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# Biodiversity conservation and water security in pastoral landscapes of the Chalbi desert

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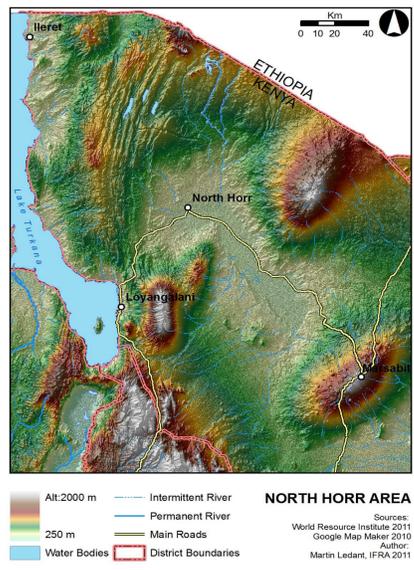
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# Biodiversity conservation and water security in pastoral landscapes of the Chalbi desert

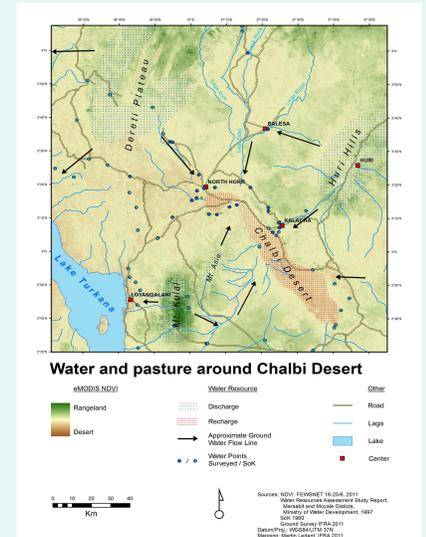


Benoit Hazard, CNRS



## INTRODUCTION

NATEP is an interdisciplinary research to understand how conservation projects interact with bio-cultural frontiers of pastoral landscapes in northern Kenya. The background of this research is tied with conflicts occurring on natural resources (water and pasture) in the frame of the rehabilitation of the Marsabit National Park (a colonial legacy). NATEP questions how to enhance local conservation practices by focusing on interaction between conservationist project and the "ecosystemic services" of a wider arid ecosystem. Marsabit County faces many factors of stress linked with natural resources policies, environmental dynamics and geopolitical context. Most of the inhabitants are dependent on the available resources to sustain their livelihood and have developed pastoralism (a system of animal production in which mobility allows an efficient use of scarce resources available). In a context where soil and vegetation are poor, this livelihood is threatened by climate variability and the proliferation of conservation projects.

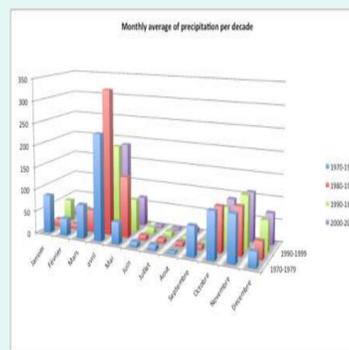


## OBJECTIVE

How local conservation projects should be understood in relation with regional environmental dynamics? By focusing on biodiversity and water conservation models, NATEP's explores how conservation models interact with livelihood and ecosystem services of the endoreic basin through a multi-scale approach (from soil and vegetation conservation to social practices). The project develops a synchronic and diachronic approach socio-ecological change of ecological niches linked with water through interdisciplinary research on a network of « watered places » (spring, oasis...). It provides a way to better integrate past and present local conservation knowledge and practices in public policies linking biodiversity conservation and food security.

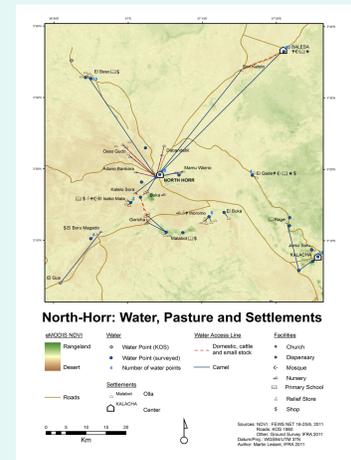
## Factors of stress and social reorganisation

### Climate variability



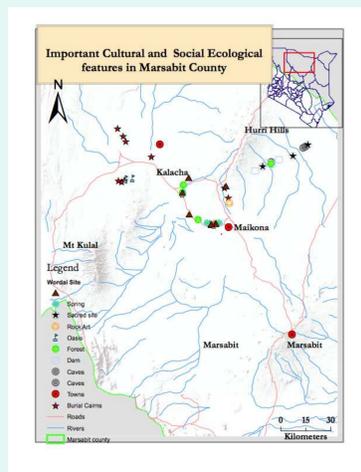
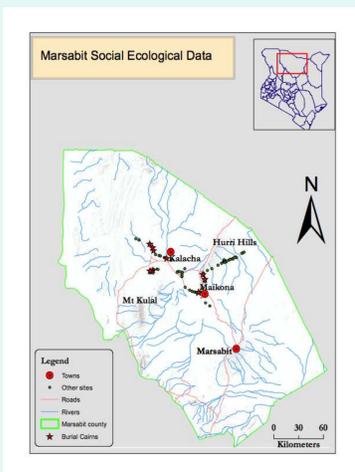
### Proliferation of protected areas

"During the dry season, we have a lot of problems because most pastoralists rely on water located inside the protected natural area. But these pastoralists cannot have access to water without destroying vegetation and cutting the trees. During the dry season, we allow them to go into the forest... But sometimes some come for watering livestock and they remain there and have illegal activities inside the protected area" (Kenyan Wildlife Services).



## THE LANDESQUE CAPITAL APPROACH

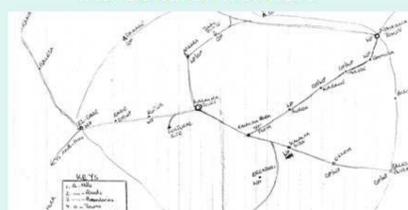
To overcome the dualism between biotic and anthropogenic landscapes, this approach helps us to understand the factors that contribute to the construction and maintenance of highly productive landscapes instead of the causal chains of land degradation. The concept of Landesque capital offers a framework within which the productive landscapes changes (terraces, irrigation canals, watered places, cultivated and improved land) and acceptance of innovation by local societies stem from societal and existing socio-ecological context. It also enables for consideration of local innovation practices to maintain natural resources (water, soil) and the conditions necessary for a change in these practices as the same issue. In this context, the study of practices of conservation of the Boran and Gabra opens a way to describe the adaptive capacity or maintenance of societies facing a current situation of scarce resources (water, pasture, forests).



## RESULTS

A preliminary survey on local conservation practices (2013) has indicated a strong relationship between conservation practices and ecological niches whose characteristic seems to be related to nexus "water, biodiversity, food". The mapping revealed many socio-natural sites in the Chalbi Desert and conservation practices linked to an old "oasis system that are a major source of information for understanding the past socio-ecological changes. On one hand, these niches inhabited by both wildlife (baboons, hyenas, zebras, ostriches) and humans who made "watered places", places of production and exchange of salt and coconut open a perspective on the environmental history of Chalbi ecosystem. On the other hand, the discovery of rock art of extirpated animals (elephant, gazelle, rhino etc.) seems to testify to the presence of sedentary societies who practiced hunting. From these socio-ecological data, the research explores local conservation practices of the pastoral landscapes through the concept of Landesque capital (Hakansson & Widgren, 2014).

### Network of watered place and bio-cultural frontiers



### Contrasted perception of « watered places »

**Water as unidimensional resource**

"During the dry season, we have a lot of problems because most pastoralists rely on water located inside the protected natural area. But these pastoralists cannot have access to water without destroying vegetation and cutting the trees that block access to the water. During the dry season, we allow them to go into the forest, we allow them to come up with livestock and to water, and then we're out of the woods... But sometimes some come for watering livestock and they remain there, cut vegetation and have illegal activities inside the protected area" (Gestiomnaire KWS du parc national).

→ research project on governance of natural resources and conservation.

→ « Watered place » versus « water point »

**Wells embedded in pastoral landscape**

« Ele » : El boru magado, El gade... ⇒ Social nature of water.

## From water conservation to food production : Farmland

