

Donkey utilisation and management in Ethiopia

by

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Abstract

Ethiopia is a country with one of the highest donkey populations in the world. The total number is 4–5 million. Four recognised donkey types exist, unevenly distributed in all agro-ecological zones and the two landscape patterns. The small-scale farmers and the Highlands have the largest share with 2–3 animals per family, and with female donkeys being most common (70%). Weaning and breeding ages were established to be between 4–5 years for places like Awassa, Gondar and Dire Dawa.

In the country as a whole, donkeys provide pack services, carrying over fifteen kinds of commodities weighing 60–100 kg and covering distances of 15–20 km for a duration of 4–5 hours. Observations undertaken along the main roads to and from Addis Ababa revealed that the use of donkeys is directly related to the distance covered. On the Gojam and Dessie roads more donkeys carried goods than people while on the Ambo Road more people carried goods than donkeys.

The role of donkeys in the diversification of sources of income in rural areas is highlighted. In Tigray and the Rift Valley areas their contribution in terms of firewood trade to the family income was found to be in the range 156–1404 Ethiopian Birr annually (US\$ 1 = Birr 6.3). In Ejersa, pack donkeys may make 80 daily shuttles from the river basin to the roadside transporting a total of 4 m³ of sand, costing Birr 90. Constraints to improved donkey use are discussed, including health problems, nutrition and policy issues.

Introduction

Number and Distribution

Various sources have given different figures for the donkey population in Ethiopia. According to FAO it was 3.9 million (FAO, 1985), 3.9 million (FAO, 1989) and 5.2 million (FAO, 1994). Jahnke (1983) and Fielding (1991) cited the 3.9 million

estimate. As shown in Table 1, donkeys are found unevenly distributed in all the zones of the country (Admassie, Abebe, Ezra and Gay, 1993). The figures quoted include the territory of Eritrea, which is thought to have a population of about 130,000 donkeys.

The majority of the donkeys are found in the Highlands, with Shewa, Gonder, Tigray, Gojam, Welo and Arsi having the largest populations. The density of donkeys is highest in Tigray, Arsi and Shewa. Areas with middle range densities are Gojam and Gonder, with low densities in all other regions. The Central Statistics Office (1995) reported that 44%, 34% and 19% of the donkeys are found in Oromia, Amhara and Tigray Regions respectively (Table 2).

According to FAO (1989) there are 27 donkeys per 100 people in Ethiopia, which is one of the highest ratios in the world. It is difficult to suggest the critical minimum donkey density required per unit of population (Fielding, 1991) on which to base interventions as part of a national livestock policy.

Types of donkeys

The domestic donkey traces its ancestry to the wild asses found in Egypt, the Sudan, Somalia and Ethiopia. The two recognised races of the wild ass are: *Equus asinus africanus* and *Equus asinus somaliensis*. About 2500 wild individuals are present in the Danakil Depression and Nogal Valley in the Horn of Africa (Clark, 1974). Based on average size and coat colour four types of donkeys are recognised in Ethiopia: Jimma, Abyssinian, Ogaden and Sennar (Dreyfus, 1976).

Ownership pattern

In the Highlands of Ethiopia farmers own an average of 2–3 donkeys per family. The following is a review of various survey samples:

The Shewa sample: Of the 120 households surveyed by Wilson (1991), 102 (85%) owned or kept donkeys. The average number of donkeys per household was 2.72 of which 66% were born on the farm and 30% were acquired by purchase.

The Tigray sample: This study was also conducted by Wilson (1991). A total of 277 households were sampled in two areas of central Tigray. Of these, 135 (49%) kept donkeys. The average number of donkeys per owning household was 1.52.

The Dire Dawa and East Oromia sample: Of the 40 households surveyed in Dire Dawa by Feseha and Yoseph (1996), 28 (70%) owned a single donkey, six (15%) owned two, four (10%) had three and two (5%) had five. Whereas the picture in East Oromia, which is located in the Highlands, showed that 30 (75%) owned one, six (15%) owned two and four (10%) owned three donkeys.

The Gonder sample: Four hundred households around the city of Gonder were included in the study of Feseha and Aweke (1995). In terms of standard of living, 83% of the households were found to be in the categories below average and poor. They owned a single donkey and one or two ruminants. The donkey ownership profile amongst the above average (17%) was between 2 and 4 donkeys per family.

The Rift Valley sample: A study revealed that donkeys constitute about 90% of the equine population. Seventy percent of the smallholders in the area own one or more donkeys making them the third most kept livestock species after cattle and goats.

Sex and age structure

In the Shewa sample, of the 277 donkeys, 76 (27%) were males and 201 (73%) were females. In the Dire Dawa sample, of the 30 donkeys differentiated into their respective

Table 1: Donkey populations and densities in the different zones of Ethiopia

<i>Zone</i>	<i>Donkey population (1000s)</i>	<i>Highland area (1000 km²)</i>	<i>Density of donkeys (No./km²)</i>
Arsi	363	24.6	14.7
Bale	125	34.5	3.6
Gamo Gofa	12	20.9	0.6
Gojam	394	58.1	6.8
Gonder	491	54.9	9.0
Harerghe	226	59.8	3.8
Ilubabor	16	15.3	1.0
Kefa	43	32.6	1.3
Shewa	959	72.9	13.2
Sidamo	125	54.1	2.3
Tigray	468	19.0	24.6
Welega	159	44.2	3.5
Welo	390	38.5	10.1
Total	3771		

Source: Admassie et al, 1993

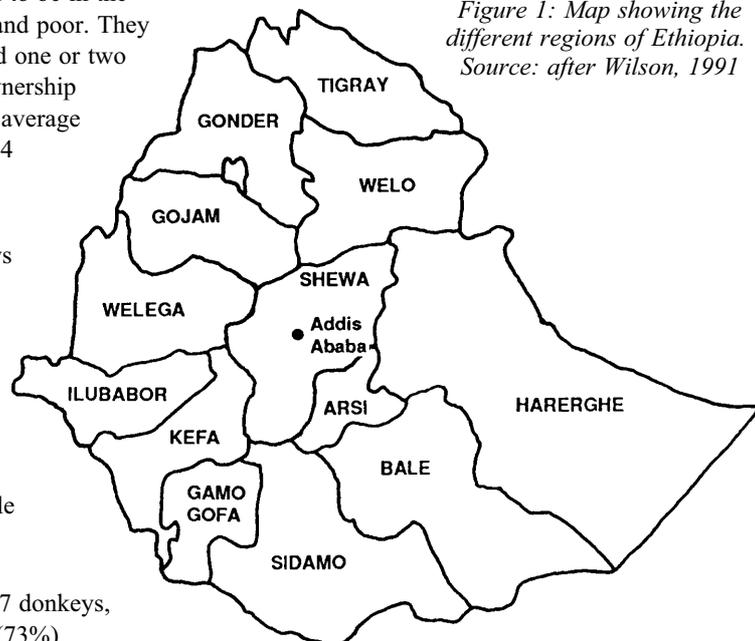


Figure 1: Map showing the different regions of Ethiopia. Source: after Wilson, 1991

Note: alternative English spellings exist for many Ethiopian names. For consistency the spellings of this map are also used in the text

sexes, six were males and 24 were females. In East Oromia 28 were males and two were females.

Biology, nutrition and uses

Breeding and growth

Various observers have asserted that donkeys breed all the year round. High foaling periods registered in the Debre Brehan area were in the months of March, April, June, July and August (Wilson, 1991). In Gonder it was noted that breeding as well as parturition periods coincide in most of the cases with the onset of the rainy season (May/June). According to Mohammed and Teketel (1991) most foalings in Awassa occur in February and March.

Donkeys reach mature weight at between two and three years of age. The average weight of donkeys (both males and females), transporting goods into Debre Brehan, was approximately 105 kg (Wilson, 1991). Breeding age for female donkeys is 4–5 years in Awassa, 3–4 years in Dire Dawa (Feseha and Yoseph, 1996), and five years in Gonder (Feseha and Aweke, 1995). For males it is four years in Dire Dawa, and four years in Gondar (Feseha and Aweke, 1995). Weaning age has also been monitored in some areas. It is 10 months in Wolisso, between 8 and 10 months in Gonder and 10–12 months in Dire Dawa (Feseha and Aweke, 1995).

Nutrition

Numerous observations confirm that in almost all cases donkeys are left to forage for themselves

when not working. For most of the time they generally maintain good body condition with the exception of the months of March and April (Feseha and Aweke, 1995). In a study conducted in Gonder, 60 donkeys were examined in March and another 60 in April in order to determine their body condition. In the findings obtained, 29 and 32 respectively were placed in the poor body condition category. In the area, donkey husbandry is characterised by inputs which range from very limited to nil. Feeding of donkeys is entirely based on grazing on communally owned grasslands as well as roadsides that are overgrazed and where forage growth is poor. Donkeys, whose feeding is often neglected, survive due to their tremendous capacity to utilise foods of low quality.

Uses of donkeys

Donkeys are important for transport relating to small scale farming, including the transport of:

- grains from fields to farmsteads
- grains to local markets or pick-up-points
- agricultural inputs from distribution centres to farmsteads
- fuel wood, animal dung and charcoal for the rural and urban sectors
- cash crops such as khat, potatoes, onions and other vegetables from fields to local markets or pick-up points
- animal food such as hay, teff and wheat straw.

Table 2: Number and percentage distribution of horses, donkeys, mules and camels used for draft power by type and region for private holdings. Numbers in thousands.

	<i>Horses</i>		<i>Donkeys</i>		<i>Mules</i>		<i>Camels</i>	
	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>
Tigray	0	0	138	19	4	18	4	66
Afar	0	0	<1	0	0	0	0	0
Amhara	114	49	252	34	10	40	1	17
Oromia	97	41	324	44	4	17	1	17
Benshangule	0	0	<1	<1	0	0	0	0
SEPAR	22	10	12	2	6	24	0	0
Gambela	0	0	1	<1	0	0	0	0
Addis Ababa	0	0	4	<1	<1	1	0	0
DireDawa	0	0	5	1	0	0	0	0
All regions	233	100	736	100	24	100	6	100

Source: Central Statistics Office, 1995

Table 3: Activity patterns and load size for donkeys in various sites in Ethiopia

<i>Site</i>	<i>Frequency of use per week</i>	<i>Distance covered per use (km)</i>	<i>Duration per use (hours)</i>	<i>Load (kg)</i>
Wolliso	–	20–30	4–6	70–100
Gonder	3–4	15	4–5	60
East Oromia	7	–	3–4	–
Dire Dawa	4–5	10–20	4–5	60–100

Source: Feseha and Yoseph, 1996

Donkeys have other economic and social roles including the transport of:

- water for the rural as well as the urban sector
- earthenware such as pots and plates
- building materials such as stones, sand, tree poles and teff straw
- relief supplies from distribution centres to farmsteads
- war hardware and ammunition
- sick, aged, and disabled persons, and bodies for burial.

Donkeys may also be used in farming systems for:

- threshing cereal crops and beans by trampling
- weeding in maize fields
- plowing of land in association with oxen.

Loads and activity patterns

Most donkeys are used as pack animals. Along the Koka-Awassa route a considerable number are seen pulling carts. Table 3 shows the results of studies of load and activity patterns of donkeys at four sites. A study by ILRI in 1988 as cited by Crossley (1991) has revealed that donkeys are utilised an average of 39 hours/year (h/y) in the Debre Brehan area for transport of crops from field to farmstead, plus 46 h/y for threshing (with other equids), plus 40 h/y for hay transport giving a total of 125 h/y. Transport to market occupies 308 h, bringing the grand total to 433 h/y (average

8.3 h/week). According to Crossley (1991) these figures are undoubtedly above the national average, but still represent a relatively low utilisation.

Another study focusing on counting the number of persons and donkeys entering the city of Addis Ababa to sell produce such as firewood, leaves, hay and dung was conducted by Boswall in 1984. Donkeys entering Addis Ababa from the suburbs carry seven types of load, these are: eucalyptus, hay, straw, dung, charcoal, teff and maize. The results obtained are shown in Table 4.

On the Gojam and Dessie Roads significantly more donkeys carry goods than do people, while on the Ambo Road significantly more people carry goods than donkeys. The most likely explanation for this is that donkeys can carry goods longer than humans and therefore further. So if there was a greater use of donkeys it would suggest that more of the goods were coming from a greater distance.

In an observational study undertaken by Wilson (1991) of the 1130 pack loads being transported by donkeys along the south-eastern route out of Addis Ababa, 49% were sacks of grains, 19% were firewood, 8% were water and 4% were charcoal. In the Dire Dawa zone, charcoal, fuelwood and water were the most frequently carried commodities while grains, khat leaves,

Table 4: Comparison of numbers of human and donkeys loads in June 1984 on the main roads leading into Addis Ababa

<i>Period</i>	<i>Gojam Road</i>			<i>Dessie Road</i>			<i>Ambo Road</i>		
	<i>Mon</i>	<i>Wed</i>	<i>Fri</i>	<i>Mon</i>	<i>Wed</i>	<i>Fri</i>	<i>Mon</i>	<i>Wed</i>	<i>Fri</i>
Donkey	326	1026	1112	304	870	1183	102	339	441
Human	200	490	452	207	202	294	266	434	561

Source: Boswall, 1984

potatoes and onions dominated the loads in East Oromia (Feseha and Yoseph, 1996).

Income generation

In countries such as Mexico, India and Ethiopia, it is difficult for most farmers to afford horses and mules. In fact in the latter two countries some low income people are wholly dependent on donkeys for sustenance.

In Tigray a 160 km journey is travelled by heavily laden caravans, which include donkeys, from the salt plain to the main town in four days (see Photo 1). Donkeys transport 49 kg of salt per animal per trip (Wilson, 1991). Excise duty of Birr 0.75 was levied on donkeys and over three Ethiopian fiscal years, from 1971 to 1974, revenue from this source averaged Birr 60,680 (US\$ 1 = Birr 6.3). Mules contributed 40%, equivalent to Birr 172,093. Since there would be no mules without donkeys, the real contribution of donkeys should be considered to be in excess of 50% (Wilson, 1991).

As for the contribution of donkeys to the household economy, Wilson (1991) reported a survey of 58 village households situated about 15 km from Mekele in Tigray. Seventeen of the households earned their entire living from cutting and transporting wood to Mekele, carrying an average of nine donkey loads per week per household. The other 41 households usually transported one load per week. In addition, village consumption amounted to about 3000 kg or 2.4 m³ per week. The contribution of donkeys to the village in terms of fuel transport alone was 685.6 t or 548.5 m³, equivalent to just over 13,000 journeys. The gross revenue from commercial exploitation was Birr 30,254/year. This gave an annual earning of Birr 1404 per family for households which were commercial traders in firewood and Birr 156 for those who traded only occasionally (Wilson, 1991).

In Ejersa, which is located between Modjo and Koka, sand is transported using four containers of 20 litres capacity fitted on the back of a donkey.



Photo 1: Unloading rock salt from a donkey in Mekele, Tigray, Ethiopia

Each day a donkey makes 80 shuttles from the river basin to the roadside transporting a volume of sand amounting to 4 m³ and costing Birr 90 (Friew Kelemu, person observation). In the Rift Valley donkey drawn carts are rented out at Birr 10 per day, thus helping farmers diversify their incomes.

With the production of more marketable surpluses the role of donkeys in the transport of farm produce, crop residues, and agricultural inputs is going to be even greater. The intensification of the use of donkeys as work animals needs to be promoted with much more emphasis because:

- they require little attention regarding fodder and care
- they are easy to train and can be handled by children
- their market price makes them accessible to a large number of farmers.

Constraints to improved donkey use

Surveys to determine the constraints faced by farmers in the utilisation and management of donkeys have been undertaken and the following problems identified.

Photo: Paul Starkey
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Health Problems

Even though donkeys have often been described as sturdy animals, they succumb to a variety of diseases and a number of other conditions. Most important are parasites of the gastrointestinal tract such as the large and small strongyles, *Trichostrongylus axei* and *Parascaris equorum*. These worms have a debilitating effect in general. Helminths such as *Strongylus vulgaris*, the predominant large strongyle, often cause severe damage in the form of a thrombi-embolic process of the anterior mesenteric artery and its branches. In a study conducted by Feseha, Mohammed and Yilma in 1991 quantitative and qualitative faecal examinations were done on 1075 samples from Debre Zeit and 810 from Menagesha. Only two donkeys from Debre Zeit were found to be negative for parasites. All the others were shown to harbour ova and/or larvae of large and small strongyles, ascarids, pinworms, bots, stomach worms, lung-worms, tapeworms and flukes. Out of 810 donkeys examined at Menagesha, 465 (57%) had faeces with eggs-per-gram (epg) values of over 2500. A further 195 had 100–2500 epg indicating massive infestations are common (Feseha et al, 1991).

Cases of saddle sores (back sores) are widespread. In one study, of 2020 donkeys examined, 680 (34%) were found to have saddle sores (Yilma, Feseha, Svendsen and Mohammed, 1991). The sores were caused by the total lack of any type of saddle or protection for the donkeys' backs. Other wounds that are frequently seen include abrasions due to friction with improper harness and harnessing materials such as nylon ropes and strips of car tyres. Lacerated wounds inflicted by hyena bites, barbed wire or any other sharp object are also encountered. Sarcoids, a common skin tumour in equids, has been detected in 33 (3%) of 1090 working donkeys at Debre Zeit (Yilma et al, 1991).

Nutrition

Donkeys are not provided with any type of concentrate food. In most of the cases they are left to scavenge. It is anticipated that with systematic and better use of donkeys coupled with the understanding of the energy requirements of donkeys for work, there will be progress towards improved care and feeding programmes. This will be particularly important if donkeys are to be used for operations other than pack, such as carting (entailing a possible 10 fold increase in the load factor) and/or the use of capstans for seed

decorticating, oil milling, lifting water, threshing or other operations.

Policy issues

Even though the donkey makes a major contribution to transport in Ethiopia there is no government policy on its use and no attention is given to its promotion. One reason for this is the fact that the donkey provides many services with no inputs or costs to its owner. In comparison with farm ruminants one of its major limitations, albeit not of its own doing, is the fact is that its meat is not eaten. Thus at the end of its life it is thrown away or left to die.

In promoting its use and better care, areas that require attention and research are many. For instance, there is little use of donkeys for pulling carts, cultivation and weeding operations. Experiences from other countries in Africa have shown the usefulness of donkeys in land preparation, seeding and weeding activities, particularly in dry areas with light sandy soil, which implies the need for specialised donkey-drawn implements. In addition there is a need to launch an extension programme regarding the proper breeding, nutrition, housing and utilisation of donkeys.

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