

# Analysis of Historical Range Use South of Lake Chad, Cameroon

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In the last 20 years droughts and desertification processes have drawn world attention to problems in many parts of Africa. Particular attention has been focused on the area immediately south of the Sahara Desert, a region known as the Sahel. Many factors are involved in range deterioration problems in the Sahel.

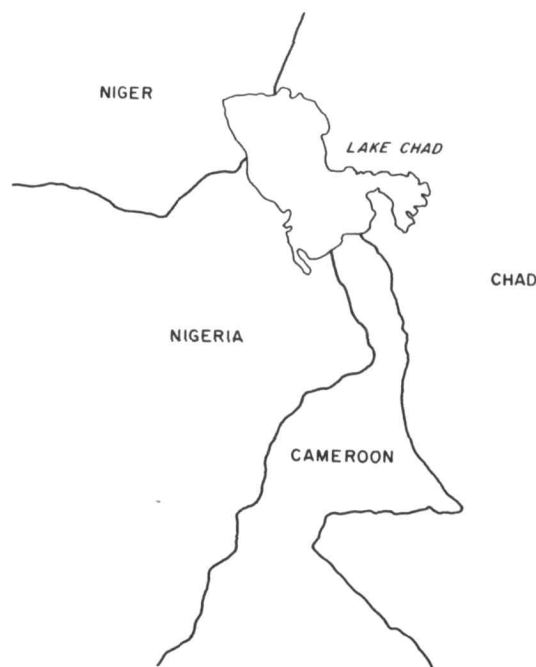
The Lake Chad Basin appears to be particularly well-suited for the study of the history of range use, desertification processes, and the socio-cultural environments of the herdsmen in the Sahel region. The area has a wide diversity in the availability and distribution of the range resource base (water and forage) in space and in time. These basic range resources led to the development of range use pattern (nomadism—movement of people and livestock with no fixed base—and transhumance—movement of livestock and people with a return to a permanent base each year) which has been criticized by some (e.g., Hardin 1968) but may have been the best available alternative considering the contemporary technology available.

## Pre-Colonial Era

Range management is considered by many as a North American science of rather recent origin compared to other disciplines such as mathematics, chemistry, physics or agronomy (Love 1961). Although there is no doubt that the name "range management" and the establishment of range management as a science is a North American development, a meticulous look at the history of mankind should lead us to realize that basic principles behind this science have been in existence in many areas of the world for centuries. The roots of the profession are lost somewhere in the prehistory of man.

Many anthropologists believe that the early evolution of man began in heavily wooded savanna grassland at the moist end of a gradient of grassland ecosystems (Ripley 1966). As man learned to use fire, he increased the frequency of burning and cleared the woodlands, thus extending grassland. The first tools might have been only a piece of wood to scrape the soil (Malassis 1977). At the same time man had to adapt to the new environment he was creating and to evolve with it. Man was a part of the ecosystem and adjusted biologically to its fluctuations. His impact, in this early stage, was important primarily in the immediate vicinity of his living area. Hunting, fishing, and harvesting of natural products were the first form of human activities. The circle of his activity was extended progressively outward.

By capturing animals and domesticating them, man devel-



Map of the area around Lake Chad, West Africa.

oped a symbiotic relationship in which animals provided him with food, clothing, and transportation and he in turn, provided them with protection. Many of the African religious tales or stories contain strong evidence of a close, almost spiritual, relationship between man and animal.

We cannot be certain when pastoral cultures came into being; but as far as we go back through the history of the herdsmen of the Lake Chad area it seems clear that the origin of pastoralism is associated with the early appearance of mankind. Pearse (1971) presented evidence that grazing of domesticated animals occurred as early as 9000 B.C. Goats were well established in the Middle East in 7000 B.C.; sheep about 1000 years later. Cattle were present in Greece by 6200 B.C. and horses and donkeys probably somewhat later. By 5000 years ago these animals seemed to be widespread from the Nile to the Indus.

At some point within this time span, pastoral cultures were developed. Survival of pastoralist populations depended upon how they used the resources (grass and water) at their disposal. Although different patterns (transhumance, nomadic, sedentary) might be found from place to place, the basic element linking all these systems was that man was struggling to live in harmony with his surroundings not for the sake of conservation, but because his survival depended on

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it. No attempt by man to modify his environment to suit his purposes seems to have ever been found in the early tales and stories. Cyclic rise and fall of herd size in relation to seasonal growth habits and palatability fluctuations of plant species and plant communities were the herdsman's principal guide for effective range utilization. These fluctuations seem not to have impaired the capability of the system to sustain itself in the long run. The overall system appeared stable and relatively unchanging, but we do know that interactions are always operating, giving rise to more subtle and less obvious seasonal variations mostly in stable environments.

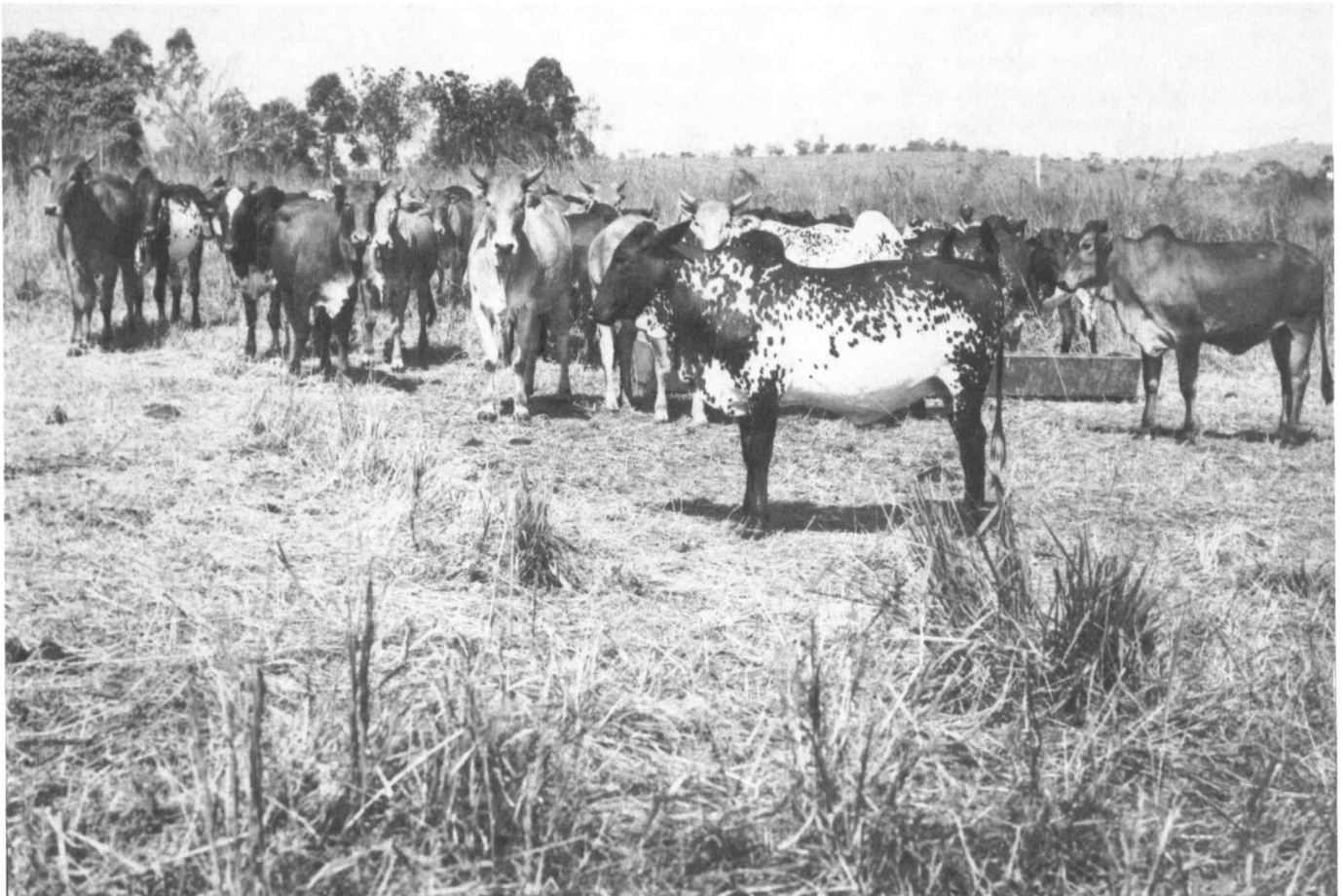
Down through the course of years pastoralists empirically accumulated knowledge about rangelands and water resources. They knew where and when these resources were available and when to use them in order to perpetuate the productivity of the system and thus insure their survival. Because man was able to communicate and pass on knowledge from one generation to another, he developed and included in his tradition, production patterns and needs derived from both individual experience and the experience of the community as a whole, which were beyond those required for animal-like survival.

People in the environment were part of the system and evolved with it. They were, by their direct or indirect action, part of the continuing environmental interaction and thus subject to short or long-term changes. But their ecological adaptability as well as their inherent capability to evolve in a fluctuating environment may have prevented them from

catastrophe. Their adaptability was demonstrated by man's widespread occupation of diverse environments of the world. Mistakes as well as successes were accumulated as a guide and part of the community heritage. The scale of the operation on the other hand was so small that even with mistakes no one would have expected widespread and unmanageable disaster.

For centuries, the Lake Chad area was subject to several migratory trends. No definite state boundaries existed as is the case today. The region, as the whole continent, was divided into small villages and subdivisions with rather continually changing boundaries due to periodic wars between tribes. Common use of land was the rule. Production depended mostly on the amount of rainfall received during the short growing season. With the forthcoming dry season and the resulting depletion of surface water, the people were required to search where they could still find surface water in the Yaere (an open grassland often inundated during the rainy season) (Stark 1986) or valleys where surface water was still available. As complete depletion of the surface water approached, they dug wells to obtain water from underground sources for their animals.

The relationship that existed between man, his livestock, and the environment was harsh and capricious allowing little margin of security beyond the next season. As farmers learned to cultivate and manage rangeland resources, they learned that it would not always share its bounty. Floods could wash away fields, disease might exterminate herds,



*Herd of local native cattle of the Lake Chad region.*

insects might devastate their fields, or long droughts could dry up the crops and water sources. Yet the relationship governing the man-plant-animal complex has always evolved to afford the herdsman and his family the best prospect of survival within the confinements of contemporary technology.

### Post Colonial Period

With colonization came a new technology which outstripped the ability of the traditional lore to adjust. In essence, colonization is one reason why the traditional ways of pastoral nomadisms are collapsing all over Africa.

The first European explorer, Denham reached Mora in 1823 and discovered the Logone River. In 1851, the German Barth discovered the Benoue River and explored the region south of Lake Chad. Between 1869 and 1873, Nachtigal explored the northern Cameroon region and obtained a protectorate treatise from the Douala people in the coastal area. Around 1880 Flegel visited the Adamawa plateau. None of these explorations were covered by a general protectorate from the entire country to a European nation. It was not until the end of the 19th century during the widespread exploration movement that Germany chose to become involved in the race and officially took control of the country. After the German defeat during the first World War, the region was taken over by France. Under French holding no change was introduced in the old prevailing nomadic and transhumant grazing systems. Rather, inadvertently Europeans introduced diseases into Africa such as rinderpest and small pox (Baker 1978), which created havoc in the various parts of the continent.

Europeans came into the region with a new trend of thought. Native communities of the area now had to take into account the presence of the newcomers; they had to deal with them. With the Europeans' increasing power, they had to accept their rule. The colonial era finally brought about the collapse of the old relationship between man, livestock, and the environment. Many factors limiting herd size were reduced or eliminated by an entirely new technology, e.g., vaccines and medicines. Along the West African-savannah-sahel zones there was a steady encroachment of cultivators into dry season grazing areas, which often led to the breakdown of the old symbiosis between nomads and farmers.

Prior to colonization, farming was restricted to small areas around the village. The remaining space was for common use, allowing pastoralists free movement to seek good pasture and drinking water. Specific territories for movement and partial settlement of the various tribes that inhabited the area were fairly well marked. Grazing was practiced over the entire area through the year.

Most of the rangeland before colonization was used by all communities of the region. Herdsmen were usually able to move their animals across several subdivisions in search of suitable pasture and water. Europeans came into the region and their first act was to create a frontier in an area where open range had existed for centuries. Tribes and sometimes families were separated and hereafter belonged to different countries. Henceforth, the southern region of Lake Chad was split into three countries: Nigeria, Cameroon, and Chad. Inhabitants of the region could no longer move as they used to, at least in principle. Pastoralists were directly or indirectly

forced to graze their animals on a relatively limited area.

### Development of Veterinary Services and Its Consequences

During the first half of this century and especially after World War II, livestock services and especially veterinary services were set up in Cameroon and have been expanding ever since. Even after the country became independent in 1960, efforts were oriented towards the reinforcement of veterinary infrastructures with almost no concern for rangeland improvement. This service has provided protection from several diseases and has carried out mass cattle immunization campaigns, which led to an expansion of herd sizes. Although animal production cannot evolve efficiently without a concomitant evolution of rangeland management, rangeland improvement is a complex task. Range management constitutes the ground work of the whole production system because a well-fed animal can by itself resist some diseases. What is unfortunate is that even after Cameroon became independent in 1960, many local technicians continued to think for a long period of time that animal care was the only key to sound production, despite all the nutrition problems faced by herders during the long dry season.

One of the resulting effects of placing too much emphasis and efforts only on animal health care was the large livestock losses during the drought of the early 1970's. Cameroon cattle population is estimated at about 3,000,000 head of which about 2,000,000 or more are in this northern area. These herds have been increasing rapidly during the past years. Their numbers have outpaced the carrying capacity of the rangeland. This led to an increased stocking rate which coupled with poor grazing management brought about deterioration of basic range resources. Increased livestock numbers resulted partly from increased human population, which depended wholly upon their livestock for subsistence. Thus the mismanagement by herders is not, as has been claimed, the sole cause of the problem. Rather a contributing factor began at the turn of the century with the introduction of an incomplete production improvement scheme.

### Unsound Water Planning Development

Water has always been a limiting factor in the development of livestock production as well as agricultural crops of the region. Rainfall provides the surface supplies and replenishes the underground water resources. The limited rainfall occurs mostly during the months of June through September. Range plants depend on its intensity and distribution during the course of the growing season. Scarcity of rainfall means a decline in forage yield and renders much forage unavailable because animals cannot reach it. This has led to the development of bore holes to catch and store surface water for use by livestock after the rainy season.

Although this approach was sound, the techniques often used were inadequate. Most of these bore holes, if not all, had been dug without preliminary evaluation of ecological and social effects. In many areas they led to accelerated rangeland deterioration. The design of these water sources did not take into consideration the soil structure nor the available forage of the area. Some never filled because of a high infiltration rate (bore hole built in a sandy soil). Others



were either too small and dried up before appropriate utilization of the pasture was reached or they were too large and animals lingered in the vicinity causing excess forage depletion and damage to the surrounding rangeland.

These cases illustrate that even a single small operation in range management requires careful planning. In reality water potential of the region is enormous. It needs only to be carefully assessed, properly developed, and soundly managed. Thus water development programs could be included in a rangeland improvement program to enhance the overall productivity of the region.

It was not until November 1976 that the Cameroon government realized the seriousness of the lack of a range management agency. By decree the Division of Range Management and Division of Range Water Resource Development were created in an attempt to fill the gap. These divisions are in charge of:

- Range water resource research.
- Development and management of range water resources.
- Study and management of rangeland.

The creation of these divisions was an important step towards the improvement of the whole system and the objectives assigned to each of them realistic. However, these objectives can be achieved only if financial means and qualified staff are provided to support these activities.

Although multiple and complex problems have to be solved in order to stabilize the livestock industry in the Lake Chad region, history shows us that the range use pattern of the region had a colorful past. The region south of Lake Chad has been inhabited and exploited by men and women with vision and culture which will not fade away as a dream. Livestock production is still viable but sooner or later it will remain only for those who care and provide effort and hard work.

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## Perennial Broomweed and Texas Ranching

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Perennial broomweed is a toxic plant that occurs throughout most of the western United States and northern Mexico. This plant is also called slinkweed, turpentine weed, broom snakeweed, threadleaf broomweed, and perennial snake-weed. To further complicate matters, two species of perennial broomweed are found in Texas, *Xanthocephalum sarothrae* and *X. microcephalum* (Correll and Johnston 1970).

Ranchers began to suspect that perennial broomweed was toxic to livestock in the early 1900's. In 1936 perennial broomweed was shown experimentally to cause illness and death in cattle and sheep (Matthews 1936). Clinical signs of broomweed poisoning described included loss of appetite, listless attitude, an arched back, drooping head, and in severe cases, pronounced blood in the urine 24 to 48 hours after the initial signs appeared. No mention was made of the abortive properties of the plant.

A series of feeding trials with perennial broomweed utilizing various classes of livestock were conducted near Marfa, Texas, from 1953 to 1957. Results of these trials expanded the clinical signs of broomweed poisoning to include constipation, periodic vulvar swelling in pregnant cows, an abnor-

mally early udder development in most instances, and a periodic mucous nasal discharge (Dollahite and Anthony 1956 and 1957, and Dollahite and Allen 1959). Also, for the first time abortion was linked to the consumption of perennial broomweed and experimental evidence was obtained to show that plants growing on sandy soils were more toxic than those growing in loams or clays.

Mature perennial broomweed begins its seasonal growth in late winter to early spring. The early growth and production of over 9,000 seeds per plant places perennial broomweed at a significant competitive advantage over perennial grasses (Ragsdale 1969). Ueckert (1979) and McDaniel et al. (1982) reported herbage production on short grass range to be severely reduced under dense stands of perennial broomweed. Ueckert (1979) reported grass production increased from 976 lb/acre to 2,024 lb/acre during the first year after complete control of perennial broomweed. During the second year, grass production on the treated area was 2,569 lb/acre compared to only 606 lb/acre on an adjacent untreated area. Similar work conducted by McDaniel et al. (1982) on a heavily grazed range in poor condition showed grass production increased 36 lb/acre to 373 lb/acre in the first year of complete control of perennial broomweed. During the second and third years after control, production on the treated area

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