Vol 18 No 1, p 25-29

THE ONE-HUMPED CAMEL AND THE ENVIRONMENT IN NORTHERN TANZANIA

R Trevor Wilson
Bartridge Partners Bartridge House, Umberleigh, North Devon EX37 9AS, UK

ABSTRACT

The presence and performance of the one-humped camel – exotic to Tanzania – are reviewed. Camels appeared in annual veterinary reports in 1926-1934: numbers varied from 26 (1926) to 67 (1930) and 5 (1934). In this pre-independence period they occurred mostly in the coastal provinces: lack of additional information could mean they were imported unofficially. Since independence some 340 camels have been imported privately and by NGOs. Numbers have remained low, there is no clear vacant ecological niche (a "key purpose" of introduction) for the species and its impact on producer livelihoods (another key purpose) has been limited. Camels have consumed resources that would have better been expanded on improving the performance of indigenous livestock. In Tanzania, and elsewhere, introductions of exotic livestock are often a diversion to, rather than a diversification of, the production of traditional livestock species.

Key words: Diversification, exotic species, introductions, livelihoods, livestock policy

Tanzania had 19.1 million head of cattle – the third largest population of this species in Africa – in 2009 (FAOStat, 2010). It also has relatively large populations, at 17.2 million head for the combined species, of goats and sheep. Donkeys are important in some areas for transport. Poultry include domestic fowl, ducks (mainly of the Muscovy type), Guinea fowl, pigeons, geese and turkeys. Horses (of which there have never been more than a few hundred in the country at any time) and pigs (mostly introduced by missionaries in the early 20th century) are minor species.

The animals in the foregoing list can perhaps be considered as "indigenous" livestock. The one-humped camel *Camelus dromedarius* is definitely an "exotic" species. An account of its presence and performance or use in what was formerly German East Africa, then the British-administered Tanganyika Territory and is now the mainland portion of the United Republic of Tanzania is the subject of this paper.

Materials and Methods

This study was undertaken in three parts. A general search of the international and national literature was first undertaken. Secondly, data relating to the pre-independence period (before 1961) were extracted mainly from the detailed Annual Reports of the Department of Veterinary Science and Animal Husbandry. A search for camels in the National Archives in Dar es Salaam failed to find any references to these animals. In the third stage the main source of information for the post-independence period was the known "repositories" of the camel in northern Tanzania. Detailed information on the animals was obtained mainly by exchange of correspondence between the author and the people principally involved in the management or oversight of camels. Additional information and on government policies was obtained in discussions with staff of the Ministry of Livestock Development.

Results

The one-humped camel in the pre-independence period

Although here considered exotic there is some archaeological evidence that a camel-like species existed in northern Tanzania in the past (Hartley, 1990). In the period of German colonisation a Mr O Baumann imported a camel to the area of Ngorongoro crater early in 1892 but this died there shortly afterwards on 18 March (Hartley, 1990).

Camels first appeared in the census of livestock that was published in most of the annual reports of the Department of Veterinary Science and Animal Husbandry in 1926 (Table 1). They had not been listed in previous censuses and there was no explanation regarding when they had come (DVSAH, 1926-1934). A further unusual fact is that they were mostly

SEND REPRINT REQUEST TO R TREVOR WILSON email: trevorbart@aol.com

present in the humid coastal provinces of the country whereas they would have been more acclimatised to the drier northern and central areas. It appears likely, therefore, that these camels were "casual" residents or even tourists brought by trading dhows from the northern Kenya coast and Somalia or from the Persian Gulf. There were no data on livestock censuses in the annual reports for 1935-1937 as the authorities contented themselves with stating that the livestock populations showed no marked differences from previous years. A tabulated census in 1938 made no reference to camels: they simply disappeared as mysteriously as they had apparently first arrived.

Table 1. Camels in Tanganyika Territory, 1926-1934.

Year	Province and number of camels				Total camels
	Tanga	Eastern	Lindi	Central	
1926	12	27	2	0	41
1927	12	6	2	0	20
1928	12	6	2	0	20
1930	0	55	1	11	67
1932	0	55	1	0	56
1933	0	5	1	0	6
1934	0	4	1	0	5

Source: Annual Reports, Department of Veterinary Science and Animal Husbandry

The one-humped camel in the post-independence period

A camel is known to have been an attraction at a private wildlife park at Usa River between Moshi and Arusha in northern Tanzania during the 1970s (Hartley, 1990). It was apparently killed by a motor vehicle but there is no further information on this animal.

In January 1984 Mr Brian Hartley (formerly a Colonial Service Agricultural Officer in Tanganyika Territory in the 1930s and a private rancher in the West Kilimanjaro area of northern Tanzania in the late 1950s and early 1960s) bought eight Somali camels at Garissa in Kenya. He subsequently walked them—when he himself was more than 80 years old — a distance of about 700 km to Namanga on the Tanzania/Kenya border (Hartley, 1990). In January to March 1984 Hartley travelled with his camels in the northern dry range country between West Kilimanjaro and Lake Natron. His expressed purpose in attempting to introduce camels into Tanzania was to assess the potential carrying capacity for the species, determine health problems and carry out an economic appraisal of their use (Hartley, 1990). Hartley assessed carrying capacity at between one and six camels per square kilometre. The only health problems he touched upon were tick infestation and problems with biting flies. His "economic appraisal" considered that the 4000 km^2 he regarded as suitable for camels in northern Tanzania would carry 12000 camels including 3000 breeding females of which 1200 would be in lactation at any one time (on the assumption that the parturition interval was two years and that 80 per cent of females would calve). According to Hartley, at an average milk yield of 1600 kg per lactating female, total annual milk production would be 1.9 million kg. He estimated annual meat production of 240,000 kg from planned and emergency slaughter. Blood production – at 50 kg per head from 300 bulls and castrates – would be 15000 kg. Drawing on the examples of Australia, China, India, Niger and Kenya, Hartley considered there was good potential for tourism and noted that a tourist organisation was interested in acquiring the eight transport animals. There appears to have been little early progress in this enterprise. In 2010, however, there is an active camel safari business operating with up to 25 camels based on the northern slopes of Mount Meru (Mkuru, 2010).

Heifer Project International (HPI), a faith-based international Non-Governmental Organisation (NGO), has been the main instrument in recent imports and promotion of the camel. Financial assistance from other donors allowed it to import more than 330 camels from Kenya—mainly from the northeast – to Tanzania between 1995 and 2006 (Table 2). These camels were distributed to 26 villages or groups (two received two lots of animals) in five districts in northern Tanzania. A further group of 31 camels was imported in 2008 and, according to HPI's own website was a great success in producing milk, creating income and empowering women (HPI, 2010). "Key purposes" of HPI's introduction of camels were to improve the environment and to provide a means to increase and improve training and education among the people (Pelant *et al,* 1997).

The services of an agent were used in the HPI import process (Alson Lyimo, personal communication). The agent's contract generally stipulated the purchase of a mixed group comprising pregnant camels not exceeding 7 years of age at a price of US$ 500, unbred but ready-for-breeding females aged 4-6 years at a price of US$ 460 and breeding bulls not more than 7 years old at a price of US$ 500 (2007 prices). HPI provided an Animal Health Permit for the import of animals whereas the agent had to provide a veterinary health certificate,

Table 2. Data on camels imported to Tanzania by Heifer Project International, 1995-2006.

	Mfadhili Donor	Mdhamini Trustee	Kijiji/Kikundi Village/Group	Wilaya District	Tarehe ya kupokea Date received	Majike Female	Madume Male	Maksai Castrate	Jumla Total
1	World Runners (USA & Japan)	KKKT-Loliondo	Monik	Ngorongoro	5.10.1995	8	1	–	9
2	World Runners (USA & Japan)	KKKT-Loliondo	Malambo	Ngorongoro	5.10.1995	4	2	–	6
3	Global Partners (USA)	KKKT-Loliondo	Olbalbal	Ngorongoro	10.9.1997	18	2	–	18
4	Wild Gees - (Netherlands)	Jimbo la Masai kusini	Namalulu	Simanjiro	21.1.1999	7	1	–	8
5	Wild Gees - (Netherlands)	Jimbo la Masai kusini	Lotukutaa	Simanjiro	21.1.1999	8	1	–	9
6	Wild Gees - (Netherlands)	KKKT Jimbo la Masai kusini	Orkasmet Madukani	Simanjiro	21.1.1999	7	1	–	8
7	World Runners (Japan)	Baptist Kisimiri juu	Kisimiri juu	Arumeru	11.8.1998	10	1	6	17
8	World Runners (Japan)	Baptist-Mukuru	Mukuru	Arumeru	10.9.1997	11	1	8	19
9	Global Partners (USA)	Meru Baptist	Uwiro	Arumeru	4.9.1999/ ??.??.2001	9/3	1	5	18
10	Global Partners	KKKT-Namanga	Namanga	Monduli	13.1.1997	11	3	1	15
11	Global Partners	KKKT- Namanga	Maatiani	Monduli	14.4.2001	10	1	–	11
12	Global Partners (USA)	KKKT Engarenaibor	Engarenaibor	Monduli	4.9.1998/ ??.??.2001	16/1	1	2	20
13	World Runners (Japan)	KKKT-Longido	Nareto Kimwate	Monduli	??.??2003	14	5	1	20
14	Global Partners	KKKT-Longido	Eworendeke	Monduli	15.3.1999	18	1	2	21
15	Global Partners	KKKT-Namanga	Lesoiti	Monduli	14.8.2001	11	1	–	12
16	World Runners (Japan)	KKKT-Engarenaibor	Naripi	Monduli	20.12.1998	9	1	2	12
17	Global Partners	KKKT-Engarenaibor	Mundarara	Monduli	20.12.1998	14	2	2	18
18	Global Partners	KKKT-Kitumbeine	Kitumbeine	Monduli	4.3.2000	9	3	–	11
19	Global Partners	KKKT-Namanga	Sinonik	Monduli	26.8.2001	10	1	–	11
20	Global Partners	KKKT-Namanga	Matale	Monduli	28.8.2001	10	1	–	11
21	Global Partners	KKKT - Pare	Kapashe group - Kirinjiko chini - Same	Same	18.9.2003	5	1		6
22	Global Partners	KKKT - Pare	Makoreni - Kirinjiko juu - Same	Same	18.9.2003	5	1		6
23	Global Partners	KKKT - Pare	Kitamuri - Ruvu - Same	Same	18.9.2003	5	1		6
24	Global Partners	KKKT - Pare	Handeni - Nyumba ya Mungu - Mwanga	Same	18.9.2003	5	1		6
25	Kanisa la Mungu – Babati.HPT	KKKT- Namanga	Gilai Bomba	Monduli	11.4.2005	20	2	–	22
26	Global Partners & World Runners	KKKT - Loliondo	Monik V.T.C.	Ngorongoro	6.10.2006	10	1		11
					Jumla. Total	268	37	28	333

Source: Heifer Project International North East Integrated Project

a commercial invoice and a Letter of Agreement. Other conditions to be fulfilled by the agent were that all animals should be in good condition and health, that all should have had prophylactic treatment against trypanosomosis and been vaccinated against anthrax ("and any other vaccine the supplier will feel necessary") and be delivered to the purchaser at Namanga.

The HPI animals were mostly transported by lorry from the point of purchase to the Namanga border post on the Kenya-Tanzania international boundary. They were then re-loaded to other lorries in Tanzania for onward conveyance to their final destinations. A small number of animals was trekked in Kenya and rather more in Tanzania when the recipient group was close by (Fig 1). Over the years the sex ratio of introduced animals was 1 male to 10 females. Camels are kept mainly for their milk and produce up to 10 litres per day but this varies with period of lactation, frequency of milking and various other factors. Some six groups (Eworendeke, Kisimiri, Uwiro, Namalulu, Madukani and Lootukutaa) have been more active than others in using camels as draught animals. The Longido and other groups around Namanga also use camels as a tourist attraction. Old camels and those that show poor reproductive performance are slaughtered for meat. Age at first parturition is six years and intervals between successive parturitions are 2-3 years. Overall annual mortality is about 14 per cent but is higher in calves. The main health problems are pneumonia in calves, mange, abscesses, orf, tick infestation and problems with internal parasites.

One international source (presumably based on information obtained locally from official sources) gave an estimate of 100 camels in the country in 2001 (FAO, 2007). The same source also stated that 90 per cent of "output" was revenue from tourism activities and 10 per cent from milk. The Government of Tanzania's own estimate of camel numbers in 2006 was 93 animals (URT, 2006).

Fig 1. Camels from Kenya arriving at Namanga for transfer to Tanzania.

Discussion

Tanzania has a broad array of domestic livestock species. The main meat and milk species are cattle, goats and sheep. Cattle are also used for draught purposes. One source (Pelant *et al,* 1997) has said that the Tanzania indigenous livestock resource is in need of "enhancement" (whatever that word may mean in this context) but it is not clear how the introduction of exotic species will contribute to this objective. It should also be understood that many local livestock types are very well adapted to their local environments.

Government has apparently shown (at least until recently, see URT 2006) little or no interest in camels in both the pre- and post-independence periods. That nothing is known of camels in Tanzania in the former period other than their numbers almost certainly means that government was not involved in their introduction. The most likely explanation for their pre-independence presence and demise is that they were somewhat casual visitors perhaps unloaded from trading vessels on the coast for rather short periods. In spite of claims by Hartley (1987; 1990) that northern Tanzania is ideal country for camels this is not necessarily so (the author of this paper lived in the area for six years in the 1960s and, incidentally, knew Hartley well). Hartley was a "camelophile" – in addition to colonial service in Tanzania he had been Director of Agriculture in the South Arabian Protectorate (Aden, now southern Yemen) – and perhaps did not have a fully objective view of their capabilities. His introduction of camels through Namanga in 1984 can be seen as something in the nature of a personal crusade and it is in no way attempting to demean Hartley by saying that his imports might not have had the full approval of the central and regional governments. For many years from the 1960s the camel as an instrument of development was neglected if not deliberately ignored by national governments and international organisations. In the 1980s, however, the species began to be seen as an instrument or a "tool" (Pelant *et al,* 1997) in livelihood support projects. Several large not-for-profit international NGOs began to promote the camel and put it on their bandwagon. Many large international NGOs, however, are also known to work

to their own agendas which may not be completely in accord with central government policies. NGOs often claim spectacular success for their projects but such is usually limited to a small percentage of the whole population and there is often little continuity after project funding and intensive support is withdrawn. A pillar of HPI's philosophy is "passing on the gift" which involves, in the case of livestock, recipients of an animal ceding two female offspring to other potential beneficiaries. A measure of the (lack of) success of the HPI camel initiative is that in the first 12 years of its operation in Tanzania only 24 new families had received the gift from the original beneficiaries. It is certain that the situation with regard to passing-on will not improve after the end of the project direct support period (Afifi-Affat, 1998).

The camel received more attention in the government's livestock policy document of 2006 (URT, 2006) than it benefited from in the past. The animal is seen (by government) as able to complement milk supply in areas where the environment does not favour improved dairy cattle production. Major constraints are seen as inadequate knowledge and skills among farmers and inbreeding due to low population numbers. Government's policy objectives are stated to be increased milk production from the species in order to raise household incomes and improve nutritional status. In order to achieve these objectives government proposes to promote and support genetic improvement and multiplication, support and strengthen the technical services dealing with the camel and create awareness and promote consumption of safe and quality milk from these animals (URT, 2006).

The United Republic of Tanzania is home to large numbers of cattle, goats and sheep which are, and will remain, the main producers of meat, milk and draught power in the country. Introductions or attempted introductions of exotic species might be seen as attempts to broaden the production base. In the case of the Tanzanian camel the introduction has also been aimed at improving the environment and providing benefits to the local ecology. It is difficult to see how the animal will achieves these goals in view of the very small numbers. In addition, there are no real vacant niches – environmental, ecological, social or economic – for the camel. There has been clearly very limited success in the private sector in the case of camels in contributing to improved livelihoods for livestock producers and should government's policy objectives be pursued it is difficult to see how it will be more successful. Considerable sums of money and large amounts of time have been expended in promoting these animals. There can be no doubt that the use of these two limited and limiting commodities (time and money) in improving the production of traditional livestock species would have yielded more worthwhile results. In Tanzania – and perhaps in many other developing countries with a range of domestic livestock already well adapted to local conditions– exotic animals should generally be seen as a diversion to mainstream production and not as a diversification of it.

Acknowledgements

I wish to thank Erwin Kinsey and especially Dr Alson Lyimo (North East Zonal Coordinator) of HPI for information on camels in their North East Integrated Project. Dr Sachinda M Das, Director of Tanzania's Central Veterinary Laboratory (and a long time colleague and friend), supplied information via the national livestock policy document on national camel numbers in 2006 and on government policy attitudes to the species. None of these people is, of course, implicated in any of the statements or conclusions in this paper, which are those of the author alone.

References

Afifi-Affat KA (1998). Heifer-in-Trust: a model for sustainable livestock development? World Animal Review 91:13-20.

DVSAH (1926-1934). Annual Reports of the Department of Veterinary Science and Animal Husbandry, (Government Printer: Dar es Salaam).

FAO (2007). Breed data sheets. Http://dad.fao.org/cgi_dad

FAOStat. (2010). Statistical Yearbook. Http://faostat.fao.org/site/339/default.aspx.

Hartley BJ (1987). The one humped camel in northern Tanzania. Unpublished mimeograph.

Hartley BJ (1990). The one humped camel (*Camelus dromedarius*) in northern Tanzania. Proc.Tanzania Soc.Anim.Prod. 17, 185-190.

HPI (2010). Heifer in the news. Www.heifer.org/site/apps/nlnet/content2.aspx

Mkuru (2010). Mukuru Camel Safari Project. Http://mkurucamelsafari.com/about_us.project.html

Pelant RK, Gudala DJ, Chandra B and Kinney E (1997). Camels for socioeconomic development in India and Tanzania. Journal of Camel Practice and Research 6:119-122.

URT (2006). National Livestock Policy, (Ministry of Livestock Development, United Republic of Tanzania: Dar es Salaam, Tanzania).