

Commission on Nomadic Peoples

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Nomadic Peoples, Number 24, 1987

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DEVELOPMENT AND TRADITIONAL PASTORALISM IN SOMALIA

by Abdulkadir A. Handulle and Charles W. Gay

The Somali Democratic Republic is located between latitudes 11°30'N and 1°30'S in the extreme northeastern corner of the Horn of Africa. It is bordered by Ethiopia, Kenya, and the République of Djibouti on the west, southwest and northwest respectively. The area of the country is 638,000 sq. km of which 28.8 million ha are suitable for livestock raising.

Climatically, the country is situated within the arid and semiarid zones with total annual rainfall varying from a maximum of 600 mm in the south to less than 100 mm in the northern coastal plains. Precipitation is distributed in most of the country in a bimodal pattern with two alternate wet and dry seasons which occur during the year. Major characteristics of the rainfall pattern in the Somali environment include scarcity, poor distribution, variability in the beginning date of the wet seasons, and high variability in amount of rainfall from year to year, resulting in droughts of different degrees of severity every 4 or 5 years. Such scanty, erratic and unpredictable moisture limits the productivity of the rangelands. Although the country is dry and rainfall is erratic, the Somali pastoralists have sustained themselves by developing a system of nomadic rotation dictated by the harsh environment (Box 1968:338).

Pastoralism is a form of livestock production in which subsistence herding is the primary economic activity, and which relies on the movement of herds and people (Dyson-Hudson 1980:15-17). It is practiced in the arid and semiarid parts of the country in which scarcity and variability of rainfall are the dominant features. Moreover, drought is a recurring phenomenon in ecosystems where pastoralism is the primary method of resource utilization (Coughenour *et al.* 1985:619). Nomadic pastoralists who utilize these areas are traditionally livestock herders as opposed to crop cultivators, and depend upon livestock for subsistence either through direct consumption or trade, and who as a result of their harsh milieu, have evolved by learning numerous survival strategies to cope with environmental conditions of risk and uncertainty.

Mobility is the primary means by which Somali pastoralists compensate for the sparse and unpredictable resources which characterize the arid environment in which they live. It is a strategy of risk aversion, crisis survival, and a method of utilizing a rangeland poorly endowed with moisture. Also, the use of different species of livestock by nomadic pastoralists, which is common to arid environments, is based on pragmatic considerations. The practice has both ecological and economic implications. Different species utilize different ecological niches more efficiently than do single species. Resistance to drought also differs, as do reproductive rates and maturation rates (Coughenour *et al.* 1985:621-623).

Livestock production is the principal economic activity in Somalia, accounting for approximately 50% of the Gross Domestic Product (GDP) and more than 80% of export revenue (SDR 1982:84). About 55% of the Somali population is engaged in nomadic pastoralism, while 80% of the population is engaged in livestock raising of one sort or another. The current basis of livestock production from rangelands is an extensive and mobile system of grazing adapted to the environmental characteristics of the country. Native rangelands cover about 80% of the land area. Because much of the rangeland is unsuitable for any other use, it is expected that traditional pastoralism will continue as the only viable and rational form of range resource utilization.

During the last three decades, Somali pastoralism has begun to have detrimental effects on local range resources primarily due to over-stocking and over-grazing. Much of the detrimental effect has been either caused or exacerbated by poorly designed and highly erratic development schemes and policies that were imposed on nomadic pastoralists during those times. In the traditional Somali nomadic pastoral ecosystem, human and animal populations were maintained in a fluctuating but ecological balance with each other and with the land by natural control mechanisms. These control mechanisms include scarce and variable rainfall, drought, and disease (Swift 1977:276).

However, recent changes such as water development and disease control, which aimed to alleviate constraints and limits in livestock production, have created ecological imbalance. These are viewed by many development planners, who profess the goal of economic development, as ends in themselves rather than as part of an overall management strategy. In such a marginal pastoral ecosystem, the removal of one check element not only results in imbalance, but also will have far reaching repercussions throughout the system in a short space of time. Ecosystem changes brought about by development dramatically affect the life style of pastoralists. Unless one is closely involved with rangeland development in pastoral areas of Africa, it is difficult to understand how such development can affect the present pastoral ecology. Unfortunately, most development projects seemingly avoided assessment of the ecological and economic efficiency of the pastoral system (Dwyer 1986). The degree to which this occurs can significantly affect the outcome of the best designed projects.

Since the date of Somali independence (1960), six development plans have been launched. Several of them were aimed, with regard to the livestock sector of the economy, to increase livestock production by creating an additional productive capacity. In order to achieve these aims, some of the measures proposed an improvement in animal health through better veterinary services and an increase in water supply to open up new grazing lands.

Water Development

The availability of water for livestock and people has been a determinant of range use in Somalia as in other arid and semiarid parts of Africa. It is overwhelmingly the form of development most sought by pastoralists. Enthusiasm for new water development remains strong (Sandford 1983:249) since water is the major resource in short supply, and control, access, and proper use of water is a continuing obsession of the herders. Range management thus becomes, in part, a question of water management and involves the availability of water in suitable quantities and qualities at the right place and at the right time (Stoddart *et al.* 1975:319). This represents a serious problem in arid and semiarid situations where pastoralism exists.

The provision of water seems so inherently good in the pastoral areas of the country that the Somali government in one of its development plans included the drilling of 300 deep wells (SDR 1977: 145). The evidence suggests that this solution universally not only fails to solve immediate problems but exacerbates the pastoralists' situation. There is no doubt that development of water points is crucial for the well-being of both nomads and their livestock, but unless accompanied by a well devised grazing management plan, the resulting long term destruction of the environment may outweigh its immediate benefits.

As an example, the Central Rangelands Development Project (CRDP) indicated in its "Study of the Future Development of the Central Rangelands of Somalia" (1986:122, 210) concern for the 21 bore holes planned by the Saudi Arabian Programme for Rural Water Supply. Although the primary purpose of the bore holes is to provide water for human consumption, the CRDP notes that "in villages it is impossible to differentiate between human and livestock supplies". The CRDP further states that "since bore holes have been constructed, there has been a significant increase in the availability of dry season water

supplies at the expense of vegetation in the area surrounding the bore hole". The CRDP recommends that they be involved in the planning of all water supplies so that a strategy can be followed to prevent further range resource degradation.

Many bore holes have been drilled in many parts of the country by both donor agencies and the Water Development Agency. Also, many artificial cemented reservoirs (berked) were built by livestock merchants, rich pastoralists, Somali sailors and others who returned from abroad with money (Lewis 1961). There is always localized environmental degradation associated with the development of a well. When permanent water sources, installed by government or donor agencies, appear in an area, livestock concentrations increase and remain past the grazing period. Settlements spring up spontaneously where none existed before. Range resource degradation often results within a 10 km radius of the well. The potential for range degradation exists with a corresponding increase in the number of bore holes.

Although recent country-wide data is scanty, surveys performed in the Central Rangelands of Somalia (a primary grazing area of about 150,000 sq km) in 1975 and again in 1979 of water sources indicate the proliferation in water development (Table 1). The 1979 survey was done by aerial reconnaissance in both the wet and dry seasons. The numbers presented are an average of the two seasons. The number of constructed water points in the central rangelands not including stream-bank accessibility areas, increased from 9,437 in 1975 to 42,211 in 1979 according to the Department of Survey.

Table 1

Water sources in the central rangelands calculated by averaging wet and dry season survey data from department of survey maps (Sanderson 1986:52).

Source	Earth Reservoirs and Pools	Wells	Cement Reservoirs	Bore Holes	Flowing Rivers (km)
1975 census	923	8320	167	27	249
1979 census	2183	39433	463	132	1323

Sanderson (1986:50) stated that water availability is one of the major determinants of livestock numbers in any area. Box (1982:15) also mentioned range deterioration in Somalia where range improvements have been established, especially the development of bore holes and additional stock water. Similar cases of degradation concentrated in immediate proximity to deep bore holes were reported elsewhere in Africa (USAID 1980:15). All parties, i.e. herders and developers, have conspired, however unknowingly, to bring about this result.

This increase in water availability has had an important ecological consequence. Often water availability was the limiting factor regarding animal numbers. The increase in watering points has removed this natural control and has led to a large increase in the numbers of animals, and consequent-

ly, degradation of traditional grazing areas surrounding them. Increases in watering points, particularly in the privately owned reservoirs (berked), also had social consequences. Many of these reservoirs are open only to those who can pay for the water rather than the collective property of kinsmen who dug them. This has encouraged the intrusion of new pastoral groups into grazing areas which were previously under the de facto control of groups with traditional water rights in the area. These factors have led to the further breakdown of traditional grazing disciplines.

Therefore, the result of water development programs was to spread the destruction of grazing resources into areas like the "Hawd" which had been conserved by lack of water, increasing the grazing pressure on range resources in these areas. There had been no parallel programs of grazing management despite assertion by planners that programs should be integrated.

In conclusion, many well-intentioned water development interventions, although beneficial in the short run, have had disastrous long-term effects. The construction of permanent water points caused an over-concentration of livestock in proximity to them, and consequent vulnerability when rainfall declined and the forage became insufficient. This has resulted in near irreparable damage to the vegetation and soil.

Veterinary Interventions

Disease control is the most important form of animal improvement that has been attempted. It has regularly met with acceptance by the pastoralists and has often led to dramatic increases in animal numbers. Such intervention has been disastrous. Decreased livestock mortality exacerbates problems of overgrazing. USAID (1980:38) indicated that veterinary intervention has enjoyed, by and large, the best assessment of all donor activities in the livestock production system. Such interventions remain attractive and have enjoyed high short-term payoffs (USAID 1980:15). Major emphasis has been given to the control of disease and improvement of animal health in Somalia. This is considered the quickest and most economic means of achieving increased offtake and higher productivity.

The introduction of disease control programs began as a national campaign launched to eradicate the threat of many livestock diseases. Emphasis has been placed on prevention rather than cure of disease. Massive vaccination against rinderpest was introduced as part of the trans-African campaign carried out in the 1960s known as Joint Program 15 (JP15) (Moulton 1984:83). This program virtually wiped out the disease in Somalia. Vaccination against other major diseases for which locally produced vaccines are now available in adequate quantities (e.g. contagious bovine pleuro-pneumonia, anthrax, blackquarter, and haemorrhagic septicaemia), has been developed on a strategic campaign basis rather than outbreak control (SDR 1982:97).

Also, the supply of drugs and medicines has been rationalized and improved. Surveys have been conducted to determine the occurrence and economic significance of diseases and various parasites to expand the knowledge of animal health problems. Specifically this included a tick and tick-borne disease survey. Further effective control measures have been implemented. Among these include the development of the Serum and Vaccine Institute and Central Laboratory, and the establishment of the Northern Laboratory and several smaller regional laboratories.

Although the program was successful, and virtually removed another major check in livestock number, the unintended consequences have frequently led to deterioration of the environment. As a result, this has threatened the survival of pastoralism as a viable production system. Just as water development had no accompanied grazing management program, so disease control had no complementary marketing program to accommodate excessive stock numbers on the rangeland. However, in anticipation of increased numbers of stock, attempts have been made to remove marketing constraints.

There was, as a result of water development and disease control programs, an excess of livestock in relation to seasonal grazing resources. Comprehensive surveys of animal numbers are unavailable. However, in the central rangelands where considerable development activity has occurred, estimates of animal numbers allow some picture of growth to be drawn that are probably indicative of increases throughout Somalia. Table 2 shows that during the period from 1979 to 1985 camels increased by approximately 240,000 head, cattle about 110,000 head, sheep 210,000 head, and goats 730,000 in the central region alone.

At the same time, with the exception of cattle, exports diminished and domestic meat consumption per capita declined as urban and rural tastes for grains and other foods expanded (Mascott Ltd. 1986: 221). Export figures for the 1972-80 period show sheep and goat exports declining by about 155,000 head, camel exports remaining constant, with cattle exports increasing by about 4,000 head. Foreign trade statistics since 1980 indicate that the export market for livestock is essentially stagnant (Mascott Ltd. 1986:221). The loss of the Russian market in 1977 and increased competition for the Saudi Arabian market has created real problems for the sagging Somali export market.

Table 2

Estimates of livestock populations in the CRDP (Mascott Ltd. 1986:114).

Source	(million head)			
	Camel	Cattle	Sheep	Goats
RMR (1979)	0.64	0.31	2.20	6.45
Watson (1985)	0.88	0.42	2.41	7.18
Increase	0.24	0.11	0.21	0.73

Sources: Resource Management and Resource (1979). Central Rangelands Survey 4, Dynamic range resources methods and comments. RMR:London.
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Changes in Range Condition

Although it is true that livestock production expressed as animal numbers has increased as a result of these interventions, one must ask the question, "at what cost to the range resource"? It is unfortunate that range vegetation surveys have been spotty with few attempts to standardize and calibrate the criteria (Mascott Ltd. 1986:110). As a result, little faith is placed in the quality of objective quantification of range condition and trend from recent studies. One must rely on expert observation that deterioration has occurred and that the trend is down.

In 1966, a special FAO survey team conducted a reconnaissance of the rangelands of Somalia. Combinations of aerial reconnaissance and overland safari were used to develop some picture of range condition. All major vegetation types were sampled. In general, they found the rangelands to be in a

particularly so where stock water was available. Box (1968:391 and 1971:226) confirmed this situation. Glover as early as 1947 discussed range condition in the northern areas. Little of the perennial grass cover listed by Glover was found by the FAO team.

In the late 1970's degradation of the range resource in Somalia was perceived to be widespread. Although little quantitative data is available, the Project Appraisal Report of the CRDP by the World Bank (1979:51) noted a few specific examples of erosion and overgrazing around settlements, and generalized that "rangelands in the area are degraded". Other references were made in the report by Hemmings, a botanist, to declining wildlife populations and negative changes in landscape stability. A geographer, E. Hall, noted that extensive stands of mostly dead acacia in 1943 had been consumed by 1973 leaving the soils unprotected from erosion.

Conclusions

There were no improvements in any aspect of the livestock production system other than water and disease control and this subsequently led to range resource degradation. There appears always to be a lack of appreciation of the complexity of the social, economic, cultural and environmental factors in the pastoral way of life (Dwyer 1986). Somalia's checkered history of pastoral development can serve as a classical example.

Since the size and economic importance of Somalia's nomadic pastoralism is unique in Africa, solutions that are specific to the situation are required. New, comprehensive policies for pastoral development should take into account the complexities of the pastoral ecosystem. Therefore, any development plan should consider the basic factor contributing to the nomadic existence: that nomads inhabit a highly variable environment and that production is always faced with risk. Of course, the major climatic element, rainfall, cannot be modified, at least given the current level of technology, but precautions can be taken to ameliorate its effect when it fails.

Research to resolve the problems associated with managing rangeland and utilizing these lands for producing livestock on a continuing basis is essential. It would seem logical to initiate a research program to gain an understanding of the local pastoral ecosystem supplemented by a collection of an ecological baseline data set. Consideration of nomadic movement patterns, types of livestock and the selling of livestock and their products would appear to generate sufficient questions to begin serious hypothesis testing. A more relevant and feasible focus for research would be to examine the areas around several newly developed water points, preferable immediately before and sometime after the completion of the well. Some research and monitoring programs should accompany any attempt to develop water points under arid conditions in Somalia. Also, it is advisable that a National Range Research and Development Committee be organized to enhance cooperation, review problems, determine priorities, and ensure smooth functioning of research and development programs.

There is no doubt that Somali pastoral nomadism can lead to ecological problems. Given a certain level of aridity, it is the only means of land use. However, the risk of resource degradation is likely to occur whenever the number of livestock exceed the carrying capacity of the land. Therefore, it would be more sensible to develop a pastoral system that reduces pressure on rangeland, and at the same time, increases long range economic security for the pastoralists. The only way of achieving these objectives would be to prevent overstocking. The foreseeable future of Somalia lies in pastoralism.

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