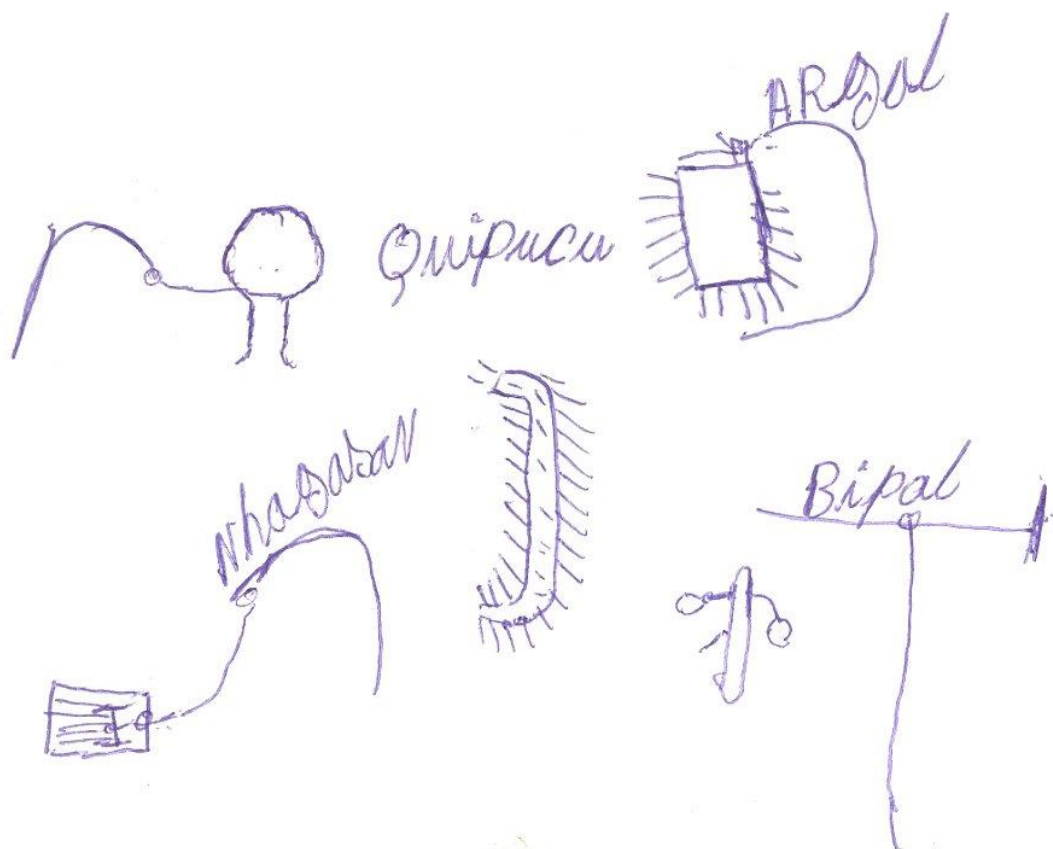
Another type of fencing is adopted in upland farms and requires considerable labour. It is built with the semi-burnt trunks that are piled along the edges of the farm to avoid nocturnal animals to get in the farms. This usually targets cane rats [lower right photo].



In Balanta villages there are usually cattle around. These farmers are obliged to fence their crops and have developed sophisticated fencing structures. After harvesting the rice is left near to the mangrove rice fields. Farmers thresh the rice there and then transport it to the compound. The harvested rice is temporarily stocked in these areas and covered with straw to prevent bird damage. These piles of ripe rice also have to be kept away from the cattle and strong fences are built around it [upper photo]. To divide the farming areas and the cattle grazing areas, strong and sophisticated fences are built. In the small photo in the left the fence has a passage for people in the left and a larger middle passage for cattle, cars and motorcycles (this picture was taken in Komo island in Tombali region). Compounds' gardens are fenced with strong and double fences to avoid damage by cattle [photos on the right].

Appendix 25 – Children’s snares





Snares are mainly built by children and youths. Adults can also use snares to hunt larger species such as bushbucks, duikers, bush pigs. In the farms and while children are guarding the fields they experiment snares for cane rats, squirrels, rats, and different types of birds.

In the previous page:

Upper and bottom left photos correspond to snares used to catch the prey by the neck. The lasso is put opened in the vertical. The upper and bottom right photos are snares with lassos put horizontally that aim to catch the prey by the leg. The snare in the bottom is improved by a hole bellow the branches.

The upper drawing were made by children to explain me the techniques they use while guarding the fields

Appendix 26 – Hunting birds



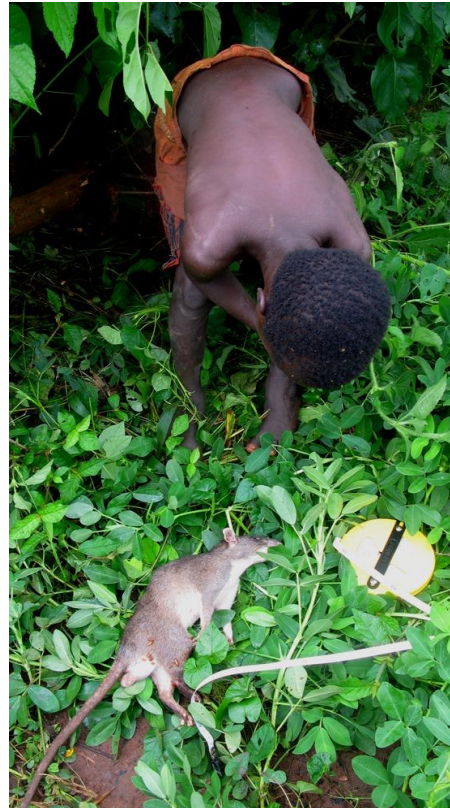
“Like a bird in a child’s hand” is a Bissau Guinean expression that means that something or someone was mistreated or injured. Children are known for their techniques to catch birds. Small birds and rodents are regarded as children’s food. They catch, cook and share these foods in the farms autonomously. Another technique to catch birds is by using a sticking white sap that is mixed with lemon juice and put around horizontal branches, like perches, where birds are likely to sit.



Appendix 27 – Hunting rodents



The cane rat in the [photo in the left] and the *juquim dudu* (*Cricetomys gambianus*) [photo in the right] were caught by children in snares. The cane rat is the harshest upland rice raider and is responsible for considerable damage. The rodent in the right is a common visitor people's houses at night which is said to steal objects and take them to its burrow. Once the burrow is discovered and rum is run into it, the rat will get drunk and give back all the stolen objects.



The cane rat is said to walk together with a python, an *irã* (kl, spirit), which makes people afraid to hunt cane rats. Another farmer explained to me that the python feeds on cane rats and therefore the two hunters (the python and human) can meet on their way.

It is thought as a waste of bullets to try to hunt cane rats because it is too small for a 300 XOF bullet. Moreover it is hard to have a good shot. Cane rat meat is appreciated by adults but the *juquim dudu* is considered as children's meat.

The boy shown in the photo on the right has a very close relationship with his father. Neither of the two wants the boy to go to school. The boy likes farming and hunting with snares. To avoid seeing him go, his father started giving him Koranic classes by the firenlace.

Appendix 28 – Reciprocity



Sharing the costs and benefits:

Otchol (fake name) had a very bad agricultural year. His daughter was hospitalized for a long time in the hospital of Catió (in other peninsula) and he had to stay close to her. He does not have sons that could plough and sow for him. He spent all his money on medicines and hospital costs. In spite of the efforts his daughter died. He came back to the village and the time to plough the mangrove rice fields and to prepare the upland farms had passed. He thought he had no rice for the following year. However, when he was back, a nephew had prepared an upland rice field for him and another youngster in the village had ploughed and prepared a mangrove rice field for him. Despite the efforts of these youngsters that belong to different households than him, he would not have enough rice. Therefore, the village decided to build a very large canoe that he could rent and be paid in rice by the Balanta for transporting their rice. The photos show the construction of the canoe and the collective efforts of people from the village and other villages to bring the canoe to the sea.

Appendix 29 – Witchcraft reports

Report from a previous episode in the 1980s about an incident in a village (Cubucaré di Riba):

There was a [witchcraft] war in the village. Someone transformed in to a chimpanzee and went to fight with the other but nobody won. They both had ‘head’ [magical power].

Report by a Nalu elder in 2011 about a previous episode (Cubucare di Riba):

I was going from one village to the other and a chimpanzee, a big one, grabbed my hand and talked to me. I knew who *bida* [shape-shifted] into a chimpanzee. I told her I would not eat people as she wanted [the woman who shape-shifted into a chimpanzee was inviting him to join her witchcraft society]. This elder is known to have power, he is a ‘seer’¹⁰⁸. So apparently, this elder is one of the good empowered people. He is well respected in his village.

Report by a Balanta (Cubucare di riba):

Julio [fake name]... a chimpanzee was irritating him, he wanted to harm him, so he killed it. After killing the chimpanzee, Mamadu [fake name] died. Mamadu had shape-shifted into a chimpanzee. Julio was drinking wine with his colleague, he had his gun, the chimpanzee came to steal his gun, he killed the chimpanzee. Mamadu died.

Report by a Fula man about an incident in his village (north of Boe):

Nearby the cemetery, there was a chimpanzee, frightening people. Once, it got a boy, he is a brother of my wife, it caught the boy in the cemetery and it bit his face all around

Report by a Fula man about his cousin (north of Boe):

He was laid down in a *bentem* [a long wooden seat], he had his feet hanging down, a person who shape-shifted into a chimpanzee bit his big toe. Thank God, his eldest brother was working nearby, the boy screamed and he came. He grabbed a big stick and the chimpanzee ran away.

Report by a Fula man about an incident in his village (south of Boe):

He shot a chimpanzee, he is not a hunter, people say it was a shape-shifted chimpanzee. That chimpanzee was sick; his skin was falling out. The chimpanzee was always in his farm to scare his

¹⁰⁸ He was the elder responsible for the *barimé* (the altar of the dead) of his house (see chapter 3).

wife. He killed it. Whites came to say that he should not have killed it.

Report by a Fula (northern Boe):

We do not know what got the boy. It happened in the morning. We looked for him for three days. (...) He was with other children, they were looking for *fole* [fruits of *Landolphia* sp]. (...) The others said that something like a chimpanzee appeared, something black, but they do not know for sure what type of thing it was. (...) Authorities came, ‘people that know’ [magical abilities] were asked, they discovered that the boy’s mother knew about what had happened. People decided that since his mother knew what killed her son, they could not do anything, since the law does not say that the mother should be killed.” His mother ended up leaving to another village away from the region.

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- ⁱ Nalu man, Cabam, 12.03.2011 (Cm1)
ⁱⁱ Nalu man, Cabam, 25.04.2011 (Cm8)
ⁱⁱⁱ Two Nalu men, Cabam, 18.11.2010, (Cm13 e Cm1)
^{iv} Nalu man, Cassin, 05.03.2011, (Ctm1)
^v Nalu man, 03.10.2010, (Cm13)
^{vi} Nalu man, 18.11.2010, (Cm13)
^{vii} Nalu man, 22.11.2009, (Cbm1, Cm13, Cm1, Ctm1, Ctm2)
^{viii} Nalu man, 10.04.2011, (Cbm1)
^{ix} Nalu man, 20.11.2010, (Cm13)
^x Nalu man, 05.04.2011, (Sm1)
^{xi} Nalu man, 05.03.2011, (Ctm1)
^{xii} Nalu man, 20.02.2011, (Sm1)
^{xiii} Nalu man, 10.03.2011, (Cam1, Cam2)
^{xiv} Nalu man, 05.03.2011, (Cbm1)
^{xv} Nalu man, 05.03.2011, (Cbtm1)
^{xvi} Nalu man, 05.03.2011, Ctm1, Ctm2)
^{xvii} Nalu man, 20.02.2011, (Sm1)
^{xviii} Nalu man, 10.03.2011, (Cqm3)
^{xix} Nalu man, 05.12.2010, (Cm13)
^{xx} Nalu man, 13.05.2011, (Cm6)
^{xxi} Nalu man, 13.05.2011, (Cam1, Cm1, Cm6)
^{xxii} Nalu man, 17.04.2011, (Cam1)
^{xxiii} Nalu man, 05.03.2011, (Ctm2)
^{xxiv} Nalu man, 04.10.2009, (Cm2)
^{xxv} Pepel man, 12.05.2010 (Lm2)
^{xxvi} Two Nalu men, Cabam, 16.11.2009 (Cm1 and Cm1)
^{xxvii} Fula man, Macubé, 15.05.2011 (Mm2)
^{xxviii} Fula man, Macubé, 07.12.2010 (Mm55)
^{xxix} Nalu man, Catunaimi 10.03.2011 (Ctm1)
^{xxx} Nalu man, Cabam, 19.02.2013 (Cm16)
^{xxxi} Nalu man, Catunaimi 03.04.2011 (Ctm1)
^{xxxii} Nalu man, Cabam, 17.11.2009 (Cm25)
^{xxxiii} Nalu man, Cassin, 127.05.2010 (Ctm2)
^{xxxiv} Fula man, Mcunda, 17.12.2009 (Gm6)
^{xxxv} Two Nalu man, Cabam 16.11.2009 (Cm1, Cm11)
^{xxxvi} Fula man, Mcunda, 17.12.2009 (Gm6)
^{xxxvii} Fula man, Macubé, 10.12.2010 (Mm39)
^{xxxviii} Two Nalu man, Cabam 16.11.2009 (Cm1, Cm11)
^{xxxix} Nalu man, Camcoiã, 06.12.2009 (Tm6)

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- xl Fula man, Macubé, 07.12.2010 (Mm39)
 xli Nalu man, Cabam, 19.05.2011 (Cm6)
 xlii Two Nalu men, Cabam, 15.11.2009 (Cm6 and Cm1)
 xliiii Fula man, Mcunda, 16.12.2009 (Gm5); Fula woman, Macubé, 15.05.2011 (Mf11); Fula man Macubé, 15.05.2011(Mm7)
 xliiv Nalu man, Camcoiã, 08.12.2008 (Tm3); Nalu man, Cabam, 24.03.2011 (Cm23)
 xliv Informal talk with two Nalu men, Cabam, 15.11.2009 (Cm6, Cm1)
 xlivi Fula man, Macubé, 10.05.2011 (Mm51); Nalu man, Cabam, 24.03.2011 (Cm10); Nalu man, Cabam 19.05.2011 (Cm19); Nalu man, Camcoiã, 08.12.2009 (Tm3).
 xliiii Fula man, Macubé, 14.05.2011 (Mm28)
 xliiii Nalu elder, Cabam, 15.11.2009 (Cm6)
 xlix Nalu man, Cabam, 19.05.2011(Cm6)
 l Fula man, Macubé, 16.03.2011 (Mm46)
 li Nalu man, Camcoiã, 30.03.2011 (Tm9)
 lii Nalu man, Cabam 17.03.2011 (Cm19)
 liii Fula man, Munhini, Boé (Um4), Balanta man, Cabslau 02.04.2011 (Lm2)
 liv Fula woman, Cabam 04.05.2011 (Cf5)
 lv Nalu man, Cabam 24.05.2011 (Cm5), Nalu man, Camcoiã 30.03.2011 (Tm1)
 lvi Nalu man, Cabam 30.01.2011 (Cm10)
 lvii Fula man, Macubé, 12.05.2011 (Mm25); Nalu woman, Camcoiã, 04.05.2011 (Tm3), Fula man, Mcunda, 19.12.2009 (Gm8)
 lviii Fula man, Mcunda 19.12.2009 (Gm8), Fula man, Macubé, 17.03.2011 (Mm32), Fula man, Macubé, 07.11.2010 (Mm50), Nalu man, Camcoiã, 02.12.2010 (Tm3); Fula man, Macubé, 09.05.2011(Mm11); Fula man, Macubé,10.05.2011 (Mm51)
 lix a Nalu man in Camcoiã, 30.03.2011 (Tm1)
 lx Fula man, Macubé, 07.12.2010(Mm39)
 lxi Fula woman, Macubé, 14.03.2011(Mf5)
 lxii Nalu man, Cabam, 19.05.2011(Cm6)
 lxiii Nalu man, Cabam07.12.2010 (Cm5)
 lxiv Nalu man, Cabam, 19.05.2011 (Cm6)
 lxv Fula man, Macube07.12.2010 (Mm19)
 lxvi Nalu man, Cabam, 16.10.2010 (Cm1)
 lxvii Fula man, Macubé, 15.05.2011 (Mm7)
 lxviii Nalu man, Cabam, 19.05.2011 (Cm8)
 lxix Young Nalu man, Cabam, 17.03.2011 (Cm19)
 lxx Balanta woman, Cablau, 11.05.2011 (Lf3); Nalu man, Camcoiã, 08.12.2009 (Tm3)
 lxxi Fula man, Macubé, 17.03.2011 (Mm32)
 lxxii Fula man, Macubé, 16.03.2011 (Mm46)
 lxxiii Fula man, Macubé, 13.10.2010 (Mm46)
 lxxiv Nalu young man, Cabam, 24.03.2011(Cm22)
 lxxv Fula man, Boé, 19.02.2012 (Pm1)
 lxxvi A man in Cabam
 lxxvii A man in Cambam
 lxxviii Nalu man, Camcoiã, 19.10.2010 (Tm1)
 lxxix Fula man, Macubé, 13.10.2010 (Mm46)
 lxxx Fula man, Macubé, 10.05.2011 (Mm50)
 lxxxi Nalu man, Cabam, 16.10.2010 (Cm1)
 lxxxii Fula man, Macubé, 04.10.2010 Mm4)
 lxxxiii Fula man, Macubé, 10.05.2011 (Mm50)
 lxxxiv Nalu woman, Boé, 22.09.2011 (a woman, Pf21)
 lxxxv Nalu woman, Camcoiã, 05.05.2011 (a woman Tf5)
 lxxxvi Nalu woman, Cabam, 20.03.2011 (Cf7)
 lxxxvii Nalu man, Cabam, 26.11.2010 (Cm19)
 lxxxviii Fula man, Macubé (Mm1)
 lxxxix Fula man, Mcunda, 18.12.2009 (Gm7)
 xc Fula man, Macubé, 18.01.2011 (Mm14)
 xci Nalu man, Camcoiã 16.12.2009 (Tm1)
 xcii Nalu man, Cabam, 19.05.2011 (Cm8)
 xciii Fula man, Macubé, 15.05.2011 (Mm7)

^{xciv} Balanta woman, Cablau, 08.02.2013 (Lf3)
^{xcv} Fula man, Macubé, 16.03.2011 (Mm46)
^{xcvi} Nalu man, Cabam, 25.12.2010 (Cm2)