Pastoralism and displacement: strategies and limitations in livestock raising by Sahrawi refugees after thirty years of exile

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Abstract: The Sahrawi people lived as nomads in the Western Sahara, relying on camels and secondarily on goats and sheep, until Morocco occupied the country in 1975. Since then, a large majority of them lost their herds and had to abandon pastoralism, becoming refugees in four camps located in a desert plateau near the Algerian town of Tindouf. After an initial situation of acute emergency, Sahrawi refugees started again livestock breeding, in spite of the problems due to the sedentary condition and to the absence of pasture areas in the surrounding of the camps. The impossibility especially for camels of conducting a free grazing regime based on the biodiversity of Western Sahara, and the improper feeding they receive in the camps, are the cause of digestive and metabolic disorders as well as of a low nutritional quality of the milk produced.

In order to cope with the situation and to maintain traditional livelihoods and culture as well, many Sahrawi livestock raisers and families began a semi-nomadic regime, moving to the territories of Western Sahara under Polisario control - the ‘liberated territories’ - during the rainy seasons. In this context, the liberated territories - obtained through a guerrilla warfare that lasted until 1991 - become crucial for the conservation of Sahrawi pastoralism tradition, at least until a political solution of the conflict will be achieved and refugees will be able to go back to their original nomadic territories.

Keywords: Sahrawi, refugee camps, displacement, camel, pastoralism

Introduction

During the past two decades, scholars and development organizations have
increasingly paid attention to nomadic populations and their social-ecological systems, in part because these systems are threatened throughout the world by the creation of political boundaries, forced sedentarization and resource depletion, and in part because they have become aware of the complexity and efficacy of such systems in relation to resource scarcity and harsh environmental conditions. Research has also been conducted around the key role of the camel in these systems (Bekele et al., 2002; Farak et al., 2004), on the traditional ethnobiological knowledge of nomadic populations (Wolfgang and Sollod, 1986; Köhler-Rollefson, 1996; Mohamed and Hussein, 1996; Ag Arya, 1998; Abbas et al., 2002), and on human-camel relations from an anthropological perspective (Kaufmann, 2003; Farak et al., 2004; Catley, 2006).

Nevertheless, the role of livestock, especially of camels, in the Sahrawi social-ecological system has barely been investigated (some information can be found in Guinea, 1949; Caro Baroja, 1955; Gauthier-Pilters, 1965), apart from our recent work, and few attention has been paid to the changes that have occurred in human-camel relations with forced sedentarization in the refugee camps, in spite of the importance of the camel in Sahrawi culture, livelihoods and ecological relations.

Sahrawi, literally ‘people from the desert’, is the name given to the tribes of the nomadic and pastoral peoples who traditionally inhabited a coastal area of north-western Africa called Western Sahara. The origin of the Sahrawi traces back to the fusion between Arabic groups that migrated from Yemen from the XI to the XIII century BC and a nomadic Berber group that was living in Western Sahara. A slow process of integration took place until the XVI century, from which arose a Sunnite Islamic nomadic population speaking an Arabic dialect with Berber substrate called Hassanya: the modern day Sahrawi. The Sahrawi people were essentially nomadic, pasturing mainly camels but also goats and sheep in the sandy low-lying plains of Western Sahara and relying for food on camel milk and meat, dates, sugar, and small amounts of cereals and legumes (OXFAM, 1995). Their social structure was based on tribes and organized by subdividing individual into hierarchical patrilinear groups that were competing through violence and negotiation in order to have access to local resources (Caratini, 2000).

During the 1960s, while under Spanish colonization, the Sahrawi became increasingly sedentary and urbanized (Seddon, 2000). The consecutive droughts in the late 1960s and early 1970s forced substantial numbers of Sahrawi people to abandon animal husbandry, and to become cheap labour for the phosphate mines. Indeed, it has been estimated that, in this period, out of the 50,000 inhabitants of Western Sahara, 30,000 were still nomads (Capot-Rey, 1962). By the
late 1960s, these processes brought renewed anti-colonial sentiments and created the conditions for the emergence of a Sahrawi identity and nationalism that went beyond traditional kinship ties and tribal affiliation, and for the creation in 1973 of the Polisario Front, which became the political representative of the Sahrawi people. In 1975, following the occupation of Western Sahara by Mauritanian and Moroccan forces (Mauritanian pulled out from Western Sahara in 1979), about 70,000 Sahrawi became refugees after fleeing the Moroccan army (Spiegel and Qassim, 2003; Loewenberg, 2005). Since then, they are living as refugees in four camps located on an isolated desert plateau – the **Hamada** – in south-western Algeria, near the town of **Tindouf** (see Figure 1). The Sahrawi Arab Democratic Republic (SADR)/Polisario Front - the government in exile and the political and
military organisation that represents the refugees - was granted administrative and governing autonomy over this area by the Algerian government. Besides the camps, SADR has also political control over the eastern part of the Western Sahara which was wrested away from the Moroccans through guerrilla warfare that lasted until the peace agreement of 1991 (Bhatia, 2001). Western Sahara territory is thus geographical and politically divided into two parts separated by an earthen wall protected by land mines and Moroccan military points. This wall physically separates the eastern portions of Western Sahara under Polisario control, the so-called ‘liberated territories’ occupying about 20% of the Western Sahara, from the western portion under the control of Morocco, the ‘occupied territories’ (San Martín, 2004; Loewenberg, 2005).

Today, the Sahrawi live in the refugee camps of south-western Algeria (about 165,000), in the part of Western Sahara under Moroccan control (about 65,000-90,000), in the part of Western Sahara under Polisario control (about 10,000-30,000), in Mauritania (about 25,000), and minorities are present in mainland Spain, the Canary Islands, Algeria, and southern Morocco (Arkel, 1991; UNHCR, 2002, 2005). Their numbers sensibly increased with the sedentarization in the camps, where half of the population – everyone under the age of 30 – was born. In the camps, refugees live in canvas tents and mud brick huts, and face severe problems of water and food supply. The European Union, certain bilateral donors, UN agencies, and several solidarity groups from across Europe provide food, shelter, and other basic necessities (Loewenberg, 2005). In a context in which refugees can not generally continue with their traditional practices and livelihoods, with a high level of dependency on donors, and a peace process that has stagnated, they have been struggling against identity loss both militarily and through social and cultural resistance (Seddon, 2000; Shelley, 2004; Volpato et al., 2007).

In this paper, we will first briefly describe pastoral practices of the Sahrawi before the war and consequent displacement, and then address the changes in the practices of livestock management and feeding brought about with the sedentarization, with special emphasis on camels.

Sahrawi pastoral tradition

Traditionally, the Sahrawi based their livelihood on the camel, and secondarily on goats and sheep. Their basic social structure was the frik, an encampment of variable number of tents (from few up to ten) often composed by members of the same family. Frik of the same area were generally members of the same tribe,
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and used to move across the territory in agreement to customary routes of their tribe. Within these areas, flocks, and friks, used to move toward areas with pasture according to parameters like the distance from water wells and the qualitative and quantitative estimation of the available resources (abundance of pasture and presence of important species). During the dry season, groups used to divide in sub-groups in order to use in a rational form the few available resources (Caro Baroja, 1955).

Within the frik, flocks were property of the single families, and they were marked with specific brandings which identified their tribe. Decisions regarding the frik, including management of the flock, were under the responsibility of male members, and ultimately under the authority of the shij, the oldest man. Given the differences in the number of animals owned that could exist between different families of the encampment, the shij had also the responsibility of redistributing the resources of the frik. Camel milk, for example, was given to every family independently from their actual livestock properties, and female camels may have been given as a lift to families who lost their herds.

The camel was central to Sahrawi livelihood and to cultural and symbolic representations and beliefs, representing a ‘keystone’ of Sahrawi cultural identity. Camels were used by Sahrawi for food, leather, wool, and to obtain medicinal and veterinary remedies. Camel milk and its derivatives were the basis of Sahrawi food habit. The milk was consumed mostly fresh, and camels were milked already 3-5 days after delivery, when the colostrum had finished. The separate fat (zibde or rraip, sometimes called also butter) was eaten with rice, bread or dates, or used for medication to treat respiratory and digestive afflictions. Besides milk, camel meat and fat were other basic food of Sahrawi nomads. A common method for camel meat conservation was to cut it in ribbons and to dry it hanging them on the stems of Acacia trees, and then cooked at occurrence. Dry camel meat was often consumed with milk cream or hump fat. Camel leather was used to make ropes, backpacks, as well as camel saddles.

Camels not only provided staple foods, but served also as the main means of transport of both humans and goods throughout the desert (Caro Baroja, 1955), as well as exchange capital in cities or markets to provide the frik with other important goods like barley, sugar, and tea. Their ecological adaptations, coupled with cultural and behavioural aspects of nomadic life, allowed Sahrawi tribes over centuries to exploit the biologically-poor territory of Western Sahara and to serve as a commercial and cultural bridge between Sub-Saharan and North-Saharan populations. In search of pastures and for commercial reasons, the Sahrawi pastoralists often arrived to Mauritania and Southern Morocco, sometimes to Mali.
and Senegal. The importance of the camels as packing animals was fundamental for the Sahrawi trade. Historically, Western Sahara has been a crossing area and an arrival point of important trade routes. Some of the main routes began in Europe and were arriving up to Timbuktu in Mali and San Louis in Senegal. Sahrawi pastoralists participated actively in this trade not only by interchanging products (e.g. salt blocks from Western Sahara salines) but also offering services of protection, guides and camel renting. Since the XVII century also East-West routes became important, joining the interior of the country with the coast, which was the area where the trade with European countries increased. Camels were then used to carry Arabic gum from northern part of Senegal River or ostriches feathers that were exchanged with textile, metals or food stuff.

**Changes in pastoral practices due to war and displacement**

Although the process of urbanization and sedentarization of Sahrawi nomads began partly before the exile, camel breeding has been mostly reduced after 1975 as a consequence of the war, and many Sahrawi abandoned livestock breeding with the exile. Pastoral nomadism, once the mainstay of the Sahrawi livelihood, has dwindled greatly with sedentarization: Arkell (1991) reports that no more than 10% of the Sahrawi population practices it today, often in conditions of semi-nomadism only during the cold/rainy period.

Under Moroccan bombings, many *friks* dissolved, and their members mostly joined the other Sahrawi in the exile and/or took the weapons. Flocks were bombed by Moroccan air force in order to destroy the basic means of nomads’ livelihoods, or were sold (often at an emergency - hence very low - price) in Mauritania and Algeria, or donated to the Polisario. Indeed, a minority of *friks* managed to maintain their herds and at least a minimum number of members in order to manage the herds (apparently, a substantial number of the young male members left their *frik* to join the Polisario). These groups of nomads escaped the bombings and displaced with the herds to neighbouring (mostly Mauritania) or non-hostile countries (Algeria and Mali), and slowly moved back to the meantime liberated territories with the peace agreement of 1991. In the same year, Arkell (1991) estimated that between 10,000 and 30,000 Sahrawi continue practising a pastoral nomadic lifestyle in the area. Among these people, the camel still represents a keystone species for livelihood.

Refugees, during the earlier years of exile, found themselves in a condition where they mostly had lost their basic means of production and consumption, i.e. livestock. Also, they found hard difficulties in beginning again livestock raising
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Table 1 - Animal census in the Sahrawi refugee camps in 2007, divided per camp (NVD-SADR)

<table>
<thead>
<tr>
<th>ANIMAL SPECIES</th>
<th>AAJUN</th>
<th>AUSERD</th>
<th>SMARA</th>
<th>DJILA</th>
<th>27-FEB</th>
<th>RABUNI</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>sheep</td>
<td>10.559</td>
<td>7.061</td>
<td>9.013</td>
<td>2.598</td>
<td>1.484</td>
<td>608</td>
<td>31.323</td>
</tr>
<tr>
<td>camels</td>
<td>843</td>
<td>41</td>
<td>636</td>
<td>105</td>
<td>32</td>
<td>22</td>
<td>1.679</td>
</tr>
<tr>
<td>donkeys</td>
<td>75</td>
<td>35</td>
<td>24</td>
<td>20</td>
<td>2</td>
<td>0</td>
<td>156</td>
</tr>
<tr>
<td>dogs</td>
<td>32</td>
<td>74</td>
<td>56</td>
<td>17</td>
<td>10</td>
<td>32</td>
<td>221</td>
</tr>
<tr>
<td>chickens</td>
<td>105</td>
<td>261</td>
<td>118</td>
<td>97</td>
<td>83</td>
<td>6</td>
<td>670</td>
</tr>
</tbody>
</table>

due to the lack of economic resources needed to buy an initial stock of animals, and to the ecological conditions of the place of exile, e.g. lack of pastures and no possibilities for livestock grazing. In the camps, while most of the men joined the army, women had to face with providing food and other needs to the family. Among the actions taken by families to cope with the exile, there was soon the raising of goats and sheep, while raising camels needed a mayor investment in people and resources. Nowadays, camels, goats, and sheep are reared in the camps in spite of the extreme difficulties that people have in feeding them. Almost each family owns some sheep and goats, whose number is estimated in approximately 60,000 heads, whereas camels are about 1,700 (National Veterinary Direction of SADR (NVD-SADR), 2007). In the Table 1 the animal census in 2007 is shown.

These animals provide the main source of noble protein in the refugee diet, and livestock breeding represents one of the major income generating activities.

With livestock raising, Sahrawi refugees try to maintain their food habits based on meat and camel and goat milk. The products obtained by the camel, especially from camels raised in grazing condition in the liberated territories, are considered the best from a qualitative, nutritional, and medicinal point of view. Camel milk is an important source of proteins, lipids, vitamins and minerals (Gorban and Izzeldin, 1997, 2001), and it is also important to fight the anaemia, especially in women, a very common problem nowadays in the camps (Branca, 1997; UNHCR, 2002). Because of cultural and nutritional importance of camels, some public camel herds (approximately 30-50 camels each) belonging to camps’ authorities are raised around the camps in order to provide milk to disadvantaged groups of
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Figure 2 - Watering camels at Sfaia well in Tifariti, liberated territories of Western Sahara. (P. Kourkova)

Figure 3 - Animal shelters in the refugee camps (L. Hogerwerf)
refugees (old and/or sick people, children) and for marketing purposes. Also, there are families in the camps that bought jointly a female camel in order to have fresh camel milk daily; milk is distributed to the different families who contributed, and the man that is in charge of milking also takes a part of it.

Camels are also raised under semi-nomadic conditions by refugees’ groups or families between the liberated territories and Mauritania (Figure 2). The number of camels raised in these conditions is about 40,000 heads (NVD-SADR, 2007), and often it includes those raised in the refugee camps that are brought to the liberated territories during the cold/rainy season. In fact, many livestock keepers in the camps can be defined as semi-nomadic since they move to el badia (nomadic areas) during the few favourable rainy seasons (September/October - March/April), when pastures are available. They use the area to graze goats, sheep and camels. These groups also lost their herds with the war and became sedentarized, but reinitiated livestock breeding after they had been able to collect enough capital to buy the necessary minimum amount of livestock. This does not mean that all the refugees with livestock are semi-nomadic, and many refugees remain sedentarized while raising some goats and sheep in the camps (Figure 3). Semi-nomadism can be limited to short periods of herding in the liberated territories or around the refugee camps with mainly sheep and goats, or can refer to private camel rearing between the camps and the liberated territories, up to a completely nomadic lifestyle where camps are used only in cases of emergency and as a market point.

Periods spent in the grazing areas are used to fatten the animals and increase the herd size, in order to contribute to family nutritional needs as well as to generate income by selling part of the animals. The semi-nomadic condition has also a high value for preserving Sahrawi tradition and nomadic culture: lots of refugees consider this period as a relief, a sort of holiday, to escape the boring and unhealthy life of the refugee camps. In the badia, refugees get in touch with the lifestyle of their fathers, grandfathers, and ancestors. When pastures become scarce, people return to the camps where they live on the basis of private earnings (paid work with the SADR or international organizations, private commercial activities, civil pensions from Spain) and with the assistance of international organizations. Goats and sheep are often more important then camels for these Sahrawi, where the latter probably are of cultural and social importance but do not provide the main source of food or income. Camel raising, in fact, needs a bigger investment which the average family of refugees cannot afford. Indeed, solutions based on traditional kinship networks are sometimes found, and some families borrow some camels (especially female camels to provide milk) from
relatives during the time spent in the *badia*.

Among the semi-nomadic refugees there are private camel raisers who graze the herds between the camps, the liberated territories, and parts of Algeria and Mauritania, and use the camps as a market for their products and as place of residence during part of the year. Camels raised by these people in the liberated territories are also the main source of meat for the refugees in the camps: camels are moved continuously from the grazing areas to the camps, where they are slaughtered daily, approximately twelve-fifteen animals per day. These raisers are often also skilled animal traders. There is high meat consumption in the camps, and animals raised in the camps by refugees are insufficient to cover this need. In order to face the meat demand, during the years a conspicuous livestock trade developed from the liberated territories, Mauritania, Algeria, and Mali to the refugee camps.

Besides camel meat, there are some specific periods during the year when the demand for sheep meat strongly increases, and many animals are carried and sold in the camps. For example, seventy days after the end of Ramadan, the day of *El Aid El Adha* (Islamic Easter) is one of the most important Islamic feasts and each family traditionally celebrates it by slaughtering a sheep. A couple of weeks before, lots of trucks loaded with sheep arrive to the camps, where animals are quickly sold in market areas. These animals often come from far away, where the epidemiological situation is often very different from the refugee camps, thus constituting a potential high risk of introducing dangerous diseases. In fact, epidemic diseases with high morbidity such as food and mouth disease, small ruminant pest, Rift Valley fever, blue tongue disease are endemic in Mauritania and may enter the camps through animal import. Nowadays, the local Sahrawi veterinary service makes big efforts to preserve the health status of the livestock in the camps, and perform strict animal health control at the borders, in particular during the Islamic Easter.

Animal traders usually buy goats and sheep in Mauritania or in the liberated territories, where prices are lower, then spend some months in the grazing areas to fatten them, and finally move to the camps and sell them. The income generated may be high, and animal trade represents one of the most lucrative activities for Sahrawi refugees, as well as one of the factors that increase the cash flow in the camps.

Given the cultural and economic importance of the camel among the Sahrawi, it is not surprising that also the Polisario raises its own herds. About 27,000 camels, as well as goats and sheep, are raised in the liberated territories by the military regions in which these are subdivided, with cantoned soldiers or paid workers as
herders. Early during exile these herds were used to provide refugees and soldiers with rationed meat and milk; nowadays herds are mostly used as a source of funding by military regions themselves. In contrast with traditional livestock raising, and similarly to big private owners, the management of the herds by Polisario is mechanized, in order to be less dependent from water points and able to use different areas of pasture: water is often brought to the herds (and not herds to the water) with trucks, and herds of different regions are quickly concentrated in the few areas of green pasture after rains. These large herds of hundreds of camels have also an important social function in providing fresh milk to families living in the surroundings of the grazing area. In fact, friks or single tents without herds, or with only goats and sheep, use to move with the Polisario camel and ask for some milk for household consumption to the herders during the milking of the evening. This practice has at the same time a material function of providing the most important food item to often disadvantaged families, a cultural function of maintaining main aspects of traditional lifestyle, as well as a social function of reinforcing the traditional solidarity of nomads and quasi-commonality of camel milk in nomadic regime.

### Changes in livestock feeding

Western Sahara, including the liberated territories, is characterised by a sub-oceanic desert climate where the lack of rains is partly replaced by a high hygrometric content in the atmosphere that allows more plant species to grow, and by permanently dispersed vegetation, at least in the southern part (Guinea 1949; Ozenda 1991). Following Gauthier-Pilters (1965), pasture areas can be distinguished in three ecological types: depressions or wadi (where most of the annual vegetation grows after the rains), rocky desert or hammada (where mostly dispersed halophyte species grow), and sandy desert of dunes or erg, less relevant as a pasture area. Before the displacement, the wandering of Sahrawi nomads across Western Sahara and neighbouring areas aimed at moving the herds to wadis with yerbia (‘all the plants that come out with the rain’) during the period February-June, by ‘following every sign of rain’. Here, camels were mainly pasturing green herbaceous annual plants (e.g. *Diplotaxis pitardiana*, *Asphodelus tenuifolius*, *Astragalus* spp., *Stipagrostis* spp.), as well as salty species (*Traganum nudatum*, *Salsola* spp., *Cornulaca monacantha*, *Nucularia perrinii*), and trees (*Acacia* sp., *Maerua crassifolia*). These last two kinds of pastures, especially salty species, called batha, were covering almost the totality of camels’ intake during the dry season from July to January. Dry annual plants from the rain of the year before are also considered a
good pasture and are called *sbnide*.

Sahrawi states that all the *yerbias* that grow with the rain are good pastures for camels. *Stipagrostis plumosa* (called *nsil*), for example, is a main pasture in the region of Tiris (southern part of Western Sahara), and camels grazing it are reported to produce more milk and to fatten quickly (Volpato, 2006). But the most important resources are considered salty plants of the genera *Atriplex*, *Nucularia*, *Traganum*, *Anabasis*, *Cornulaca*, *Suaeda*, which are available throughout the year and even after more years of draught, and provide the animals with important proteins, salts and minerals (Gauthier-Pilters, 1965). Especially *Nucularia perrinii*, called *askaf*, is regarded by Sahrawi as the best camel pasture (cfr. also Guinea, n.d.), and eating meat or drinking milk from a camel that pastured *askaf* is considered to give health and strength.

Given the relevance of salty plants in the diet of camels in Western Sahara, and in accordance to the salinity of wells where herds were drinking, Sahrawi did not usually give salt as a food supplement. This was done mostly only after during periods of draught, when plants of *hatba* were not available any more and camels were brought to pasture in ‘emergency’ areas, like *ergs*, where camels were feeding mainly of *Stipagrostis pungens* (called *sbat*).

After war and displacement, this system collapsed, and camels’ feeding substantially changed in the refugee camps. In fact, the area where the refugee camps are situated is almost completely without vegetal life. With less than 50 mm of rain per year, the Hamada is classified as an absolute desert of Libyan or continental type (Ozenda, 1991). Camels graze around the camps mostly *Zygophyllum gaetulum* (called *aggaya*), which indeed is not considered a good pasture. Consequently, Sahrawi livestock raisers confront new problems related to animal feeding and health that are linked to the condition of lack of pastures in the camps, and animals (especially camels) suffer strong nutritional stress. Especially when animals move from pasture areas to the camps after a period of grazing, or when they are bought somewhere else and brought to the camps, they suffer alimentary stress from diet drastic changing; rest of vegetables and other organic rubbish, flour, cereals, and legumes represent their main feeding in the camps, and paper is often the only source of fibre. Livestock health is seriously compromised, with high prevalence of dismetabolic disorders, food intoxications and constipations, enterotoxemia, which represent one of the major causes of livestock death.

In the search to feed livestock under camps’ conditions, throughout the years a marketing of fodder has developed from Tindouf to and within the camps, and herders started using different available complementary food products. When the
general health status of the animals decreases during the dry period, for example, wheat is given as a stimulant and food supplement. Camels are also sometimes fed with dried bunches of plants which can be found in the surroundings like *Zygophyllum* spp., *Panicum turgidum*, *Pergularia tomentosa*, *Calotropis procera* (Volpato, 2006). The last one was also used from Sahelian herders as an emergency fodder during the long draught of the 1980s (Fall, 1989). The seeds of *Trigonella foenum-graecum* (*halba*) are given to both camels and goats and sheep as a complement with stimulant and carminative properties. In other parts of Algeria they are also given to cows and sheep to strengthen and fatten the animals before selling those (Pieroni et al., 2006). Given the complete absence of salty plants in the surroundings of the camps, Sahrawi livestock raisers also give salt as a complement to the herds in order to prevent what they call zoran, i.e. lack of salts and related metabolic disorders (Volpato, 2006). This practice is extremely important for camels health (Farid, 1989), especially in situations when herders have no other possible ‘salt cure’, i.e. alternate visits to salty wells, to areas with salty soils, or with association of halophyte plants (Gauthier-Pilters, 1965; Farah et al., 2004).

Other problems related to animal health that are linked to the conditions of the camps are the presence of rubbish and poor hygiene in the animal shelters that are diffused all around the camps (Broglia et al., 2005). Improper feeding, lack of hygiene, consequent poor body condition and diffusion of parasitic diseases (e.g. sarcoptic mange, ticks, lice, coccidiosis), are the main causes of animal mortality, decrease of livestock fertility and production losses in the livestock of the Sahrawi refugee camps (Figure 4). In particular the very bad hygienic conditions of the shelters where animals bred in the camps are kept highly concentrated, lead to very high prevalence and intensity of coccidiosis, up to 90% in young lambs, which often suffer severe diarrhoea with high mortality rates. This is a typical management problem raised with the sedentarization of Sahrawi breeders in the camps, who are used neither to animal shelters nor to keep them clean.

Nevertheless refugees are well aware of the low quality (in nutrients as well as in taste) of the milk produced in the camps, and often state that ‘only milk from the liberated territories makes you strong and makes children growing’.

The difficulties in raising camels in the camps and the changes in Sahrawi livelihoods with the war and the displacement progressively affected the vertical and horizontal transmission of all the related knowledge (ethnoecological knowledge about the location of pastures, ethnobotanical knowledge about important food plants and toxic ones, ethnoveterinary knowledge about illnesses and remedies), which are consequently slowly being lost (Volpato et al., 2007).
Conclusions

Sahrawi people used to base their livelihood on pastoralism in Western Sahara, with the camel as main means of production and consumption. Because of war and displacement this system collapsed and fragmented, with different groups reacting in different ways in relation to livestock breeding. Besides groups that maintained nomadism, most of the Sahrawi became refugees, lost their herds, and found themselves without traditional livelihood resources and in an environment completely unfit for livestock grazing.

Nevertheless, livestock breeding continued or started back during the years of exile, and nowadays it represents one of the major coping strategies for Sahrawi refugees, providing fresh food of animal origin (milk and meat) which is central to Sahrawi traditional culture and food habits.

Although one of the main problems in raising animals in the refugee camps is the complete lack of pasture, with consequent alimentary diseases, Sahrawi livestock raisers faced this problem mainly by conducting a semi-nomadic life, moving from the camps to the grazing areas in the liberated territories during rainy seasons. In fact, traditional knowledge about the camel and its management
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is central to Sahrawi culture, as well as inextricably linked to the territory of Western Sahara and its resources. The control of this eastern stripe of Western Sahara is then crucial for the conservation of traditional Sahrawi culture and lifestyle, including camel raising.

Nevertheless, pastoral tradition and culture transmission have been affected by the processes of sedentarization first and migration (mainly to Europe) then. Although negotiations to solve the political impasse of Western Sahara are in course between the Polisario and the Moroccan government, yet a solution seems to be far. A stable political situation and a free access to Western Sahara territory and pastures are crucial to preserve Sahrawi pastoralism and related knowledge and practices.

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of Animal Resources, Niger, y Tufts University, School of Veterinary Medicine.

Web sites of interest:
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http://www.wsahara.net
http://www.womenwarpeace.org