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Ahmed S. El Wakeel and Mohamed A. Abu Sabah

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# Relevance of mobility to rangeland utilization: the Baggara transhumant of southern Kordofan

Ahmed S. El Wakeel & Mohamed Azim Abu Sabah

This paper identifies sets of constraints to the full utilization of the available resources in the rangelands based on a study of the Hawazma and Messerya of southern Kordofan in the Sudan. These groups of people exercise a transhumant system of seasonal migration between wet and dry season camping areas from a home base located in the centre of the migration route. The authors argue that mobility is above all an adaptive mechanism to overcome limitations of grazing, water scarcity and subsequent labour demands. Mobility depends on considerations such as herd size, extra managerial efforts, timing of certain practices and decisions. Factors governing movement are variable access to water and grass, and sedentary farming. The transhumants have been forced to roam larger areas in search for better and safer grazing areas due to drought, warfare and expansion of cultivation.

This paper is the outcome of several surveys conducted in the rangeland areas of South Kordofan and several visits made to transhumant Hawazma and Messerya camps. The major aim was to better understand the constraints to rangelands utilisation, and the mobility and traditional husbandry practices of the transhumant pastoralist of southern Kordofan, Sudan.

The livestock population in Sudan is far above the existing carrying capacity of the rangelands. This is further pointed out in the report by Abdel Ghaffar and Darag (1992) where they showed that the livestock population in the country had exceeded the proper stocking rate by almost 5.5 million AU (Animal Unit) in 1979/80. Southern Kordofan rangelands are no exception, especially after the decade of the eighties when repeated droughts hit the region causing the grazing lands' condition to deteriorate severely. Furthermore, the expansion of farming, both traditional and mechanised, is continuing on the marginal grazing lands. Al Bashir and Jamma' (1993) reported that during the (1969-1979) decade an area of 8 million feddans (1 feddan=0.42

hectare) was under mechanised rainfed agriculture in the Nuba Mountains region of southern Kordofan. The situation was exacerbated for the transhumants in the region by the escalating war which had been escalating in Southern Sudan since 1983 and by the one waging in southern Kordofan. The transhumant were then faced with problems of poor range condition, limited mobility and less grazing areas as a consequence of drought, war and the expansion of cultivation, respectively, individually and jointly. The traditional corridors and routes the transhumants used to utilise were blocked by farming. Due to such pressures, coupled with the 1983/85 famine, some pastoralists lost all their animals and others had to become more dependent on farming to avoid the purchase of grain (Mohamed Salih 1990). Some groups of the transhumants were persisting in the prevalent situation with the same mode of life. These were the ones considered in this study.

The main subgroups of producers involved in the survey were the Hawazma and Messerya who follow the central

grazing route. This route follows the Kadugli-Dilling paved road in their south/north trek. The seasonal movements and camping arrangements were described by Teitelbaum (1984), and the ecological evaluation of the rangelands in the area was covered by Bunderson (1981 and 1984). However, this transhumant system is an adaptive one whereby rangeland use is inseparable from the livelihood of the people. The system incorporates man and animal in a movement across several ecological zones. The animals include cattle, goats and sheep, with cattle as the main species, while most of the households keep chickens for home consumption and for sale on some occasions. Currently, the pastoral sector has been the only one to supply meat, milk and milk products to the sedentary people, and the demand for these products is what has kept the pastoral sector expanding (Michael 1991). The system is a developed transhumance of seasonal migration between wet and dry season camping areas from a home base located at the centre of the migratory route. In short, these transhumants are conservative to their environment, yet there are many constraints to the full utilisation of the available resources. The constraints identified include sets of natural, sociocultural and political ones.

- (a) Natural constraints include:
  - (i) an erratic unimodal rainy season from July to October
  - (ii) the domination of the rangeland by annual grass species offers neither an optimum carrying capacity nor adequate nutrition for livestock for 12-months
  - (iii) scarcity of water towards the middle and end of the dry season
  - (iv) the disease problem (i.e. flies and ticks)
- (b) Sociocultural and political constraints:
  - (i) increased number of livestock
  - (ii) expanding cultivation
  - (iii) unprescribed burning of the rangelands
  - (iv) recently, the civil wars in south Kordofan and Southern Sudan and their implications

(v) recent economic pressures.

These constraints act simultaneously and interact with different magnitudes on transhumants, depending on the prevailing conditions.

In what follows, we attempt to discuss these constraints which influence the transhumant practices.

### Grazing and husbandry practices

Traditionally, transhumants manage their livestock according to their individual requirements. For instance, cattle are herded separately while sheep and goats are herded together. During most of the year, cattle are herded during the day time, however, under exceptional conditions, during the late dry season when grazing is insufficient, night grazing might be practised under a system called *sarba*. This clearly indicates a lack of feed supplementation on a regular basis. Nevertheless, critical supplementation is given only to animals which fail to graze naturally. The Hawazma grow crops; sorghum, sesame and cowpea in an opportunistic manner, however, crop residue utilisation is not adopted strictly.

The migratory feature, often definitively used to describe the transhumant Baggara system, has never been critically investigated. From the preliminary surveys we conducted among these farmers, we are convinced that mobility is cardinal an adaptive mechanism to overcome limitations of grazing, water scarcity and subsequent labour demands. Mobility encompasses a set of considerations such as herd size, extra managerial efforts, timing of certain practices and decisions. It was consistently reported by interviewed pastoralist groups that in order to qualify for migration the minimum cattle herd size should be greater than 20 heads. It is preferable to have a flock of goats and/or sheep of a similar number in addition. Moreover, the adequate herd size that meets the transhumant's needs is estimated to be above 30 heads. Normally, the herd is dominated by cattle, followed by goats then

sheep and a few donkeys as beasts of burden. Females are dominant, particularly among cattle of age classes above four years (Bunderson *et al.* 1984). The transhumants prefer to have their cattle breed when they are at their peak body weight which usually happens in September. This allows calving to occur the early dry season and helps in reducing the calf mortality rate. Weaning takes place gradually and is highly influenced by the competition between calf and man for milk. If calves are born in June, then December of the same year would be a reasonable time for weaning since the calves could graze naturally. Most of the day-to-day labour is handled by boys or young men ranging in age from 10 to 25 years. If there are not enough Hawazma or Messerya boys within this age category for herding requirements, then Nuba herd boys are hired (Michael 1991).

Although there is lush, green vegetation in southern Kordofan during the wet season, there are grazing problems associated with the area dictating the trek north. Mud, biting flies, humidity and natural barriers are some of these problems.

Rains are more frequent and heavier in the south than in the north and usually fall during the afternoons; something that reduces the normal daily grazing hours. This reduction in grazing hours is caused by the fact that cattle do not graze when the rain is falling and also because rain hastens the animals to be herded back to the camp before sunset to avoid getting stuck in the mud or becoming cut-off from the camp by running *khores* (waterways and small streams flooding during the season). Early morning humidity can also delay sending the animals to pasture, and humidity and mud can cause hoof problems. Biting flies and mosquitoes greatly disturb both man and animal and could possibly cause several diseases. In some cases, the transhumants are forced to keep their animals in fences near the camp and start smoke-fire to repel biting flies.

## Migration journey

The length of the migration journey to the north and the duration spent there are governed mainly by the amount of rains received there. It takes about six weeks to get to the northern camping areas, while it takes only about half of that time for the journey back to the south. When migrating north, the primary limiting factor that guides the journey is the improvement in grass and water conditions ahead. At the beginning of the wet season, water is the main limiting factor, but, with progression of the season grass, and not water becomes the major limiting factor. Towards the middle of the wet season, farms of sedentary people become obstacles to free movement.

Any camping is normally preceded by range area scouting. When scouting, transhumants avoid certain areas such as muddy areas, areas with natural barriers i.e. *khores* and thick woodlands and cultivated areas. Desirable camping areas are the ones with good and accessible grass, plenty of water, are open and spacious and have not been visited recently by other herds.

The trek back south is undertaken once the rain stops in the north. Ultimately, the water scarcity by then dictates the fast return. Mean while cultivation along the route becomes an additional factor hindering a longer stay at the station along the route. The sedentary village cultivators have developed their own customary laws and institutions for detecting animal trespassing and for assessing crop damage. The result of these is a heavy fine on transhumants. Arrival in the south is not without problems. Early arrival is never welcomed by cultivators in the south. The reaction of cultivators is often expressed in burning the areas around their fields and villages to discourage the transhumants from prolonged camping.

## The vegetation

There is a diversity of plant species in the rangelands of south Kordofan, however, there has been no accurate documentation and categorisation as to which ones are more desirable and nutritious among these species. Moreover, good estimates of herbaceous species production could not easily be made since the southern Kordofan rangelands are dominated by annuals which are characterised by fluctuations in forage volume from year to year. The transhumants interviewed consistently mentioned and agreed upon some species as being the most desirable (Table 1).

During their migration transhumants look for pastures where such species are available. Some of these species such as *Zornia* sp. (*luseig*) are predominantly restricted to the sandy soils of the north.

Lately, and due to drought incidents, some of these species have become very scarce or have disappeared altogether. These include *Um ballilah*, *Um sikina* and *Um hemeroon* in southern Kordofan, and *Beghail* and *Luseig* in northern Kordofan.

There are also many woody plant species that play an important role as browse for livestock on these rangelands. The animals feed on different parts; leaves, pods, twigs and seeds. Most important among these are; *Maerua crassifolia* (*Serhe*), *Acacia albida* (*Haraz*), *Dichrostachys cinerea* (*Kadad*), *Combretum aquleatum* (*Sheheit*), *Acacia seyal* (*Talih*), *Balanites aegyptiaca* (*Higleeg*) and *Ziziphus-spina-christi* (*Nabag*). Some of these herbaceous and woody species are palatable, but some may cause disorders if utilised at certain stages of growth or if consumed in large quantities. For example, *luseig* can cause bloat in cattle and sheep if

Table 1. Some herbaceous plant species that are considered to be desirable for livestock

Scientific name	Vernacular name	Family
<i>Blerpharis linarifolia</i> *	<i>Beghail</i>	Acanthaceae
<i>Brachiaria obtusiflora</i>	<i>Um chir</i>	Gramineae
<i>Chloris prieuri</i> *	<i>Abu malhi</i>	" " "
<i>Dactyloctenium aegyptium</i> *	<i>Ab asabae</i>	" " "
<i>Echinochloa pyramidalis</i> *	<i>Follah</i>	" " "
<i>Hyparrhenia confinis</i>	<i>Um racho</i>	" " "
<i>Ipomea</i> spp.**	<i>Hantoot</i>	Convolvuleaceae
<i>Rhyncosia minima</i> **	<i>Erg al azrag</i>	Papilionaceae
<i>Rottboellia exaltata</i> *	<i>Um ballilah</i>	Gramineae
<i>Sorghum purpureo-sericeum</i>	<i>Bigil</i>	" " "
<i>Spermacoce chaetocephala</i> **	<i>Garagoub</i>	Rubiaceae
<i>Setaria incrassata</i> **	<i>Um sikina</i>	Gramineae
<i>Setaria pumila</i> *	<i>Danab el kalib</i>	" " "
<i>Schizachyrium exile</i> **	<i>Um hemeroon</i>	" " "
<i>Zornia glochidiata</i> *	<i>Luseig</i>	Papilionaceae

\*very scarce

\*\*disappeared

grazed before seed maturity. The transhumants' most common treatment for bloat incidents is puncturing the animal's stomach with a knife to release the entrapped gases and possibly rescue the animal from death. Species such as Chlorophytum tuberosum (*Bercida*), an herb, is known to cause diarrhea in cattle. As the rangeland condition has deteriorated, some species such as Cassia obtusiflora (*Kawal*), a plant species that is not palatable to livestock or even equine, has recently invaded many grazing areas which formerly had been covered with grasses. This invasion could be attributed to the successive drought events. In addition, there are certain plant species that are known to transhumants to be poisonous and that can cause health disorders and sometimes immediate death of livestock, however, there are no statistics on the rate of mortality caused by these plants. The ones known locally include (*Um bregingo*) which is normally found on foothills and water ponds and is the most fatal one to livestock. Others are; (*Um-kashao*), (*Um-tabaj*), (*Gulum*) and (*Shoosh*). Not much has been documented about the availability, economic importance or taxonomy of these plant species. However, if the range condition continues to deteriorate, probabilities of their abundance and consumption can increase and a higher livestock mortality can be expected.

In these surveys, it was obvious that the accusation against the transhumants of burning the rangelands is not true. This practice is adopted by cultivators, charcoal makers, honey collectors or through carelessness, but never by transhumants themselves.

The transhumants agreed that the rangeland has been deteriorating for the last decade. Some of their suggestions for improving the rangelands were reducing areas under cultivation and stopping further expansion. Some others proposed reseeding the rangeland. When we proposed a grazing land-reserve system, they did not object, however, none of them accepted the idea of reducing livestock numbers as part of solving the problem.

## Discussion

Disappearance of perennial and desirable grass species, invasion by unpalatable and poisonous plants and newly forming patches of barren soil are indicators of a deteriorating and a poor range condition. Nevertheless, a series of atypical years of unusual drought can be the major reason for the rapid decline in the rangeland condition and carrying capacity. If seed reserves and seed banks are still intact, conditions will improve, provided that typical years with normal rainfall resume. Drought, insecurity due to the war, coupled with a fast rate of expansion in cultivation and burning have remarkably reduced the areas that used to formerly provide transhumants' animals with an adequate area to graze. Currently, with all these forces against them, the transhumants are not left with many options other than to crowd in to smaller grazing areas, to use congested routes and corridors, to keep on being mobile in order to cover as big an area as possible and to utilise as many good grazing areas as they can. Therefore, the transhumants roam large areas to look for better and safe grazing areas. The Hawazma and Messerya subgroups are just such examples.

## Conclusions and remarks

It is imperative that both the government and the pertinent researchers intervene if better utilisation of the rangelands and better returns from livestock production are to be expected. It could be concluded that the following policies and research need be considered:

- (1) Creation of efficient marketing systems that encourage the pastoral people to sell their livestock at feasible prices in order to help reduce livestock numbers.
- (2) Development of a sound range research program which includes a better understanding of the values of pastoralism and the present ecological system. A multidisciplinary team of researchers

is needed. It is appropriate here to quote Abu Sin (1993), "Research which is assumed to guide development in pastoralism has been fragmented, mostly academic and unfortunately the government has failed to make use of the research institutions to set the scientific basis for development and change".

- (3) It is important to have a land tenure system and land use systems which can prevent the encroachment of cultivation onto the marginal rangelands.
- (4) Intensive research on crop residue management and legume forage supplementation, taking into account that any attempt to increase forage production without controlling livestock numbers will not be met with much success.
- (5) Transhumants need help in devising survival strategies through the development of a stronger institutional setting in order to enable them to bring their problems to the top authority, at least to match the sedentary farmers.

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**Ahmed S. El Wakeel** holds a Ph.D. from Utah State University, 1986. He has been working as a range and forage scientist in the Western Sudan Agricultural Research Project (WSARP) at the Kadugli Research Station in southern Kordofan 1986-1990, and at the El Obeid Research Station in northern Kordofan 1990-1992. He has done a lot of work on forage evaluation, range ecology and desertification. He is member of AFRNET-ILCA Network. Currently, he is a postdoctoral associate fellow in ILCA.

**Mohamed Azim Abu Sabah** holds an M.Sc. in social Anthropology from the University of Khartoum, Sudan, 1984. He has worked extensively with the pastoralists of Eastern, Western and Southern Sudan. He joined WSARP in 1979 and conducted most of the preliminary surveys in both the transhumant and sedentary sectors in southern Kordofan. Currently, he is working for a marketing research company in Saudi Arabia.