
Proceedings
of the
Second International Congress
of Somali Studies

University of Hamburg
August 1-6, 1983

edited by
Thomas Labahn

— VOLUME III —

ASPECTS
OF
DEVELOPMENT

HELMUT BUSKE VERLAG HAMBURG

Anders Hjort / Mohamed Ali Hussein

CAMELS AND SOMALIA: THE CAMEL RESEARCH PROJECT

About two years ago a research project called the "Somali Camel Research Project" was started at the Somali Academy for Sciences and Arts (SOMAC). SOMAC applied for support from the Swedish Agency for Research Cooperation with Developing Countries (SAREC) under the umbrella of a wider agreement on research cooperation. With such support Somali researchers are implementing a number of research activities. The present paper gives a brief outline of the project. It points at a few crucial factors for camel pastoralism in Somalia and hence it outlines a research problem rather than presents reached conclusions.

The project is multi-disciplinary, mainly with Somali research input. It is anticipated to grow gradually in momentum as competence in the field of camel research grows. The activities up to date have included a study of the camel's browsing behaviour, a camel trypanosomiasis research project, an investigation into breeding and reproductive patterns, research on camel milk production and preservation, an investigation of different types of camels and a study of the role of the camel in folklore. The paper mentions these subprojects and activities planned for the coming two years in the last section, but focuses primarily on their background and context. It is organized in three steps:

- (1) some salient features of the camel in Somali economy;
- (2) factors constraining camel pastoralism;
- (3) the reproduction of camel herds and their food production.

The first section offers a national perspective, while the second and third give a systemic one on pastoral food production, sketching more of a household perspective.

Some salient features of the camel in Somali economy

The interest in the dromedary species is today growing within the scientific community. Detailed information is sparse however, and much, even basic research is needed in order to provide a coherent scientific picture. For Somalia one can note an increasing interest in the role of the camel in academic and administrative quarters. This fact should surprise no one since the country harbours one of the world's largest camel populations.

Livestock forms the backbone of the Somali economy. As much as 80% of its citizens are engaged in one form of animal husbandry or another, and 70% - 90% of the country's export revenues derive from the livestock sector. The main recipient is Saudi Arabia, and Somalia covers more than half of that country's meat import according to official statistics.

The livestock population of Somalia is made up of camels, cattle, sheep and goats. Their distribution by species and region is given in the following table (the 1975 government census):

Region	Humans ('000)	Camels ('000)	Cattle ('000)	Sheep ('000)	Goats ('000)
<u>Northwest</u>	708	926	189	3152	3978
I. Waqooyi Galbeed	440	606	145	2242	3076
2. Togdheer	268	320	44	910	902

Region	Humans ('000)	Camels ('000)	Cattle ('000)	Sheep ('000)	Goats ('000)
<u>Northeast</u>	<u>384</u>	<u>600</u>	<u>101</u>	<u>3132</u>	<u>3370</u>
3. Sanaag	145	205	74	1521	664
4. Bari	154	240	15	1388	2095
5. Nugal	85	155	12	223	611
<u>Central</u>	<u>397</u>	<u>1146</u>	<u>558</u>	<u>1724</u>	<u>4478</u>
6. Mudug	215	751	340	1136	2744
7. Galguduud	182	395	218	588	1734
<u>Shabelle River</u>	<u>1152</u>	<u>991</u>	<u>977</u>	<u>708</u>	<u>2098</u>
8. Hiran	147	461	170	287	1159
9. Middle Shabelle	236	236	366	325	720
10. Lower Shabelle	398	293	419	90	200
11. Benadir	371	1	22	6	19
<u>Juba River</u>	<u>458</u>	<u>1081</u>	<u>1564</u>	<u>581</u>	<u>902</u>
12. Gedo	212	784	528	500	725
13. Middle Juba	246	297	1036	81	177
14. Lower Juba					
<u>Interriverine</u>	<u>402</u>	<u>554</u>	<u>355</u>	<u>134</u>	<u>466</u>
15. Bakool	100	192	100	55	274
16. Bay	302	362	255	79	192
Total	3501	5298	3744	9431	15292

Table I. Rural population and number of livestock in the 1975 census

Figure I. The camel is a major domestic animal in Somalia. The Somali type of camel is large and a good milk and meat producer.



However, stock counts are extremely difficult to carry out (due to seasonal migrations, also across national boundaries, and reluctance by the local population to give herd sizes, just to mention two problematic reasons). The difficulty has been illustrated in the "Livestock and Range Sector Study" (1981:7) by comparing different counts:

Source	Year	Camels ('000)	Cattle ('000)	Sheep & Goats ('000)
Hartley	1966	2000	1756	7000
Walker	1966	1874	1756	5724
Pillai	1968	2500	2500	9000
Hartley	1968	2500	2500	15000
JP 15	1971	--	2767	--
German Planning Advisory Group	1973	3000	3000	15000
IDA	1974	2500	3000	14000
Government census	1975	5298	3744	24723

Table 2. Varying results of stock counts.

(Source: Livestock and Range Sector Study, Ministry of National Planning, 1981)

If we look closer at the data and utilize recent areal surveys, the great variations remain. This fact comes forth in the following table. It was compiled in early 1982 with the help of T. Willby, Ministry of National Planning.

Table 3. A comparison of the 1975 census with Central and Northern aerial surveys.

Central Region (Hiran, Mudug, Galguduud)

	1975 census ('000) (dry season) ¹	1979 aerial survey ('000)	
		(dry) ²	(wet)
Camels	1607	314	963
Cattle	728	233	389
Sheep & Goats	7648	6330	11122

Table 3. (continued)

Northern Region (NW, Sanaag, Togdheer, Nugal, Bari)

	1975 census ('000)	1979 aerial survey ('000)	
	(dry season) ¹	(dry) ²	(wet)
Camels	1526	1027	1529
Cattle	290	203	204
Sheep & Goats	13082	12307	14758

¹ carried out during the Jilaal dry season² carried out during the Hagaa dry season

The figures for Central Region are not directly comparable, since dry season figures refer to the two different seasons, and also because a moderate drought occurred between the counts (1979-1980). The estimated losses during this period are 273,000 camels, and 4,464,000 sheep and goats and 289,000 cattle (T. Willby, personal communication). Nevertheless, the trend is clear; the 1975 census consistently exhibits higher counts on camels and cattle (small stock fluctuate more widely in numbers).

These statistics should be enough to demonstrate a general unreliability of available stock censuses. A reflection of how uncertain stock counts are can be seen in available calculations on meat off-take from the national camel herd. We have seen varying annual rates in different reports ranging as much as between 1% and 5%. With a need to maintain a balanced herd composition and also a requirement to produce beasts for burden, the herdsman (the animal husbandry expert) must, in the long time perspective, refrain from such off-take that threatens long-term stability. If that is not possible under short-term conditions his family

herd will deteriorate. In consequence we assume for the sake of principal discussion that the meat off-take lies near a maximum under given circumstances which he faces. Figures on hides production over recent years (which have maintained a fairly constant level) hint a decrease in the individual annual consumption of meat granted a growth in the number of consumers. True, such rough estimates are dangerous, and we may already on this level note a need for research into one aspect of camel husbandry.

The figure for export and municipal slaughter are given in the following table:

Year	Municipal Slaughter	Exports No.	Value SoSh	% of total Livestock Export Earnings
1970	31,194	25,808	18,967,303	15.9
1971	31,491	23,707	16,597,559	13.5
1972	43,618	21,196	14,731,701	9.2
1973	30,119	27,914	23,334,994	11.9
1974	37,968	23,692	30,249,846	13.6
1975	56,509	33,351	47,421,072	12.4
1976	38,987	36,622	49,394,445	17.6
1977	25,978	34,602	48,211,235	17.2
1978	26,351	20,968	40,525,788	6.9
1979	38,987	12,508	?	-

Table 4. Camel municipal slaughter and export.

(Source: Statistical Abstracts of Statistics Department, State Planning Commission)

One more interesting piece of information from this table is the fact that the export of camels accounts for approxi-

mately one tenth of the total revenues from livestock exports. This means then some 8% of the total Somali export earnings. Government expenditures in the livestock sector seem weak against its dominating role, only some 15% of the budget. The interest in the camel is particularly meagre. This fact provides a strong argument for carrying out more research on the camel, research that can offer reliable advice for future planning and development inputs.

As things stand today, the only planned development effort that will have beneficial and direct impact on the camel population is an improved veterinary service. In planning quarters it is hoped that this will bring down the present mortality rates, averaging around 8%, to about 6.5% during the on-going Five-Year Plan period (1982-1986). If this goal is obtained, the concomitant increased off-take will just balance an increased food demand from a growing population.

A number of development projects, especially in the field of range development, may have effects on the camel husbandry. One may think of fencing or other activities that introduce new restrictions to herd movements, or of systems of stratified access to watering opportunities. It is not obvious that all inputs for range improvements are introduced after considering requirements of camel husbandry, not even to those production systems where camel husbandry forms a part. Some research on the implications of future camel herding for other production activities and ecological circumstances is obviously needed urgently.

Various attempts in Africa to create suitable conditions for joint collective efforts in livestock rearing have occurred and been discussed. One way or the other, it seems to us, some form of cooperative organization is the sole way to create a hope for positive incentives to counter-balance the current rapid process of herd ownership strati-

fication, a privatization which seems almost universal. In Somalia efforts have begun to establish new communal reforms as parts of major integrated development projects: The Bay Project in southern Somalia, Central Rangeland Projects and Northern Rangeland Projects. The cooperatives are intended for livestock traders, for settled pastoralists who want to legitimize rights to a piece of land, and for nomads who become inspired by the initiative and get a wish to acquire a piece of land for dryland farming in an agropastoral system. Judging from experiences in other countries there is a definite risk for town-based pastoralism where affluent town-dwellers invest in livestock wealth through representatives.

The cooperatives established in 1979 are presented in the following table. They are based on the principle that members contribute to a communal herd, usually a flock of sheep containing some 200 - 400 head. Remaining animals and farmland are privately owned. The number of camels is minute.

Table 5. Range Cooperatives at the end of 1979

	Dhumay	Degaar	Shidaale	Carmaale	Dan Weyn
Year establ.	1976	1976	1977	1976	1977
Area (ha)	6540	3000	1200	2420	3000
No. of members	30	52	94	24	61
Camels	30	67	29	--	45
Cattle	26	240	65	35	150
Small stock	3800	5000	3400	600	4500
Total LU	442	820	440	92	654
ha/LU	148	3.7	2.7	25.5	4.6

Table 5. (continued)

	Madare Dhuur	Madare Hoose	Ceel S. Karin Diyood	Balurbaal	Kal Booc
Year establ.	1975	1976	1977	NK	1977
Area (ha)	2900	1350	1000	1750	600
No. of members	61	65	60	45	42
Camels	--	50	34	24	45
Cattle	74	1900	81	40	60
Small stock	2400	6018	5018	4200	3420
Total LU	315	1902	624	489	456
ha/LU	9.3	1.3	1.6	3.6	3.9

Table 5. (continued)

	Suuf Dhearel	Cudud	Habari Heshay	Ceel Bardaale	Farsooleey
Year establ.	1977	1978	NK	1979	1979
Area (ha)	1840	6300	3460	7000	2000
No. of members	52	34	39	120	40
Camels	--	110	41	30	--
Cattle	140	119	75	2200	5000
Small stock	5050	5250	3370	9790	1000
Total LU	645	776	461	3215	5100
ha/LU	0.9	8.1	7.5	2.2	0.4

Source: Livestock and Range Sector Study, Ministry of National Planning, 1981

Another kind of collective effort is to set aside pastures either for seasonal pasture or for a rotational grazing system. The situation at the end of 1979 was as follows:

Region	Seasonal		Rotational	
	Number	Total area (km ²)	Number	Total area (km ²)
Northwest	4	2000	1	700
Togdheer	7	3655	21	880
Sanaag	4	2290	19	864
Nugal	2	2200	14	570
Bari	2	1950	16	640
Mudug	6	11000	0	0
Galguduud	3	1900	0	0
Hiran	6	14375	0	0
Middle Shabelle	4	3250	0	0
Lower Shabelle	3	2050	0	0
Bakool	4	6750	0	0
Bay	8	3200	0	0
Gedo	4	2000	0	0
Middle Juba	3	3000	0	0
Lower Juba	3	4000	0	0
Total	65	66000	71	3654

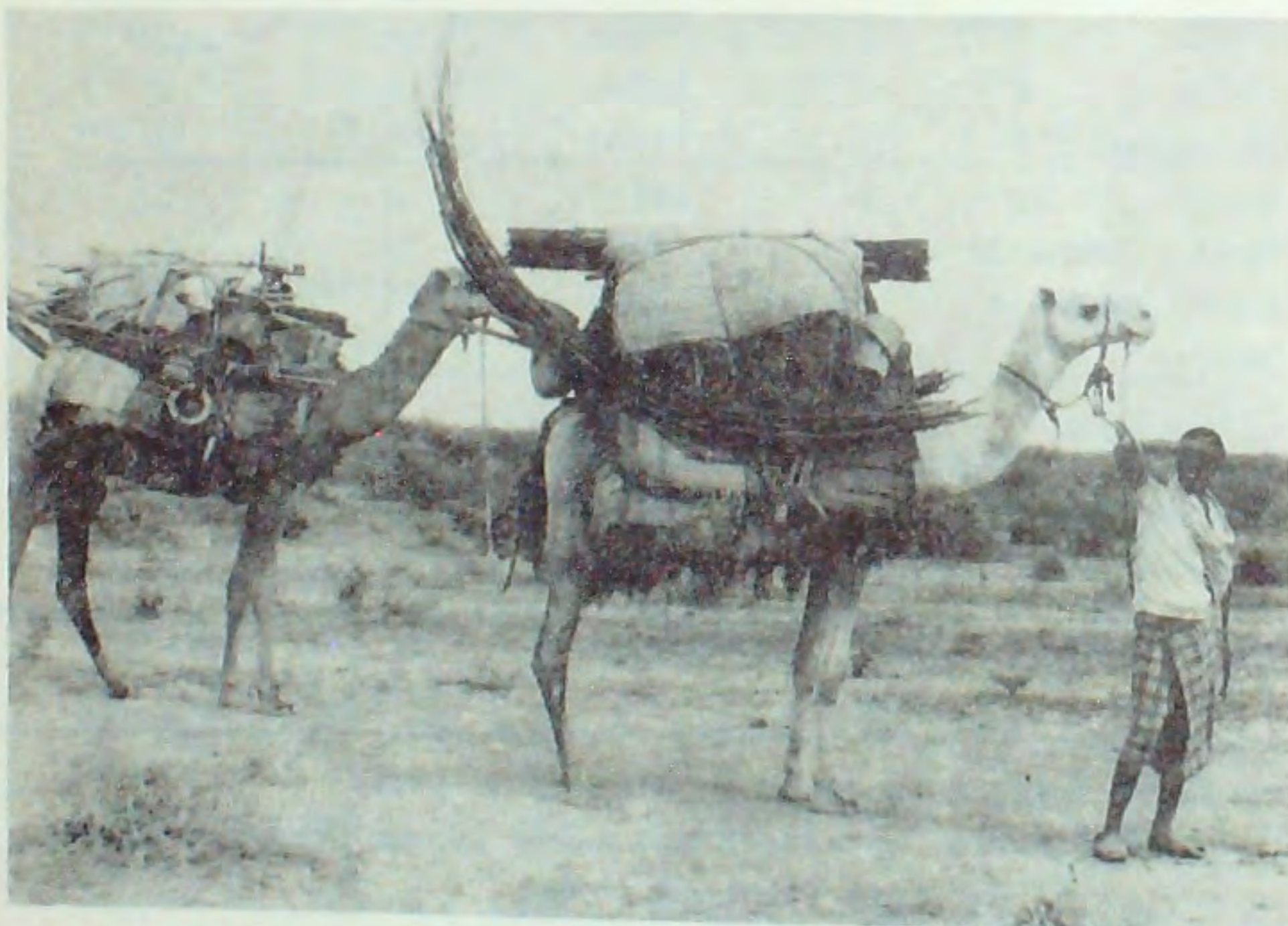
Table 6. Grazing reserves at the end of 1979.

(Source: Livestock and Range Sector Study, Ministry of National Planning, 1981)

The direct involvement of camels also in grazing schemes seems to be limited. The impact of stratified grazing and browsing access is twofold. Establishment of restrictions on migration opportunities will have repercussions on noma-

dic pastoralism and hence on production systems where camel husbandry is a component. Again, efforts to seek new forms for animal and range management should be made both from this point of view and in order to seek experience valuable in the context of camel pastoralism.

Figure 2. The nomads follow the rains in their search for browse for their camels. The camel is then used as a pack animal for transporting dwellings and other accessoires.



So far our presentation of the role of the camel has been more from a national economy and macro-political point of view. The greatest single importance of the camel is that it enables most Somalis to produce their food in a subsistence economy. This function has to exist under extremely varying conditions and desiredly also during drought conditions, once every 6 - 8 years.

A number of varying food production systems can be identified. One set would be agropastoral with a combination of farming and animal husbandry. Another would be pastoral with combinations of different species of livestock and/or diversifications of family herds into several management units. Whatever the food production system, one also has to consider how this is linked with the urban monetary system. This aspect requires a heavy emphasis.

Space does not allow us to present what the more specific forms for production systems will be like. However, the following section sketches their conditions in a more theoretical perspective. Its purpose is to create a baseline for research on various specific aspects of the camel and its husbandry.

Factors constraining camel pastoralism

Let us now move to the case of an individual pastoral household. In the simplest sketch a balance must be struck between (1) the number of individuals available in the pastoral enterprise, (2) the number of domestic animals and (3) "land", i.e. forage, water, and salt. Each of these components is depending directly or indirectly on the others. The herd size, for example, is not only a function of biological growth. It is also constrained by management decisions, herding practices, manpower available, forage and access to salt. Similarly, the human population com-

ponent relates to the food production of the domestic herd but also to the need of labour for efficient herding and husbandry. Thus there are both production and consumption requirements that have to be met for the family labour when the household's viability shall be maintained.

This very simple kind of model for a balanced food production system is of course not sufficient, since other factors complicate the picture or interrupt the balance even at a household level. (4) Given a risky life situation, individual households can diversify their productive activities into the fields of rearing other animals and into farming. (5) The penetration of a capitalist economy into that of camel pastoralism implies among other things changes in wealth distribution. The trend is that camel ownership becomes concentrated to wealthy strata of the population, and a reduction in herd size for the majority along with an increased economic diversification. (6) Another factor may be limited access to pasture, due to a growth of competing land use practices, for example over wet season pastures. (7) Labour migration out of a pastoral system is yet another factor. Today there is an acute conflict between the need of able-bodied men for the management of camel herds and the needs of the labour markets especially in the Middle East.

Another set of factors of relevance here is given by the historical development process: How did camel pastoralism turn into its present form and what are the possible future developments? Somalia is a unique country in that a majority (two thirds) of its population are nomadic pastoralists. This fact, however, has limited impact on the development strategy. The heavy dependence on livestock products for foreign exchange earnings is not reflected in the allocation of development funds. Attention is given to veterinary, marketing and intensive animal husbandry and

recently also to range management. The situation of the pastoral economy remains insecure and with little coordinated effort spent with the administration. Most efforts seem to be rather preventive and indirect, geared also at other activities.

Yet one set of factors within the pastoral system could be termed socio-cultural. Here we find, for example, culturally prescribed rules for wealth distribution and solidarity. The role of different kinship groups is significant in this context but is difficult to study, given the prohibition against them for other reasons. However, thorough studies are already available (cf. Lewis 1961 and 1981).

The kind of factors which we have outlined here give the context for camel pastoralism in Somalia. This being the case they will have to be integrated in the research activities of the camel project if this is to fulfill its outmost goal, i.e. to enable projections of alternative developments for the future. Such projections include (a) the extrapolation of the current situations with reference to constraints such as those touched upon above; (b) the identification of complementary activities to present production systems; and (c) the study of alternative camel rearing practices. In the light of the change of camel pastoralism towards more settled practices which occurs currently at a considerable pace, the need for coordinated community efforts increases, and special interest should be given to cooperative efforts, whether confined to marketing (within point b) or livestock production (point c).

The reproduction of camel herds and their food production

In the last two sections mention has been made of the role of the camel in the monetary economy of Somalia and of some

principal factors that influence camel pastoral systems. It has been stated that 80% of the Somali population rely to a considerable extent on animal husbandry for survival. On the average there is more than one camel per person in the country. The major economic role of the camel is obviously within the subsistence economy, and its monetary importance is functional of its role in pastoral systems. The two economic systems, subsistence and monetary, are not always compatible. The market value of one camel approaches SoSh 10,000 (1982), but even the owner of several camels can be impoverished since his camels are the only long-term source of income (in kind) for him. If he sells this capital, he will never regain it and must procure another livelihood.

Let us for a moment focus the attention on some management issues relating to food production from camel herds. Of course, in this short report we can only touch briefly upon some elementary aspects of the camel and its role in the lives of the nomadic pastoralists. The reader who wants a brief overview of the Somali case is referred to Taneja (1980) and Mohamed A. Hussein (1982). For some more comprehensive references see e.g. ILCA (1981) or IFS (1980), the former being a bibliographical review and the latter a collection of papers on different aspects by camel experts in various fields.

Taneja (1980:1) distinguishes between three different production systems based on animal husbandry:

- (i) "Camels, goats and sheep are predominant in five northern regions; typically the family unit keeps about 7 - 10 camels, 40 - 100 sheep and goats, and very few cattle.
- (ii) Camels, cattle, sheep and goats: in the central rangelands and in the interriversine area (Gedo, Bakool), camels are still the predominant species; a typical

pastoral family would keep 10 - 20 camels, 5 - 13 cattle and 20 - 90 sheep and goats.

- (iii) Cattle, camels, sheep and goats: In the Juba and Shebelli River valleys, cattle are the most important livestock species followed by camels. Typically, a nomadic household would keep 6 - 13 head of cattle, 4 - 5 camels and 3 - 30 sheep and goats."

To this list should be added at least one more production system, agropastoralism, whether there is a heavy reliance on animal husbandry supplemented with "take-a-chance" farming (Hjort 1981:137) or an economic base in farming with surplus channelled into livestock (Haaland 1977).

Since nomadic pastoralism is a risky undertaking, households seek as many complementary activities as they can manage. The limit can be expressed in terms of available manpower during the most demanding season. However, available manpower must be met by sufficient food production in the subsistence enterprise. When this condition is met, we say that a household is viable.

The identification of food production systems and the principles for diversification suggest that few households would rely solely on camel herds. A closer look at the reproduction capacity of a camel herd gives further evidence. This has been analysed by Dahl and Hjort (1976). The annual growth rate is low under balanced conditions for age and sex composition in a family herd, and it might take as long as fifty years to double such a herd. This means that a camel herd must be seen as a fairly constant resource compared with other species of livestock. It allows only for a limited off-take (1.5% - 7.5% annually seem to be the theoretical limits). Its greatest advantages as food producer is the fact that it is a more reliable milk producer than a family herd of cattle. A lactation period usually lasts a whole year. This means that even where re-

production is seasonal, there will be less fluctuations (though still severe ones) in the milk availability for human consumption due to seasonality than what is the case from herds of other species.

Of course, other important factors than reproduction traits must be considered; for example water and pasture conditions (to which the milk production responds immediately) and the fact that lactation drops markedly some ten weeks after birth. There is indeed an outspoken shortage in the supply of camel milk to the Somali markets towards the end of the dry seasons (compare Taneja 1980:2, who claims the opposite), when pastoralists may give their calves all four teats of milk or keep the remainder for household consumption. Similarly, in wet seasons a huge milk surplus is produced and wasted due to preservation difficulties.

Dahl and Hjort (1976:266) use a reference family of 4.9 adult equivalents in order to outline the nutritional demands from a family subsisting entirely on the products of a family herd. This family could be "a father around 30, a pregnant mother of 25, two children of 3 and 8 and two related youngsters, one boy of 18 and one girl of 15". If the family were to rely solely on camels, it would require a theoretical minimum herd of 28 camels. To this number must be added those animals that are needed to safeguard a viable family herd also after reoccurring drought disasters. Some animals are also needed for transportation.

The long term effects of severe droughts can be vital when they considerably increase the mortality rates in the camel herd. Dahl and Hjort (1979) demonstrate how such drought periods cause fluctuations in herd reproduction also many years after the drought has ceased. In order to counter the fluctuations, the household head may seek to borrow animals as one way of "filling a gap" in the age-structure. There are varying culturally prescribed ways of

doing this. Other important "rules" concern the transformation of wealth over generations ("inheritance") and the distribution of individuals into viable households with manageable herds. On the whole the adaptive capacity has to be considerable in the various pastoral production systems.

An understanding of the herd dynamics is one way of approaching the questions of how ecology, social organization and cultural systems relate. Such systemic knowledge is necessary for a proper insight into the conditions of pastoral production systems. Without it we fall in the trap of a "sectorial approach" (Baker 1975), trying to develop one side of the system without seeing all linkages to other parts.

On-going and planned subprojects

The need for research is great within the Camel Research Project. One of the principles of the project is that the bulk of the research work should be carried out by Somali researchers and that expatriate inputs should be kept at a minimum. The time schedule of the project has a rather low profile; the projects are implemented at a pace given primarily by the availability of qualified personnel. In consequence we expect the research activities to cover a longer time span than what foreign consultants might have to do.

Among the wide range of possible research projects the following ones have been selected:

- (I) Traditional camel husbandry project. The purpose of this project is to get access to and analyze the knowledge on camel husbandry of herdsman, in order to better comprehend the kinds of decisions that have to be made in different situations. Such a study is urgently needed in order to comprehend pastoralists' reactions

to various range development projects in Somalia. This fact has become apparent in integrated large-scale projects such as the Central Rangeland Project.

Figure 3. Weaning of camel calves occurs at the age of one to one and half years. One practice is to fix a piece of wood on the tip of the tongue. This hurts when the calf tries to suck the dam and shortly it will leave the habit of sucking.



(2) Camel milk analysis projects. These projects consist of a milk composition component and milk preservation/distribution research. The former can in turn be divided into two subprojects: a) Determination of inorganic components and some physicochemical parameters in camel milk; b) Characterisation of the caseins and fatty

Figure 4. The milk forms the subsistence basis for camel pastoralists. They can stay for weeks or months without any other food. Since the lactation period covers a whole year the supply is reliable. Moreover, one can milk a camel 5 - 8 times a day.



acids in camel milk. In subproject (a) the following parameters are determined: protein, fat, ash, total solids and salts. The intention with such measurements is to carry out long-term analysis of milk samples. The samples will be taken both from one static herd and from nomadic herds. The latter part of the programme requires controlled sampling with respect to browse, season and region. In all cases notion will also be made of lactation states, ages and other relevant biological data. The milk preservation and distribution components aim at making camel milk and milk products available to a wider range of consumers against the background of substantial seasonal overproduction. It seeks improvements in present preservation techniques and the viability of introducing new techniques. With improved knowledge about milk preservation follows the question how to reach urban markets. A pilot study is also proposed for the two-year period so as to sketch some structural patterns of current distribution systems. However, the major work input on the distribution side in this project lies further ahead.

- (3) Camel literature project. This project consists of a collection and an analysis of poems, proverbs and metaphors relating to various aspects of the camel. What remains to be done in this project is, first, to complete and revise the manuscript (ready by December, 1983), to arrange pictures, before having the manuscript read and commented in order to have it printed in Somali.
- (4) Camel health and disease projects. The activities under this heading include a general disease survey carried out at one or two slaughterhouses, a concentration on some of the features of the disease panorama of camels in Somalia, a pilot survey of brucellosis and toxoplas-

mosis in Somali camels, a study of the health status in a few nomadic herds, and a camel trypanosomiasis survey. Some of these activities are already well established, others are being started on a small scale.

Figure 5. Rather little is known in the literature about camel diseases. Therefore it is of paramount importance to carry out disease and health surveys in Somalia.



- (5) Camel breeding and reproduction. Much remains to be known about the reproductive pattern, breeding behaviour, etc. in the camel. Especially, no study has been made of the Somali camels in this field. (Some interesting work has been and is being done in neighbouring Sudan and Kenya.) Information about these "patterns and behaviours" is of importance as a base for improvement of management, breeding practices, etc.
- (6) Camel herd dynamics project. The purpose of this study is to seek the upper limits to increased milk and meat off-take under current management systems. One limiting factor is the slow biological reproduction capacity of the camel. Understanding herd dynamics is important also for a variety of other specific reasons: (a) Fluctuations and imbalances gear many of the management decisions; (b) They are related to variations in milk production; (c) They have a decisive impact on herd reproduction; and (d) They indicate the vulnerability of a herd to drought or other disaster.
- (7) Camel browsing and grazing project. During 1983/1984 the project will investigate three aspects: (a) The plant species camels eat; (b) The plant parts consumed (leaves, stems, etc.); and (c) The nutritive contents of the diet. Data collection will be made systematically in the field for nomadic herds in southern, central and northern Somalia. Other variables are: Ecological setting, season and age/sex of animal observed. Studies will also be carried out on the experimental herd. Here, a controlled vegetation study will be made of areas browsed and not browsed by the experimental herd.
- (8) The quantitative amount camels eat. This study is methodologically complicated. It can be supplemented with faeces analyses, so as to create a picture of energy conversions.

Figure 6. Much of the camel browse is on thorny bush which covers most of Somalia. No other domestic animal can utilize this pasture as efficiently as the camel does.



- (9) Camel marketing and commercialization project. In the first section of this paper we touched briefly upon the commercial importance of the camel. Even if camel rearing primarily is a subsistence undertaking, its

total impact in a capitalist economy is considerable. Its potential is thought to be much greater. Today's development process, though not geared by any political intention, is such that camel "ownership" tends to become more privatized along with more private control over, especially, water points and, hence indirectly, also over effective browsing control. Camels and camel products are marketed, and a cash economy is introduced in the pastoral household. This situation forms the background of the proposed study. It consists of one specific part, the study of camel marketing, and one more general, dealing with the overall commercialization tendencies.

The viability of the research

It is, of course, too early to make any efforts to evaluate the research approach tried in this project. We have already indicated a principal position regarding projections and the formulation of alternatives. However, one should also make a few reflections against the background sketched in the above sections.

The first has to do with practical aspects. We observe logistic and financial difficulties for individual researchers, a sometimes competitive relation between research and other activities, an equally competitive relation between the kind of research needed and the kind of research possible. These are all serious constraints on the project.

The second reflection concerns the applicability of research findings to development efforts. Here we feel the strength of localized research activities rather than short-term expatriate inputs. If the activities are permitted by circumstances to evolve a few years we feel that findings will indeed have a strong bearing on some development issues

that are crucial for the country, especially factors listed in section 2 above.

A third reflection touches on method. It is the explicit goal of the Somali Camel Research Project to be multidisciplinary. However, some disciplines are better represented than others in the research community, a fact which will set its mark at least in the volume of work put into each of the subprojects. It will most likely take some efforts in the future to maintain a multidisciplinary balance within the project.

A fourth reflection has to do with long-term and short-term. The perspective of the project is outspokenly long-term. The benefits of this include that the activities are anchored in the Somali research community. The drawbacks include a lack of quick results for immediate action. We note that, at least in the most clear-cut version, two development philosophies stand against each other.

Fifthly, as a follow-up, one observes the risk of fragmentation of the project. One may envisage a situation where subprojects well under way become "purchased" by financially stronger bodies than SOMAC or SAREC.

But even so, this may be a positive contribution of the project. For it is our strong belief that the camel is widely underestimated when it comes to issues of change in Somalia. On the other hand it is also our strong belief that development research has to be integrated both with a national research community and with the population concerned by directed development efforts. We have some doubts as to the benefit of the camel herders themselves, were one to drop on over-all multidisciplinary view and concentrate on a few aspects of immediate interest in a short-term perspective.

REFERENCES

- Baker
1975
The Administrative Trap (Sussex)
- Dahl, G. / Hjort, A.
1976
Having Herds: Pastoral Herd Growth and Household Economy (Stockholm)
- Dahl, G. / Hjort, A.
1979
Pastoral Change and the Role of Drought. SAREC Report R2
- Haaland, G.
1977
Pastoral systems of production: the socio-cultural context and some economic and ecological implications, in: O'Keefe, P. / Wisner, B. (eds.), Land Use and Development (London)
- Hjort, A.
1981
Herds, trade, and grain: pastoralism in a regional perspective, in: Galaty, J. G. / Aronson, D. / Salzman, P. C. (eds.), The Future of Pastoral Peoples (Ottawa)
- Hussein, Mohamed A.
1982
Comparative Study of the Relationship between Family Size Herd and Management among Nomadic Pastoralists, MS paper, London School of Economics and Political Science
- IFS
1980
Provisional Report 6: The Workshop on Camels (Khartoum, December 18 - 20, 1979), (Stockholm)
- ILCA
1981
The Camel (*Camelus Dromedarius*): A Bibliographical Review (Addis Ababa)
- Lewis, I. M.
1961
A Pastoral Democracy: A Study of Pastoralism and Politics among the Northern Somali of the Horn of Africa (London)
- Lewis, I. M.
1981
Somali Culture, History and Social Institutions: An Introductory Guide to the Somali Democratic Republic (London)
- Ministry of National Planning, Somalia
1981
Livestock and Range Sector Study (Mogadishu)
- State Planning Commission, Somalia
Statistical Abstracts of Statistics Department (Mogadishu)
- Taneja, G. C.
1980
Present position and scope of improvement in camel production in Somali Democratic Republic. FAO W/P II07/c (Rome)