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# The Camel Pastoral System of the Southern Rashaida in Eastern Sudan

*Ilse Köhler-Rollefson, Babiker E. Musa and Mohamed Fadl Achmed*

The Rashaida are a camel breeding "tribe" in the Kassala region that emigrated into the area from Saudi Arabia during the last century. This paper describes their camel utilization, breeding and management patterns as well as traditional veterinary techniques. It also discusses how the Rashaida have adapted, to some extent successfully, to the expansion of large scale mechanized sorghum cultivation into their grazing grounds, and concludes that in order to prevent further ecological degradation and desertification the interests of the Rashaida and other camel pastoral groups in the region should be safe-guarded.

## Introduction

Ecologically, camel pastoralism can be regarded as the ultimate arid land adaptation. The domestication of the dromedary, a process probably initiated in the third millennium B.C. in the eastern Arabian peninsula (Köhler, 1981), opened up a new habitat for human exploitation, enabling human groups to intrude into and utilize large expanses of land that had until then been uninhabitable.

Within this arid land exploitation strategy, there is considerable room for variation in regards to how human groups manipulate camel herds and use them to extract resources from arid environments. The Cushitic camel breeders in the Horn of Africa tend to be subsistence oriented and place emphasis on milk production. However, their particular utilization pattern represents just one of several ways of using camels to survive in an arid environment. For instance, one can find few parallels between their pastoral system and that of the Raikas, a Hindu caste in Rajasthan that specializes in breeding camels for the market in draught animals, but almost totally ignores their food potential (Köhler-Rollefson, 1991).

Cultural variation does not pertain only to utilization patterns, but also to management techniques and herding strategies. Camel pastoral societies that inhabit com-

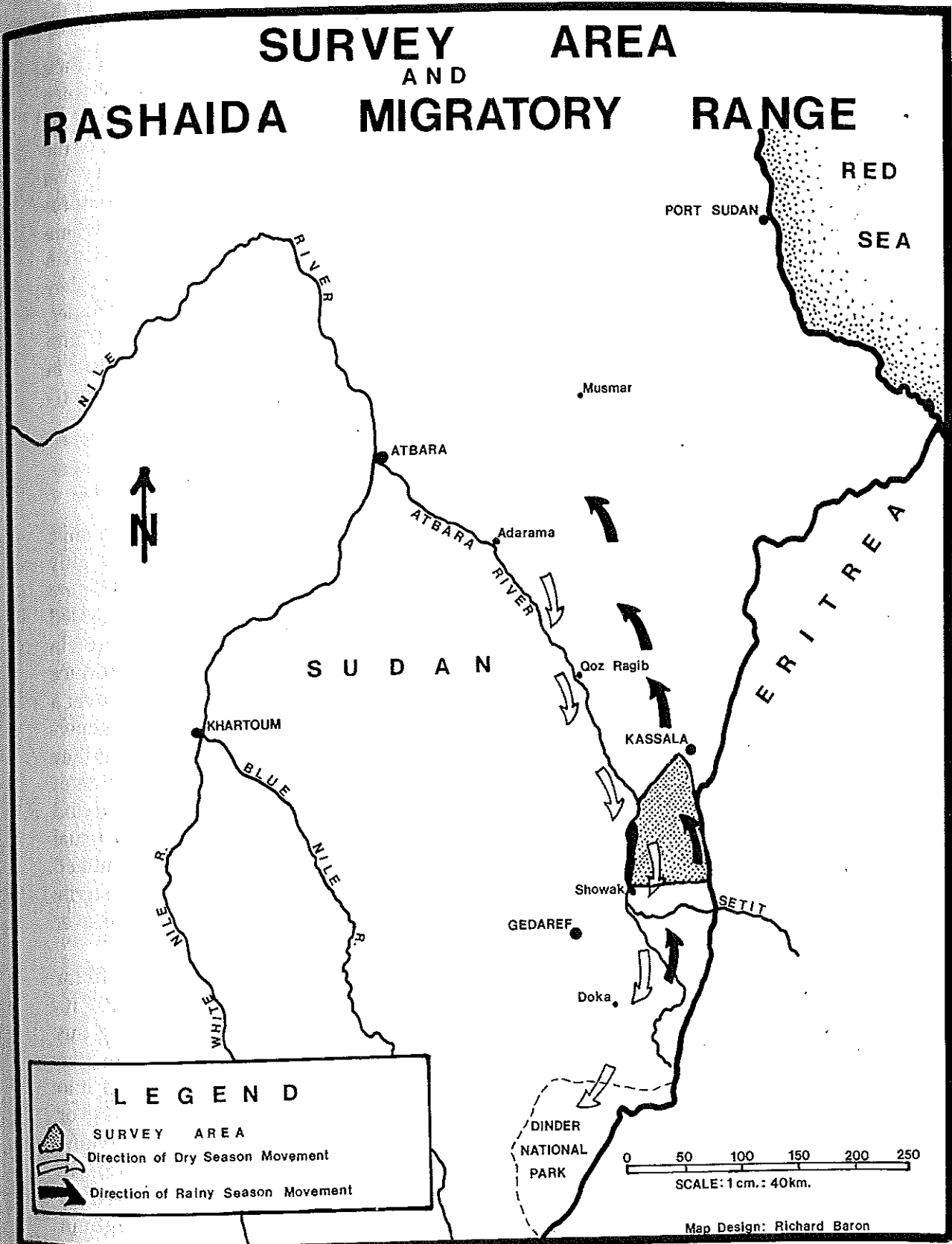
parable environments and adhere to similar utilization patterns can display significant differences in how they manage their animals and in their "skill level", as was pointed out by Schlee (1989) for the Rendille and Somali. Cultural attitudes in regards to such aspects as castration, inbreeding, weaning and handling camels, have significant effects on the productivity and reproductive performance of camels. They are therefore of interest not only to anthropologists but also of practical concern for animal scientists and development efforts.

The Rashaida, one of several camel breeding groups in eastern Sudan, are of Arab origin and reside in Kassala province. A study conducted by the authors in January 1990, focused on the technical aspects of the Rashaida's relationship with the camel (i.e. utilization patterns, management techniques, veterinary knowledge), as well as on the articulation of camel pastoralism with other land-use strategies in the region. An anthropological study of Rashaida social structure had been undertaken previously by William Young (1986, 1988).

## Social and Ecological Context

The Rashaida immigrated to eastern Sudan from Saudi Arabia during the middle of the 19th century. Their present number is estimated to be about 40,000 (Young, 1986).

Map 1.



Socially, they have maintained their identity, not inter-marrying or entering into political alliances with other groups, and retaining much of their Saudi-Bedouin identity and customs. Most of the Rashaida are camel breeders and subscribe to a movement pattern that can be regarded as fully nomadic; but, there are some Rashaida who concentrate on raising sheep and goats and move within a much more restricted radius. Members of the Rashaida tribe have also been quite adept at finding jobs in Saudi-Arabia and the Gulf states, often providing substantial financial support to their pastoral relatives (Young, 1986). Contrary to other pastoral Arab tribes in the Sudan, the Rashaida have no paramount sheikh or nazir to represent their interests to the government and administration. The largest residential unit is a camp (*fariig*) composed of approximately 7-12 extended families moving together throughout most of the year, and pooling their resources to buy the sorghum aftermath or to hire herders. Each of these groups is headed by an *omda*. According to informants, there is no competition among members of the Rashaida for grazing grounds, nor do any groups have rights to particular areas. When pasture is exhausted in one area, they send out a scout on camelback to look for the next suitable camping place.

The Rashaida can be divided into three groups according to their geographical location: the Northern, Red Sea, and Southern Rashaida. Our study focused exclusively on the Southern Rashaida, who adhere to a northwest-southeast movement pattern. The pastures they utilize during the rainy season (end of June until October, with a peak in July and August) are in the area between Kassala and Qoz Rajab. During the dry season they move south, utilizing the aftermath of the sorghum fields in the mechanized farming areas around Showak and as far south as Doka and Rashid. During years of climatic extremes this range may expand considerably. In the very wet year of 1988, they had migrated as far north as Adarama, and even, Musmar where they had not been for 20 and 25 years, respec-

tively. During the 1984/85 drought some nomads had managed to prevent losses by taking themselves south to the area of the Dinder National Park.

In years with average precipitation, their range of movement is contained between the 16°N latitude in the rainy season and the 14°N latitude during the dry season, or the 200 mm and 400 mm isohyets. In very wet years they may be able to exploit pastures as far north as the 18°N latitude (where annual precipitation amounts to less than 100 mm), whereas in very dry years they can be forced to move as far south as Dinder, near 13°N latitude and at the 800 mm isohyet. The vegetation is semi-desertic in the north and consists of low rainfall woodland savannah in the south.

### Camel Utilization Patterns

The Rashaida rate camel milk as the most important element of their diet. The only other significant dietary component is *dura* (sorghum), hence camel milk can be regarded as their almost exclusive source of protein and vitamins. Lactating camels produce between two and five litres per day over a full 12 month period. The Rashaida generally stop milking she-camels as soon as they are pregnant again, with the exception of animals that conceive within a short period after giving birth instead of after the usual 12 months interval; these camels are milked until parturition. Camels that become sterile after calving often continue to give milk over many years.

Unprocessed camel milk remains fit for consumption for 4-5 days; however its acidity increases significantly during this period. Camel milk is processed in two different ways. It can first be turned into butter (*zibde*) by shaking it in a goat skin or other container for about one hour. Secondly, *zibde* can be heated and turned into *zeman* (clarified butter or ghee) which can be used as a fat for cooking or eaten with sorghum porridge or bread. *Zeman* is ascribed certain therapeutic qualities, i.e. used as a remedy for fevers and as a topical ointment

for wounds. It may also be applied as a hair dressing as well as an unguent and cosmetic.

The Rashaida also described another product, called *madhur*, made by boiling sour milk on the fire until it coagulates. The clotted substance is then drained through a piece of gauze, formed into balls and sun dried. In this form milk can be stored over many years and reconstituted during the dry season or when fresh milk is scarce.

Camels are only slaughtered on rare special occasions (*karama*), such as weddings or wakes. Camel hair is only used to a very limited extent in weaving, and camels still fulfil a vital role in transportation. When migrating, most families rely solely on camels to carry the belongings of the family. Pick-up trucks have only been introduced very recently, and only a few families own one.

Males not slaughtered at rituals, kept for stud or as baggage animals, are sold for slaughter around the age of 6–8 years, usually to Egypt. This may be done through agents and middlemen at the Kassala or Gedaref markets or, alternatively, several Rashaida families will entrust several young members of the tribe with a herd to drive and sell at the camel market in Cairo. At the time of this research prices ranged from 7,000 to 12,000 Sudanese Pounds (USD 600–1,000, at the current rate of exchange).

The breeding of racing camels for export to Saudi Arabia and the Gulf states has emerged as an extremely lucrative option during the last few years. Training and selection races are held at Mastura near Kassala, and the winning animals are purchased by racing enthusiasts at prices ranging up to one million Sudanese Pounds (USD 80,000). In addition, breeders of animals which win Arabian races are often generously rewarded with four wheel drive vehicles, rifles, etc.

## Breeding Practices

### Breeds

The Rashaida breed two distinct types of camels. For racing and riding they breed the

elegant, long-legged and light coloured *Anafi* camels. For providing meat and milk they keep the *Rashaidi* type of camel which is of relatively small size, stocky, and characterized by its dark grey shade in infancy and reddish colour when adult. The Rashaida maintain that their animals provide more milk and are more likely to survive droughts than those of neighbouring tribes. However, they have started to buy camels from the Lahaween tribe, which are much bigger and stronger-boned, to crossbreed with their own stock. The offspring are said to exhibit hybrid vigour and to produce higher meat yields.

The Rashaida report that for their racing camels, they know the pedigrees for the last seven generations. For their food-producing camels they do not keep track of such data. Purposeful selection appears to be restricted to male animals only, which are chosen from high milk yielding female lines, and for nice temper and good conformation. Male animals used for work are not castrated.

### Breeding Season

There are two breeding seasons in the area; one during the rainy season in late summer and early autumn (July to October), and one in winter (December–January). Thus, in good years it is possible that she-camels giving birth during the rainy season may conceive again within a few months.

### Reproductive Parameters

Females are first bred at the age of 4–5 years, producing their first calf one year later. Normally, they continue to give birth every second year until the age of about 16 years, producing about 6 calves during their life span. However, there is an extremely wide range of variation in terms of reproductive performance. A minority of camels, in fact, gives birth almost every year, and we encountered a 20- and a 22-year-old camel that had given birth to 9 and 10 calves, respectively, with all offspring surviving. The same herd also contained a 12-year-old female that had "never been suckled", i.e. she had aborted twice and had two stillbirths.

Male animals are used for breeding from the age of seven years onwards, and are frequently kept for 7–8 years within the same herds. As a consequence, she-camels might be mated with their own sire, but, according to the Rashaida, to no ill-effect.

One bull can cover about 40–50 females, and most herds are large enough to contain more than one male. It is common practice to let the bulls establish dominance among themselves. Usually, a bull active during one breeding season will be fatigued by its end and willingly let himself be superseded by another during the following rutting period.

Lack of rainfall and droughts result in significant declines of calving percentages during the ensuing year. The Rashaida attribute this to the fact that in times of nutritional stress the bulls are less active sexually, and females require an additional year to reach maturity.

### Herd Sizes

Most herds encountered consisted of around 50–70 camels. A herd of such size would contain approximately 30–50 females of breeding age. Many owners said that prior to the 1984/85 drought their herds had been twice this size. A number of owners had lost all of their camels at that time, and had only slowly begun to rebuild their herds by buying stock from other tribes, especially the Lahaween. Because of the high price of camels this is a slow process, although one older man had managed to purchase four camels by performing wage labour on agricultural projects.

### Camel Diseases and Traditional Treatments

The most frequently mentioned diseases (in roughly this order) include trypanosomiasis (*ghuffar*), mange (*gerab*), ticks (*gurad*), internal parasites (*humar*, *dud*, *hulaa*), diarrhoea (*khurag*, *ishal*), ringworm (*gub*), and pneumonia (*ghuddah*). Another disease repeatedly referred to is *habub*, but the symptoms described were sometimes those of pneumonia, sometimes those of a nervous

disorder. It is difficult to determine how accurately these subjective recollections reflect the actual impact and relative importance of individual diseases. Although trypanosomiasis regularly headed the list, nobody was actually able to show us an animal afflicted by this disease. On the other hand, while none of the herders ever mentioned camel pox (*geddari*) spontaneously, one reliable informant, when asked, stated that he had lost three animals to this disease during the last year.

The Rashaida have not only a detailed knowledge system of camel diseases, but also have well defined ideas regarding their etiology, and can resort to an arsenal of traditional treatments. While their concepts do not always match those of Western veterinary science, many of their diagnostic notions and therapeutic procedures can nevertheless be regarded as sound from the western viewpoint as well.

Ghuffar (trypanosomiasis) is diagnosed by the smell of the urine and from the general condition of the animal, and it is assumed that it is transmitted through biting flies and through inhalation. The Rashaida know of no traditional remedy, and are therefore extremely keen to acquire trypanocides.

Gerab (mange) in the past was treated with goudran, a homemade topical treatment. Currently, the Rashaida prefer to use Western drugs, such as Ivomectin, and have come to consider the manufacturing of goudran as too laborious. Goudran is usually made from *handal* seeds which are ground in a mortar and then heated until liquidization occurs. Another way of treating mange is by lubricating animals with a mixture of either sesame or cottonseed oil with salt.

Internal parasites (*humar*) are diagnosed by a combination of symptoms which include swelling over the supraorbital ridges, oedema under the neck, decrease in milk production, and failure to stand up after drinking. The traditional treatment is to give orally a powder made from the seeds of gerrad (*Acacia arabica*?). One *malwah* (a type of measurement) of this concoction is given in the morning before grazing, and the app-

lication is repeated after four days, and possibly once more. The Rashaida said this treatment worked satisfactorily.

*Grun* was described as an affliction of the cerebro-spinal area indicated by a stiff neck that occurs in young and old camels, and for which the cause is not known. (It was not possible to relate this disease with any Western symptom complex, though possibly tetanus). The Rashaida treat *grun* by making cuts under the eye with a sharp knife until there is bleeding. If this treatment does not help, the neck is punctured and cauterized with a hot nail.

*Na'eita* is a skin disease that can probably be equated with contagious skin necrosis. It is also treated by cauterization.

The Rashaida also described a series of diseases in the mouth and throat areas. These included the enlargement of the soft palate, hypertrophy of the papillae, and the enlargement of the hyoid bone. All these afflictions are treated surgically, either by making incisions with a knife or by removing the proliferating tissue with a knife. A certain nasal problem, indicated by mucous discharge and dyspnoe (possibly infection with *Cephalopsis tintillator*) is treated in a similar fashion, by breaking off the decayed nasal cartilage with the inserted hand.

Lameness is treated differently according to the location of the problem. Generally the area around the affected joint is incised with a knife. Lameness of the forearm is treated by inserting two sticks through openings cut into the skin in a longitudinal direction to the bone. After a week the wood is removed, and "the resulting pus will heal the animal". Lameness in the carpals is treated by skin incisions that are then covered with salt.

Calvings are usually relatively uncomplicated and dystocia does not appear to be a major problem. If the fetus is malpositioned it is pushed back and corrected; and in cases where this is not possible, the calf is killed and dissected *in utero* with a straight shaving knife.

Prolaps of the uterus/vagina is treated in the time-honoured way of digging a slope to elevate the animal's hindquarters, washing the prolapsed tissue with soap and water, lubricating it with oil and pushing it back into position. The vulva is then sutured with bark fibers and a needle.

Although nobody had ever heard of camel twins born alive, one informant reported he had once been called to the birth of twins, both of them stillborn.

### Interaction with Agriculture

The Rashaida, as well as neighbouring camel pastoralists such as the Shukriya (Sorbo, 1985) and Lahaween (Morton, 1988), are progressively losing more of their grazing grounds to the spread of irrigation projects and mechanized agriculture schemes. Under these schemes private investors, usually urban merchants, obtain leases from the Mechanized Farming Association of rainfed land which then cleared, ploughed and sown with sorghum (*dura*) (Simpson and Simpson, 1978).

The Rashaida make a practice of buying access to the *dura* fields after the harvest, as the crop residues constitute a valuable nutritional resource for camels at a time of year when grazing is scarce. Some herders keep their animals on sorghum stalks for the whole period from January to July, letting them graze on natural range vegetation only during the rainy season and immediately afterwards.

While the spread of sorghum cultivation has thus brought some benefits for camel pastoralists, on the whole these developments can be regarded as equivocal at best. The sums pastoralists have to pay for the *dura* residues are substantial, and families have to sell 3-4 camels on average to obtain the necessary cash for a season's worth of feed. An owner of 100 camels has to pay about 50,000 Sudanese Pounds to keep them on sorghum. Obviously this causes a lot of resentment among the herders. In some cases landowners burn their fields after the harvest if herders refuse to purchase the *dura*.

Others do not take the trouble to harvest and just sell the whole crop to animal owners.

In addition, the proliferation of cultivation often renders it difficult for the Rashaida to prevent their animals from damaging crops still on the stalk. They feel that the fines they have to pay bear no relationship to the actual damages incurred. In one incident, 15 camels had invaded unharvested fields and were subsequently collected and impounded by the military police. The owners had to pay 15,000 Sudanese Pounds to regain their camels.

The problem of involuntary crop destruction is exacerbated during droughts. Whereas in years of good grazing a single person would be able to supervise 100 animals, in dry years to keep them away from the dura fields it requires up to three men for every 20 animals. It further angers the Rashaida that the merchants even make a profit from the shrubs and trees cleared in preparation for cultivation by selling the wood as charcoal. Another frequent ground for complaint is the apparent random spread of cultivation, which often leads to grazing land being surrounded on all sides by farmed fields which render the pasturage inaccessible.

It is blatantly obvious, even to a casual observer, that the spread of mechanized agriculture and sorghum monoculture is taking an enormous environmental toll. The destruction of the perennial shrub and ground cover leaves the soil bare and unprotected against erosion and loss of the top layers. The monoculture results in quick depletion of soil nutrients and rapid loss of fertility. After a few years the cultivated acreage is abandoned, having become useless both as agricultural land and pasturage. The high yields and profits that can be realized, in essence, represent a mortgage on the future and a giant step towards desertification, as has been amply documented for other parts of the Sudan (Ibrahim, 1978). The Rashaida believe "rain will only fall where there is vegetation, and if there are no shrubs, the rains will not come". Their intuitive as-

essment of the situation closely matches current scientific theories about the onset and spread of desertification.

### Transformation of Camel Breeding

Camel husbandry among the Rashaida is largely a family-based operation, although on occasion herdsman might be hired from neighbouring tribes (usually Lahaween or Qawahle). Camel milk represents the foundation of the diet, and it is regarded as crucial for the well-being of the children. The sale of slaughter camels and the breeding of racing animals provides the necessary cash to buy other essentials of life and sorghum for the herd. In spite of many complaints about the difficulties of camel breeding in the face of agricultural encroachment, the Rashaida see no alternatives to camel husbandry for themselves. A repeated statement is "camels will always be and our children will continue to keep camels", and they frequently emphasize the benefits of their way of life, which they consider to be healthier than a town existence. They like to point out that they do not have to worry about malaria, typhoid and the other diseases that are prevalent in the towns and the irrigation schemes.

That camel husbandry is an attractive economic option has not gone unnoticed by the landowners/mechanized farmers who have turned to investing their profits into camel herds (cf. Abu Sin, 1988). These are given into the care of ex-pastoralists who are allocated a share in the profits as an incentive. Because their cash reserves provide them the ability to tide over lean periods by buying supplementary feed, these commercial camel owners suffered a much lower incidence of animal losses during the 1984/85 drought. They also have the necessary money and connections to obtain veterinary drugs for their animals, and have the option of selling their animals at times when prices are highest. In the 1990 drought, when camel prices hit rock-bottom, they availed themselves of the opportunity to enlarge their herds.



## Conclusion

The Rashaida practice a double-purpose camel utilization strategy. While relying heavily on camel milk for subsistence, they also produce meat camels for the Egyptian market and, to some extent, racing camels for the Gulf. This pattern of utilization approximates that of the Bedouins of the Arabian peninsula who, in the past, combined milk usage with producing camels for the caravan trade (Lancaster and Lancaster, 1990). Their veterinary knowledge in regards to diagnosing and treating camel diseases is impressive.

Up to now, the Rashaida have also been tenacious at accomodating themselves to changes and even to integrate, to some extent, with the mechanized farming schemes by feeding their camels on the dura crop residues (Köhler-Rollefson, Musa, Achmed, n.d.). This newly created artificial ecological niche can only be utilized by camels, since for all other domesticates the distances between the fields and water sources would be prohibitive. However, the current land-use system is extremely dynamic, and if the balance shifts only slightly more in favour of mechanized farming, the survival of Rashaida camel husbandry will be threatened acutely. Provisions need to be made to stop the further erosion of their pasture and to dam the uncontrolled spread of cultivation.

It is doubly ironic that the same parties that are involved in the mechanized farming are now diversifying into camel breeding. Their capital enables them to buy not only camels but also the necessary expertise by hiring destitute ex-herdowners to attend to their newly acquired herds. Unless special efforts are made by the government or concerned agencies to safeguard the interests of the "small man", the outlook for the continued existence of the Rashaida pastoral system is indeed dire.

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## Appendix

Table 1. Camel forage plants

### 1. Trees

*Qitr* (Acacia mellifera)

*Serob*

*Orfat* (Acacia orfota)

*La'ot* (Acacia nubica)

*Talleh* (Acacia tortilis)

### 2. Shrubs and grasses

*Hantut*—conducive to internal parasites

*Tabbar*—conducive to internal parasites

*Sesaban*

*Hashiesh*

*Bittri*

*Siha* (Blepharis sp.)

*Gihawan*

*Qutub* (Cien fuegosia)

*Asham*

*Sheheim*

*Ssagul*

### 3. Toxic tree

*hai kebiba*

### 4. Medicinal Plants

*Handal* (Colocynthis vulgaris)

*Gerrad* (Acacia arabica)

Table 2. List of camel diseases cited by the Rashaida

1. *Ghuffar*—trypanosomiasis
2. *Gerab*—mange
3. *Churaq*—diarrhoea
4. *Habub*—pneumonia or affliction of the nervous system?
5. *Djeddet*—mastitis
6. *Ghudda/Al Fahada*—type of pneumonia that affects the best animals
7. *'Ateir*—"craziness"
8. *Gedderi*—camel pox
9. *Nasur*—fistulae in sternal pad
10. *Bitwa*—prolapse of vagina and/or uterus
11. *Dafara*—tumour in the eye
12. *Hadab/Zemat*—increase in the oral papillae
13. *Shweqa*—obstruction of the pharynx
14. *Na'eita*—contagious skin necrosis (?)
15. *Kasara*—bend in the neck
16. *Grun*—affection of the cerebro-spinal area
17. *Marras*—colic
18. *Ara*—type of mange (?)
19. *Hula, dud, humar*—internal parasites
20. *Gub*—ringworm
21. *Ghurad*—ticks
22. *Hattal*—stiffness and immobility of the carpal joint after tying up the leg

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