

# Yaere—Seasonally Inundated Rangeland, West Africa

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This paper introduces the readers to a rangeland unlike any other in West Africa, only 170 km south of the Sahara Desert. Waza National Park in Cameroon, West Africa, is found between latitudes 11°03' and 11°30' N and longitudes 14°28' and 14°56' E in the Lake Chad Basin approximately 150 km south of Lake Chad. The 'yaere' is a unique, vast expanse (approximately 551 km<sup>2</sup>) of open grassland, comprising almost half of Waza National Park. The other half of the Park is forest made up of Soudano-Sahelian flora characterized by flat-topped thorn trees. The yaere is unique because during the wet season, from August until February or March, run-off from the Logone, the Chari and other rivers south of Lake Chad overflow and totally inundate this grassland area. During the other half of the year, it dries out and



Completely inundated during the wet season, movement in the yaere can only be accomplished by canoe.

emerges as a grassy plain. Travel during the dry season is possible on foot or vehicle, but only dugout canoes (pirogues) are used in the wet season.

Average annual precipitation in Waza National Park is 1,400-1,600 mm which falls primarily during August-September. The average daily temperature is 29°C but it is not uncommon for the temperature to rise to the mid-fifties at the height of the dry season.

I went to Cameroon on a 2-year project, jointly sponsored by the United Nations Development Program (UNDP) and the Food and Agriculture Organization (FAO) to carry out

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the first inventory of vegetation and wildlife of Waza National Park.

The vegetation of the yaere has evolved through natural drawdowns (wet-dry cycles) over thousands of years. The most common grass is the perennial *Vetiveria negritana* which grows to a height of 2 m during the wet season. Other rhizomatous perennials such as *Echinochloa pyramidalis* and *Oryza* spp. are frequently found between the tussocks. Dotted among the yaere are widely scattered 'islands' of vegetation completely different from the surrounding expanse of grasses. These islands are slightly higher in elevation and marked by the presence of tree species typical of past human



Before burning, the yaere is densely covered with perennial grasses (note the 'island' in the distance).

habitation. *Tamarindus indica* is a common tree of the islands as are *Balanites aegyptica*, *Adansonia digitata* (baobab), *Acacia siberiana*, *A. albida*, *Ficus* spp. and *Kigelia africana*, all of which have edible fruit (pods). The islands were all occupied by native peoples up until 1960, when they were forced to leave because Waza changed its status from Forest Reserve to National Park.

By the end of February/March, the flood waters inundating the yaere recede, leaving scattered pools in the vast plains, and wildlife begin to move from the forest where they reside during the wet season, into the yaere. During the dry season, only about 20 permanent pools remain in the yaere. These are the only standing water sources available within radii often reaching up to 60 km distance. As the dry season

progresses, animals congregate close to these watering places, severely overgrazing and trampling any surrounding vegetation. By the end of the dry season, wildlife return to the forest where water is more readily available in shaded pools.

An estimated 600 elephant and 35,000 ungulates, the largest of which are Buffon's kob, roan antelope, topi, senegal hartebeest and defassa waterbuck, a live-weight biomass of some 9,428 kg/km<sup>2</sup>, occupy the yaere during the months March/April - June/July. This excludes the illegal grazing by hundreds of zebu cattle and goats frequently driven into the Park by Fulani nomads. Park personnel are just too few in number to control this illegal grazing. During March/April each year, park personnel indiscriminately torch the yaere. I witnessed this in 1977 and 1978. Incredibly, as far as the eye could see was blackened earth and stubble. Annual burning



*After burning, as far as the eye can see is blackened earth and stubble.*

has been practiced for centuries by African peoples either as a cultivation practice or for flushing wildlife. To dissuade these peoples from annual burning, even today, is very difficult. And so the yaere has been burned year after year. However, today it is burned for one purpose—it allows tourists unrestricted wildlife viewing. Fortunately, immediately after the fires, a tender vegetation springs up to form an excellent forage for herbivores.

Soil pits revealed a sandy layer at a depth of approximately 1.5 m. Within the sandy layer, oxidation was evident and a dense network of grass roots was present. The sandy layer acts as an underground drainage system where moisture is available year-round, allowing the grasses to produce foliage

very quickly after the passage of fire. Two-year studies showed that in less than 6 days after the passage of fire, green biomass production averaged 328 kg/ha. At the height of grass growth, the biomass averaged 3,554 kg/ha.

For centuries, the yaere has supported high wildlife populations. However, more recently, it has also had to contend with increasing numbers of nomadic herds of livestock. The Sahara Desert is moving slowly but steadily southward (5.6 km annually) and nomadic herders, with their excellent practice of seasonal movements of livestock to watering points, may soon make more and more use of the yaere. If they become more settled, more exploitive grazing practices may well ultimately change the yaere from highly productive to marginal, relatively unproductive rangeland. Coupled with



*By the end of the dry season, any remaining grasses around waterholes are severely trampled.*

this, indiscriminate burning may accentuate range deterioration. The results for wildlife would be disastrous.

There is virtually no current range management in Waza National Park—even the use of fire can no longer be considered a range management tool, since burning is now carried out for improved wildlife viewing. The Park lacks personnel with any range management education (my African counterpart has since been moved to another park further south), and for the foreseeable future anyway, this is not about to change. How long the yaere can maintain the high productivity is questionable. Hopefully, long enough for trained personnel to arrive and manage this unique rangeland before it is too late.