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Fulani pastoralists' perceptions and perspectives on rangelands and its degradation in Northern Cameroon

Introduction³

There is a general and long-standing concern about the nature and causes of rangeland degradation in Africa. Rangeland degradation remains, however, difficult to assess because of climatic and natural variability and the need for long term data on rangelands and livestock indicators (Behnke Jr. & Scoones 1993a). As rangeland degradation is not easily assessed through conventional methods (Breman & de Ridder 1991), Swift alternatively proposed to consult and integrate local pastoralists in research projects in order to obtain cost-effectively, more profound information on rangeland degradation (Swift 1981). However, for this type of research to succeed, it prerequisites a cross-cultural dialogue between rangeland scientists and pastoralists, and as Tourneux and Dairou (Tourneux & Dairou 1998) argue, in order for scientists to communicate with and understand local people, it is necessary that they know the local language.

Knowing their language does not only imply learning pastoralists' terminology for different types of soils or grass species, but also how pastoralists conceptualize and classify their knowledge. Furthermore, in order to get a deeper understanding of

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pastoralists' knowledge and why they conceptualize and classify their knowledge a certain way, it is essential to connect pastoralists' ecological knowledge to their use of pastoral space and resources, i.e. grazing strategies (Scoones 1989). In northern Cameroon rangeland degradation has been suspected for long (Seiny Boukar et al. 1997), but, unfortunately, no long-term systematic data is available. In 1993, the first author conducted an anthropological study, based on Swift's (1981) alternative proposal of assessing rangeland degradation by consulting local pastoralists, that explored Fulani pastoralists' perceptions and perspectives on rangelands and its degradation in northern Cameroon (Moritz 1994a). In this paper we discuss the results of our study as well as the effectiveness of Swift's proposal of consulting local pastoralists with regard to the assessment of rangeland degradation.

Methodology

The research was conducted from February till July 1993 in the villages of Gagadje and Katchel located in the Mindif district of the Far North Province of Cameroon. The selection of villages was based on pastoralists' assessments of their rangelands during a survey of villages in the Mindif district at the beginning of the first author's fieldwork. Swift's proposal does not specify particular methodologies or questions beyond interviewing pastoralists to identify which plant species invade or retreat under different grazing pressures and training pastoralists to analyze air photos (Swift 1981). Since we had no access to air photos, the research consisted of semi-structured interviews with Fulani agro-pastoralists and did participant observations. Within the villages all pastoralists present (i.e. the ones not on transhumance) were

³ I would like to thank Stephen Fraser for his critiques and comments on an earlier version of this paper.

interviewed with the assistance of two interpreters. In this paper we discuss only the findings from the Fulani village of Gagadje because the data is not sufficient for systematic comparison between the two villages.

Setting

Gagadje is situated in the Far North Province of Cameroon, which is characterized by a Sudanian climate in the south but gradually presents more Sahelian characteristics as one moves northwards. Rainfall ranges from 400 to 900 mm per annum and falls usually within a period of three months (June-August). Gagadje is a small village of fifteen agro-pastoral Fulani families and situated about eight kilometers east of Mindif. There are five herds in the village in which the animals are pooled of several families. Cattle ownership ranges from a few to about twenty heads per family. None of the herds went on transhumance in 1993.

Fulani rangeland classification

In order to obtain more profound information on rangeland degradation and improve the dialogue between pastoralists and rangeland scientists, we first studied Fulani pastoralists' perceptions of their rangelands and the Fulfulde terminology they use to differentiate between different types of rangelands. In our analysis and construction of Fulani pastoralists' classification of rangelands, We have used Basso's componential analysis (Basso 1972).

The Fulani word rangelands is **ladde gaynaako** (lit. bush of the herdsman), where **ladde** is the uncultivated bush as opposed to **wuro** (community, village) (cf. Riesman

1977)⁴. Fulani pastoralists in Gagadje distinguished several different types of rangelands.

The classification of rangelands of Fulani in Gagadje included six categories: **harde**,

`yoolde, **donaare**, **sa`doore** (or **loopere**), **sa`doowol**, and **waalowol**. Informants

described these pastures as follows:

- **Harde** (pl. **kar`de**) is a rangeland with almost no trees or bushes and only some spots with grasses such as **sel`bo** (*Ludetia togoensis*) and **hu`do harde** or **saraawal** (*Schoenfeldia gracilis*). In the rainy season these pastures remain dry because water flows away from the degraded hardpans, called **harde**, which are characteristic for this type of rangeland.
- **`Yoolde** (pl. **`yoole**) is a sandy pasture with bushes such as **geloo`de** (*Guiera senegalensis*). Rainwater filters in the soil and as a consequence the **`yoolde** remains dry during the rainy season. Different herbs and annual grasses such as **denngere** (*Zornia glochidiata*) and **sel`bo** (*Ludetia togoensis*) grow on this pasture.
- **Donaare** is a very bushy, almost inaccessible pasture with big trees.
- **Sa`doore** (pl. **ca`dooji**) or **loopere** is a pasture with a clay soil which renders it inaccessible during the rainy season as water stays. Several perennial grasses, such as **siiwko** (*Panicum anabapitistum*), **wuuluko** (*Penisetum pedicellatum*), and **mandabara** or **ndedigere-dow-maayo** (*Andropogon gayanus*) grow on the **sa`doore**.
- **Sa`doowol** (pl. **ca`dooji**) is a pasture with a clay soil where water flows away. On the **sa`doowol** only annual grasses grow.

⁴ Fulani pastoralists in Gagadje also refer to the bush as **donaare** (woods).

- **Waalowol** (pl. **walooji**) is a pasture with a sandy soil and annual grasses on which water flows away⁵.

Closer examination of these descriptions shows us that Fulani classify rangelands according to a set of morphological attributes, which may be treated as features of the following dimensions:

- Quantity of the vegetation. This dimension has three features: (a1) low quantity, (a2) medium quantity, and (a3) high quantity of vegetation.
- Type of vegetation. There are two features: (b1) perennial grasses, and (b2) annual grasses.
- Soil type. The three features are (c1) clay soil (**loopere**), (c2) sandy soil (**`yoolde**), and (c3) both soil types are possible.
- Hydrology, to be more specific: what happens to rainwater: (d1) flows away, (d2) infiltrates the soil, or (d3) stands on the pasture.

⁵ Tourneux and Dairou translate **waalowol** in their dictionary as swamp, a place where water stagnates (Tourneux & Dairou 1998).

Table 1: componential definitions of Fulani rangeland categories

		Harde	`Yoolde	Donaare	Sa`doore	Sa`doowol	Waalowol
Quantity of vegetation	Low quantity	X					
	Medium quantity		X		X	X	X
	High quantity			X			
Vegetation type	Perennial grasses				X		
	Annual grasses	X	X	X		X	X
Soil type	Clay				X	X	
	Sand		X				X
	Both are possible	X		X			
Hydrology	Flows away	X		? ⁶		X	X
	Infiltrates in soil		X	?			
	Remains on pasture			?	X		

⁶Information is missing.

The classification in table 1 is constructed by the researchers based on data collected from Fulani pastoralists in Gagadje. Not every Fulani pastoralist in Gagadje distinguished exactly the same categories; some Fulani would make a distinction between **sa`doowol** and **waalowol**, while others would not. Furthermore, not all the rangeland categories could be found within the grazing area of each village (e.g. **yaayre**); consequently these categories are not represented in this classification. Cross-checking with data from Katchel and the Logone flood plain (Moritz 1994a; Moritz 1994b) as well as with Tourneux & Dairou's dictionary (1998) suggests that four rangeland categories distinguished in Gagadje - **harde**, **`yoolde**, **donaare**, and **sa`doore** - are commonly used by Fulani in northern Cameroon.

Furthermore, Fulani pastoralists in the Logone flood plain (**yaayre**) use similar dimensions (quantity and type of vegetation, soil, and hydrology) to describe the five rangeland categories that are found in the flood plain (**donaare**, **yaayre**, **coofol**, **weendu**, and **jiddere**)(Moritz 1994b; Scholte, Kari & Moritz 1996). At this time we do not know whether Fulani in other Sudanian or Sahelian areas in West Africa use similar categories or dimensions. Schareika, who discusses Wo`daa`be pastoralists' environmental knowledge in Niger, focuses more on the state of the vegetation than on rangelands; for example, **lesdi roondoyke** land where grass has come up for the first time (since the start of the rainy season). He came across **`yoolde** (sandy dunes) and **karal** (argillaceous plains) rangelands (Schareika 1998: 9).

Grounds for a dialogue between rangeland scientists and pastoral Fulani

Tourneux and Dairou (1998) argued that to improve the dialogue between scientists and pastoralists, it is necessary for scientists to know the local language. The question is whether our exploratory research into Fulani pastoralists' language of rangelands offers sufficient grounds for such a dialogue in northern Cameroon. We have compared our findings with an ecological study by Reiss et al. in the North Province of Cameroon (Reiss et al. 1997a). Reiss et al. classify rangelands using similar dimensions and componential features - soil type, hydrology, botanical composition and production (Reiss et al. 1997a: 203-4)⁷. It is, however, difficult to get a good match with our Fulani rangeland classification, but this might be due to regional ecological variation rather than differences in perceptions of scientists and pastoralists.

While evidence shows that pastoral Fulani in Gagadje indeed have a detailed classification of their rangelands, that can be understood and used by rangeland scientists working in northern Cameroon, and possibly other research areas, their perceptions of the state of rangelands are quite different from those of scientists. The main difference being that scientists often use an additional dimension in their discussion of rangelands: state of degradation (e.g. Seiny-Boukar et al. 1992). None of our Fulani informants described rangelands as more or less degraded unless they were specifically asked. We will discuss this difference later in more detail.

⁷ In another study (Moritz 1994b), the first author found that pastoralists in the Logone flood plain (**yaayre**) described some grasses as being without power (**fam`ba semmbeejum**) which corresponds with a dimension that scientists use as well; chemical characteristics of species (phosphor, etc.).

Fulani ranking of rangelands

Part of our research consisted of investigating which rangelands were the most appreciated by the Fulani (or their cattle). Rather than asking pastoralists to rank rangeland categories, we asked pastoralists to name particular pastures surrounding their villages that they appreciate the most. Fulani pastoralists have individual names for specific rangelands surrounding their villages (23 in Gagadje). The two best rangelands in Gagadje were, surprisingly, of the **harde** category. These rangelands were valued for two reasons. First, palatable herbs and grasses such as **denngere** (*Zornia glochidiata*) and **faalande** (*Dactyloctenium aegyptium*) grow on these rangelands. And secondly, the two rangelands remained dry during the rainy season; which is important for the gudali cattle of Fulani pastoralists, which do not like to graze (or stand) in water.

These findings were unexpected and quite remarkable since rangeland scientists regard the **harde** rangelands as the most unproductive and degraded rangelands in northern Cameroon (IRA 1993). To understand why these rangelands are so much appreciated, it is necessary to know how Fulani use the pastoral space and resources available to them (cf. Scoones 1989).

A brief description of the grazing strategies of agro-pastoral Fulani from Gagadje will make clear why **harde** rangelands are so much appreciated. These grazing strategies are very similar to what Reiss et al. (Reiss et al. 1997b) describe for the use of comparable pastoral space and resources by Fulani around the village of Kolara, seven kilometers southeast of Gagadje. At the onset of the rainy season (**seeto**), Fulani pastoralists will direct their cattle to the **yoolde** and **harde** rangelands where **geloode** (*Guiera senegalensis*) and annual grasses and herbs, such as **faalaande** (*Dactyloctenium*

aegyptium), **sel`bo** (*Ludetia togoensis*), and **denngere** (*Zornia glochidiata*) can be found. These bushes and annuals are the first to have green leaves or sprout. In the midst of rainy season (**duumol**), Fulani will continue to guide their cattle to the **`yoolde** and **harde** rangelands because they remain dry and have maturing annual grasses. During the transition period from rainy season to cold dry season (**dabbunde**), Fulani lead their cattle to **sa`doore** rangelands with perennial grasses, such as **wuuluko** (*Pennisetum pedicellatum*), **mandabara** (*Andropogon gayanus*), **siiwko** (*Panicum anabapitistum*) that were previous inaccessible due to standing water. During the dry season there is no preference for a specific rangeland category; all the different grass species have dried and are considered to have the same low quality. Other factors, such as water availability, become more important in the pastoral resource decision making of Fulani pastoralists.

The variability in time and space of the pastoral resources, forage and water, determines which rangelands are used and appreciated. Rangelands have no absolute value throughout the year for Fulani pastoralists in Gagadje. The seasons determine which rangelands are appreciated and for what reasons. The **harde** rangelands are appreciated because they have palatable grass species that sprout early in the rainy season and because these rangelands remain dry throughout the rainy season.

Perennial grasses, which are considered nutritiously valuable by rangeland scientists, are either inaccessible or dried out and thus useless for Fulani pastoralists in Gagadje during most of the year. This renders the **sa`doore** rangelands less appreciated.

In Gagadje there was only one rangeland that was not appreciated and was considered 'bad' because of the presence of flies that spread a mild form of

trypanosomiasis⁸. Other criteria that Fulani pastoralists in Gagadje mentioned when asked to rank rangelands were: surface of the rangelands and distance from fields, villages, and wells.

Fulani perspectives on rangeland degradation

Since rangeland degradation is difficult to assess, the aim of our exploratory research was, by consulting and integrating Fulani pastoralists in our research project, to advance our understanding of rangeland degradation in northern Cameroon. But getting reliable and consistent data from local pastoralists on rangeland degradation over the last decades turned out to be equally difficult.

Fulani pastoralists in Gagadje used two verbs to indicate that rangelands were degraded: **tampugo** and **waatgo**. The verb **tampugo** is specifically used for soils and rangelands and signals that it is of poor quality. The verb **waatgo** (to die) is also used in other contexts. The main difference between **tampugo** and **waatgo** is that the former indicates resilience of a rangeland to recover. Rangeland scientists (Abel & Blaikie 1989) as well as pastoralists in Mongolia also make a similar distinction with regard to reversibility of rangeland degradation (Fernández-Giménez 1993). Abel and Blaikie make a distinction between reversible and effectively irreversible degradation (Abel & Blaikie 1989:113). While Fernández-Giménez reported that herders in the forest-steppe zone distinguish clearly between ‘eaten’ and ‘degraded’ pastures, with the former being temporarily overgrazed but likely to recover, while the latter were likely to have permanently altered plant species composition and production” (Swift & Mearns 1993:4). A Fulani informant explained the difference between the two verbs: “**tampugo** is an

⁸ The category of this rangeland is unknown because data is missing.

eighty year old man who can no longer cultivate his fields, **waatgo** means that the old man has died”.

The general perspective of Fulani pastoralists in Gagadje was that rangelands were in worse state; the quantity and quality of the grasses had diminished over the last decades⁹. However, none of the rangelands around Gagadje were considered **waati** (from **waatgo**), but a few were considered **tampi** (from **tampugo**).

The data collected was not as profound as expected. Swift suggested that botanical knowledge of pastoralists could be used to identify plant species that invade or retreat under different grazing pressures (Swift 1980: 487). Pastoralists in Gagadje identified one **sa`doore** rangeland where six perennial species had disappeared; it was considered **tampi** and had lost its value¹⁰. This was about the most detailed information we collected from Fulani pastoralists in Gagadje. It remains difficult to know how much the quality and quantity of grasses had diminished and thus to assess rangeland degradation in Gagadje.

Discussion

A comparison of our findings and Reiss et al. (Reiss et al. 1997a) suggests that Fulani pastoralists and scientists have comparable perceptions of rangelands in northern Cameroon as they use similar dimensions to describe and classify rangelands. But there are two major differences between Fulani and scientists’ perceptions of rangelands. First, scientists often use an additional dimension when discussing rangelands: its state of

⁹ Indirect evidence of livestock indicators from Fulani pastoralists in Gagadje suggests also that rangelands have degraded; cattle used to get fatter and older.

¹⁰ With help of Tourneux & Dairou’s dictionary (1998) we were able to identify two of these species: **selseinde** (*Kyllinga squamulata*) and **muldufre** (*Hyparrhenia sp.*).

degradation. Scientists classify rangelands as not, moderately, and very degraded (Seiny-Boukar et al. 1992). While Fulani pastoralists in Gagadje did not use this dimension when describing rangelands. Secondly, Fulani pastoralists in Gagadje ranked rangelands of the **harde** category, which are considered the most degraded by scientists, as the best rangelands around their village.

To understand these differences, which reflect two very fundamentally different perspectives on rangelands, we need to know why Fulani pastoralists' and rangeland scientists' views differ on these two points. The direct concern of Fulani pastoralists is the health and growth of their herds, which is reflected in an animal oriented perspective on rangeland degradation and the use of an *economic carrying capacity* (Caughley 1979 in Behnke Jr. & Scoones 1993b). Pastoralists look what the best rangeland is for their animals *now*. Rangeland scientists' direct concern, on the other hand, is with the rangelands themselves, and not with the animals that live off it, which is reflected in the use of an *ecological carrying capacity*. Rangeland scientists look at the state of pastures *over the years*.

We conclude that there is sufficient evidence that a dialogue between Fulani pastoralists and scientists is possible, but that further interdisciplinary research is necessary to establish a common language¹¹. Although one needs to realize that despite similar *perceptions* of rangelands, the economic and ecological *perspectives* of respectively Fulani pastoralists and rangeland scientists will remain dissimilar.

Swift's (Swift 1981) proposal to consult and integrate local pastoralists to get more profound information on rangeland degradation proved to be less useful than

¹¹ Originally the research was intended to be interdisciplinary, but in 1993 there was no biology student who could participate in the research.

expected. Although, we have the impression that Fulani pastoralists in Gagadje have profound botanical knowledge, it was difficult to get detailed and reliable information on ecological changes over time, i.e. rangeland degradation. This might be due to recall problems of Fulani pastoralists in Gagadje or because rangelands in northern Cameroon are in a constant state of disequilibrium, which makes it very difficult to assess degradation for both scientists and pastoralists alike (Behnke Jr. & Scoones 1993a).

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