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Constraints to Donkey Keeping and their Management: Case of Residents of Pate Island, Lamu County, Kenya

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Abstract:

Donkeys play an important role in rural areas particularly in developing countries. Their importance can be seen in provision of draught power and a now an emerging source of milk and meat. The study that yielded this information was multidisciplinary in nature and sought to understand the constraints of donkey keeping and their management among residents of Pate Island, Lamu County at the Kenya's coast. The methods of data collection included questionnaire survey (96 respondents), five key informant interviews and eight focus group discussions. The results indicate that the donkey keepers of Lamu encounter constraints that include diseases, parasites and insufficient feeding of the equines. The management of these constraints involved use of both formal and ethno-medical practices. The study recommends training of community animal health assistants (AHAs) from the community on the island to assist in improvement of donkey health services to the residents.

Keywords: Donkey, pate, lamu, constraints, management, Trypanosomiasis

1. Introduction

Donkeys play an important role in rural economies through the provision of draught power and transport. Compared to other domestic animals, donkeys contribute a greater proportion of readily available transport needs for people living in hostile environments, enabling them to integrate into social and economic processes (Fernando 1997; Valette 2014; Khan *et al.*, 2015). In addition to their popularity in the transport sector, donkeys are perceived by researchers and people from many communities as disease resistant and hardy animals (Blakeway 1994; de Aluja and Lopez 1991; Bakkoury and Belemlih 1991). The equines are also preferred because of their affordability, survivability, docile nature and ease of training and handling. More so, the fact that donkeys are able to thrive on poor quality minimally supplemented feeds has also made them popular in environments where feed shortages can seasonally become a critical problem (Pritchard, 2010). Donkeys have been reported to survive better under drought condition than any livestock species due to their small body size and low dry matter intake requirements minimizing their water and maintenance needs. This, combined with the high cost of oxen and/or the effect of animal diseases on other livestock, has caused many farmers to turn to the donkey as an alternative power source (Pritchard, 2010).

In many countries, the donkey is the work animal which has the most to offer in assisting rural people on their pathway to achieve poverty alleviation. This is particularly true in the difficult circumstances of the arid and semi-arid areas to which the donkey is naturally well-adapted (Swai and Bwanga, 2008; Khan *et al.*, 2015).

The use of donkeys as pack animals or for pulling carts has enabled small-scale farmers to participate in the market economy. Donkeys have reduced the domestic transport burden of rural women and have created employment and income-generating opportunities for many people (Fielding, 1988; Valette, 2014). Among the Maasai ethnic group of Kenya, women use donkeys to fetch water, household shifting (during migration), carrying the sick to hospital, carrying sick calves, transporting shopping and pulling fencing materials needed for construction of *bomas* (Mutharia, 1995). In Botswana, donkeys are used for transporting people and goods, for transporting sand for building houses and fetching water and firewood (Aganga *et al.*, 1994; Wanjala *et al.*, 2018). In spite of all these advantages, donkey keeping also has constraints. This paper presents constraints to donkey keeping among the residents of Pate Island, Lamu at the Kenyan Coast.

2. Methods

The activities that generated the data presented herein were carried out in four villages of Pate Island, Lamu County, Kenya, namely Faza (also known as Rasini), Tchundwa, Bwajumwali and Kizingitini between April 2010 and December 2015. The activity was accomplished through field visits. Data were collected through the use of a structured questionnaire, key informant interviews and focus group discussions. The questionnaire was designed to capture background information of respondents that included demographic variables such as age, sex, highest educational level attained and the economic activities mainly engaged in and constraints to donkey keeping and how the residents manage constraints for continued harnessing of the usefulness of the equines.

A total of 96 respondents from the four villages of the Island were interviewed and their responses documented. The respondents were selected randomly from the local population after stratification of their respective villages into strata that guided the boundaries for daily activities. A total of eight focus group discussions (two discussions from every village) and five key informant interviews were undertaken to collect more qualitative information relating to the variables under investigation and for triangulation of information generated from the questionnaire survey. This was done to enhance authenticity.

3. Results

The four villages were pre-dominantly occupied by the Bajun people, one of the Kenyan coastal inhabitants. However, it emerged during focus group discussions (FGDs) that other communities such as the Somali and Borana were also found in the villages albeit in smaller numbers. Majority of those interviewed 60.4% (N=58) fell in the age range 21-30 years while those above 50 years were 24% (N=23).

A focus on the highest education attained indicated that majority of the respondents 69.8% (N=67) had attained primary level of education with those without any formal education accounting for 15.6%. There was, however, no statistically significant difference between the four villages when comparison of highest level of education attained was made ($P>0.005$). As far as economic activities in the four villages were concerned, results indicate that 38.5% (N=37) of respondents were engaged in farming as an economic activity, 39.6% (N=38) were engaged in fishing activities while 8.3% (N=8) were engaged in retail business for shop merchandise. The rest of the respondents engaged themselves in, among other activities donkey breeding for sale. A simple cross tabulation of villages and economic activities revealed that there were some differences between villages as far as economic activities were concerned. Majority of respondents from Faza and Kizingitini were engaged in fishing activities while in Tchundwa and Bwajumwali, of respondents were predominantly farmers.

A majority of respondents kept donkeys although other livestock species were also kept (Figure 1 below). The other livestock kept in the four villages included cattle, sheep and goats. The donkey was ranked as the most preferred among the animal species kept (Table 1 below).

Animal spp	Measurement			
	N	Mean score	Ranked Position	Std Deviation
Cattle	96	2.35	2	0.615
Sheep	96	3.95	4	0.223
Goats	96	2.56	3	0.662
Donkeys	96	1.13	1	0.363

Table 1: Ranking of the Most Preferred Animal amongst Selected Domestic Animals.

NB. Position 1 Ranking Indicates Most Preferred Animal Species

This ranking was also supported by participants in focus group discussions during pair-wise ranking exercise in all the four villages.

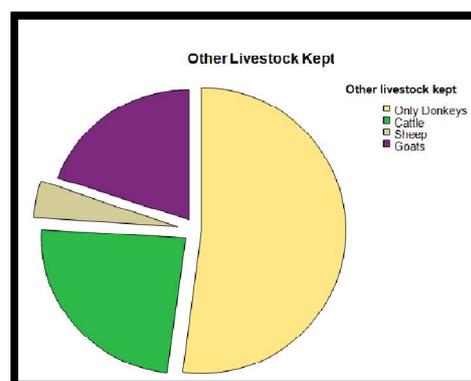


Figure 1: Animal Species Kept in Combination with Donkey

3.1. Constraints to Donkey Keeping

Majority, 55.2% (N=53) of the respondents identified diseases as the most important constraint to donkey keeping. Trypanosomiasis (*gandhi*) was identified by 68.8% (N=66) of respondents as a major disease in donkeys on Lamu

Island. Other diseases/conditions mentioned included tetanus (*Ugonjwa wa kupindana*), digestion complication (*Mshipa*), wounds and abortions. Apart from diseases other constraints included insufficient pastures, theft of donkeys for work and then set free and also wounds inflicted on the donkeys by some farmers whenever they (donkeys) strayed into individual farmlands and destroyed crops. However, in addition to the above diseases/conditions, a key informant indicated that colic, eye problems, abscess and other skin problems, lameness and rectal problems (prolepses) were other problems experienced in donkeys in the four villages. Participants in focus group discussions attributed the wounds on donkeys to overloading, beating and improper harnessing material.

As far trypanosomiasis is concerned, results indicate that the inhabitants of the Island were knowledgeable about the link between trypanosomiasis and tsetse fly. Whereas 54.2% (N=52) associated trypanosomiasis with grazing of donkeys in or near bushes- the tsetse habitat, 43.8% (N=42) indicated that tsetse fly, the disease vector had inhabited the whole Island, hence the disease evenly distributed on the Island. During grazing and working in the fields, tsetse fly was identified as a major problem. A participant in one of the focus group discussions summarized this problem as follows:

Tsetse flies (gandhi) are a major problem particularly when we go to the farms with our donkeys. They are very bad especially in the mornings and evenings. It is very difficult to work or graze donkeys there during these times. Although the Donkey Sanctuary officers are helpful with Samorin® treatment following tsetse bites, we do not know what to do to protect our donkeys from the bites. At times we put up smoke to keep the flies away but this has been a futile undertaking - (FGD participant in Tchundwa village).

Apart from tsetse, the other vectors that affected donkeys included ticks, mites and other biting flies. However, the distinction between tsetse flies and various biting flies was difficult for the respondents to make. Any fly that bit donkeys and other domestic animals was referred to as tsetse fly (*gandhi*).

3.2. Management Practices

3.2.1. Diseases

The management of donkey diseases was a function left to the Donkey Sanctuary. Farmers presented their sick donkeys to their (Sanctuary's) installation in each village (See Figure 2 below) or to the home of the Sanctuary's trained Community Based Animal Health Workers (CBAHW) in each village and expected treatment and/or advice. However, 36.5% (N=35) of the respondents treated their donkeys by themselves. In the course of treatment, 11.5% (N=11) reported that they observed swelling of the donkeys at the point of injection and at times wounds developed at these spots.

As far as identification of trypanosomiasis-related drugs was concerned, Samorin® 49% (N=47), Veriben® 33.3% (N=32) and Berenil® 1% (N=1) were identified as drugs of choice. The *emic* observations that donkey keepers looked for, in order to conclude that the animals suffered from trypanosomiasis and commence treatment included:

- Raised hair coat
- Change in body condition
- Tsetse flies seen biting the donkey
- Animal becoming inactive
- The donkey taking long periods of time in the sun
- Darkening of the skin colour
- Lachrymation
- Weakness and;
- Reduced feeding



Figure 2: A Donkey Sanctuary Installation in Tchundwa Village Where Donkeys Were Taken By Inhabitants for Treatment Whenever Cases Arose

There appeared to be no ethno-medical practices that targeted trypanosomiasis but wounds were treated through use of crushed old battery cells and the resultant carbon powder mixed with either *simsim* or coconut oil and then applied on the wounds. According to respondents, the mixture worked faster than manufactured drugs. They (respondents) indicated that the wounds took about three days post application to dry up when this mixture was applied. Cases of tetanus (*Ugonjwa wa kupindana*) were treated by placing a hot metallic bar on the affected part of the concerned animal. This was viewed by most respondents to be the only remedy available for this kind of condition (tetanus).

The treatment of eye infections in donkeys was done by heating a small, empty tomato sauce tin (*kikebe*) and putting the smoking tin on the affected eye (Figure 3 below). It was believed that the smoke and other gasses that were emitted during heating of the tin helped to cure the infection. It was, therefore, common to see donkeys with dark circular marks around the eyes as vestiges of this activity. When there was lachrymation from any or all of the eyes, a cloth was put in hot water and the hot cloth pressed on the affected eye(s). It was believed that this process cured the donkey from the condition.



Figure 3: A Small, Empty Tomato Sauce Tin Kikebe Used In the Curing Of Eye Infection in Donkeys in the Four Villages

3.2.2. Dealing with Ecto-Parasites

The ecto-parasites mentioned by respondents included ticks, tsetse and mites. A majority of the respondents 52.1% (N=50) controlled ticks and mites by washing the affected donkeys in salty sea water. However, 30.2% (N=29) used various types of acaricides through spraying to control ticks. A small group of respondents 6.3% (N=6) just plucked the ticks from the affected donkeys whenever they saw them. A further 5.2% (N=5) and 4.2% (N=4) did not know how to control the ticks and mites respectively. Other alternative methods of ecto-parasites control included application of old engine oil and coconut oil on the affected donkeys.

To treat mange, some farmers washed their donkeys in fresh water (*maji matamu*) and applied *simsim* oil on the affected parts. According to the respondents, this washing made the skin rashes resulting from mites to heal. When asked about the effect of different ecto-parasites on their donkeys, 32.3% (N=31) thought ticks were just a nuisance to the donkeys and caused no disease in the animals (Table 2 below).

Parameter	Study site (Villages)				
	Faza	Tchundwa	Mbwajumwali	Kizingitini	% of the total
Important Ecto-parasites					
• Ticks	3	2	1	5	11.5
• Tsetse	21	18	23	18	83.3
• Mites	0	0	0	2	2.1
Importance of parasites					
• Ticks					
✓ Cause disease	16	13	19	18	67.7
✓ Just a nuisance	8	12	5	6	32.3
• Tsetse					
✓ Cause disease	23	23	24	23	96.9
✓ Just a nuisance	1	1	0	1	3.1
• Mites					
✓ Cause disease	22	21	23	20	89.6
✓ Just a nuisance	2	3	1	4	7.3
Ecto-parasite control (Alternative/ethno-medical methods)					
✓ Washing with sea water	17	18	23	22	83.3
✓ Washing with fresh water and soap	0	1	0	1	2.1
✓ Using sheep fat	3	1	0	0	1
✓ Do nothing	0	1	0	1	2
✓ Other*	4	3	1	0	8
Sources of veterinary drugs					
✓ Drug vendors	5	4	2	2	13.5
✓ Supplied by AHA**	19	20	22	22	86.5

Table 2: Responses on Different Parasites, Their Control and Sources of Veterinary Drugs

* Includes Application of Used Engine Oil, Coconut Oil and Simsim Oil

** Donkey Sanctuary Officers

3.2.3. Feeding and Housing Practices

By observation, donkeys were fed on a variety of products. These included maize bran (*wisha*) bought from local shops at Ksh.20 (US\$ 0.3)/kg. The donkeys were also fed on potato or cassava peelings and waste from coconut pulp processing. The lack of sufficient feed for donkeys was also singled out as a major constraint to donkey keeping by respondents. Because of feed scarcity, many of the donkeys in the villages were left to scavenge. According to key informants and information from focus group discussions, supplementary feeds were mainly given to work donkeys. The other donkeys were left to scavenge.

As far as housing was concerned, in all the four villages, some villagers constructed structures in which to house their donkeys and domestic animals (Plates 3 & 4 below). This may be a demonstration of their love for their donkeys although at night many donkeys could also be heard roaming in the village. However, a key informant observed that some donkey keepers mistreated their donkeys through over loading, over beating, over riding and poor watering practices.



Figure 4: Donkey Structure at Tchundwa Village



Figure 5: Donkey Structure at Faza Village

4. Discussion

Results indicated that the majority of respondents had attained primary education as the highest educational level. The implication of this is that in case of sensitization on donkey issues or any other activities that necessitate passage of information therefore, the type of information, education and communication (IEC) materials developed, if necessary, need to be pictorial or by physical presence of sensitizers for desired impact.

As indicated in the results, the donkey was mainly used for transport of people, building materials and shop merchandise from one village to another or during intra village missions. The method mainly used was packing. This finding is not restricted to the research site as it is also consistent with findings of other researchers such as Fielding (1988), Dessalegne et al., (2011) and Mutharia, (1995). However, the researchers were of the opinion that packing can only carry a limited quantity of goods and if the saddle is not suitable may be an injurious undertaking to the donkey. Cases of saddle sores (back sores) were widespread. The sores were also mentioned by respondents as a problem in the research site. The sores are caused by the lack of suitable saddle or protection (Yilma *et al.*, 1991). Other wounds that were frequently seen include abrasions due to friction with improper harness and harnessing materials such as nylon ropes and strips of car tyres. The presence of wounds in donkeys and indicating by key informants about overloading, over beating and poor watering practices as constraints may be a pointer to the need for increased sensitization of keepers for improved donkey management practices and increased productivity.

Amongst the greatest constraints of donkey keeping were diseases including trypanosomiasis (*gandhi*). Although the respondents seemed to have difficulty distinguishing biting flies from tsetse, they rightfully associated the vectors to trypanosomiasis (tsetse and biting flies), biting flies being known for mechanical transmission of *T. Evansi*. However, as results indicate, the management of donkey health problems was perceived by the respondents, to a larger extent, as a role to be played by the Donkey Sanctuary personnel. This made community ownership of donkey management in terms of diseases and deworming to be low. The use of Samorin® for treatment and prophylaxis seemed to have taken precedence

of tsetse control technologies. Donkeys were mainly treated with Samorin® whenever they went to the farms, particularly during harvesting of farm produce. This regular treatment if not well managed could be a pathway towards drug misuse which may result to pathogenic resistance to the trypanocidals.

Scarcity of feed for donkeys was also singled out as a constraint. As indicated, the donkey keepers at times bought maize bran (*wisha/wishua*) for their donkeys. This may lead to the experienced digestive disorder in donkeys (Colic), with an *emic* reference - *mshipa or gesi*. Colic was also highlighted as a common problem in donkeys. According to Gebreab (1998), the importance of nutrition in donkey management is paramount. Without good nutrition a donkey does not grow properly, it remains small and weak, it is susceptible to diseases and fails to reproduce. A small improvement in nutrition can have a considerable impact on the overall efficiency of the donkey as a power unit. Good nutrition also results in rapid growth and a strong skeleton that is needed for a high work output. Good nutrition results in an effective immune system which enables the donkey to fight disease organisms, generally overcoming the disease challenge (Gebreab 1998).

5. Recommendations

- There is need to train community based animal health assistants (AHAs) on the Island to improve service accessibility and providing information about how to access quality animal health products to the donkey keepers.
- When sensitization activities are to be undertaken, it may be important to utilize pictorial and /or interactive sessions with occupants of the Island for effective transmission of the intended messages.

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