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Observations on the Phenotyphic Characteristics and Management of Donkey in Sokoto, Northwestern Nigeria

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Abstract: The donkey plays an important role in the socio-economic life of the rural people in the whole Africa and in northern Nigeria in particular, where it is used by the rural population for the purpose of transporting goods and agricultural products as well as humans during movements from one place to another. The study was conducted to indentify donkeys phenotypically in north western city of Sokoto as well as to look at the way and manner donkeys are managed in the area. A total of 267 donkeys were sampled comprising of 149 males (55.8%) and 118(44.2%) females. Ten breeds were ideintifed each its varying colour coat with the Eho breed being the most predominant (42.69%) followed by Auraki 72 (26.9%) and then Akaza breed which was 24 (8.9%). Significant differences ($p<0.05$) were observed in some of the body parameters examined – height at withers (HW), chest circumference (CC) and body weight (BW) between the breed. It was concluded that in spite of the important role of the donkey in the study area, owners do not seem to cater for their welfare and there is need for awareness to these people to take more care of their animals.
Keywords: Donkeys, phenotypic, characteristics, management, Sokoto, Nigeria.

INTRODUCTION

The domestic donkey (*Equss asinus*) is known to be the descendent of the wild ass, *Equss asinus africanus*, which is indigenous to the African continent and is usually divided into a chain of races subspecies spreading from the Atlas mountains eastwards to Nubia, down to the Red Sea and probably as far as the border of present- day northern Kenya [1-3].

Donkeys are part of the everyday sight throughout most of the arid and semi-arid northern part of Nigeria where they form an important part of the transportation system [4, 5]. Nigeria is one of the countries with a relatively large (800,000) donkey population [6]. However, cross-border movements by the pastoral Fulani from Niger, Chad, Burkina Faso, Mali and Cameroun have all tended to increase the number of donkeys in Nigeria [3]. The primary function of the donkey in Nigeria as in other parts of the world where they are found has been traditionally as pack animals [4] and this despite the introduction of motorized means of transport such as cars, buses, lorries, coaches and other means of moving goods around from one place to another [5]. In areas with poor road networks particularly the rural areas, donkeys are used to transport farm produce to markets, farm inputs like fertilizers, manure and fetching of water over long distances. Donkeys are mostly reared and managed extensively because they are hardy, docile, intelligent and easily trained animals that are used for farm operations in rural farms and communities for domestic work all over the world especially in the tropics [5]. The low cost of acquiring donkeys, their capacity to work, hardiness, docile nature, as well as resistance to diseases and therefore survivability, makes them attractive to many rural households in the semi-arid regions of the country [4]. In addition, donkeys are not very demanding in terms of feed and their water requirement.

In Nigeria, donkeys are associated with areas of Islamic predominance, are more scattered than other livestock like cattle and are rarely kept in herds. Due to the Islamic culture, they are not used for meat but they are increasingly becoming important for meat source especially in the south eastern part of the country and about 16,000 donkeys are transported annually from the northern states to the southeastern states for this purpose [7, 3]. More and more donkeys are therefore being transported to the south from the north resulting in growing concern about their population in the north which is dwindling. In Sokoto state, distribution of donkey is such that of the 247,989 estimated donkeys in

the state, 2,760 are owned by the pastoralists, while 244,197 are found within the villages with 1,032 for urban centres [8].

Few studies are available on the characteristics and the management of donkeys in the study area. This study was therefore prompted due to the paucity of information in this regards in Sokoto state.

MATERIALS AND METHODS

The study was conducted in Sokoto metropolis and environs, the capital of Sokoto state in northwestern Nigeria. The state lies geographically along longitude 11^o 30 to 13^o East and latitudes 4^o to 6 North covering an area of 26,648.48 sq kilometers. The climate of the state is semi-arid with two major distinct seasons – namely wet and dry seasons with the wet season starting late in May and ending in September. The dry season starts from October with the cool, dry, dust-laden harmattan wind lasting till February. Between the months of March to May, the weather is hot and dry with temperatures reaching a peak 43^o C. The vegetation falls within the sahelian zone which is suitable for the cultivation of grains, cash crops and animal husbandry. The state is a major livestock producer with an estimated cattle population of 2.4 million heads, 2.9 million goats and 1,988 million sheep [9]. Donkey population is estimated to be in the region 247,989. The major occupation of the vast majority of the population in the state is arable farming as well as livestock rearing.

For the purpose of this study, four donkey markets were purposely selected for the study and they included Sokoto Kara Market, Achida Kara Market, Tangaza Kara Market and Ilela International Kara Market.

Tangaza Kara- Market

This is located some 50 km north from Sokoto town. The market day is Monday of every week. An estimated 150 donkeys are usually brought to the market every market day for sale.

Ilela International Kara- Market

The market is located in Ilela which is a border town nearing Niger Republic. The market is one of the famous animal markets in the West African sub region. Over 400 donkeys are brought to the market during the weekly market days which is Sunday. The market is located some 73km from Sokoto.

Achida Kara- Market

Is in Wurno LGA and is also a popular animal market which is not far from the state capital being only 23km in the eastern part of Sokoto. The market day is Wednesday and about 150 donkeys are usually brought to the market for sale on such days.

Sokoto Kara- Market

This is the central cattle market and activities occur every day and donkeys in the region of 100 are always available in the market for sale.

DATA COLLECTION

A total of Two hundred and sixty seven donkeys were used in the study. All donkeys were randomly selected using simple random sampling from the four animal markets identified and visited in the state. Questionnaire was used to obtain information from the donkey owners as it relates to management practices, health, source and breeding. The physical characteristics including color of the coat were noted from each donkey. Other physical parameters or biometric indices included body length, chest circumference, height were taken and recorded for donkeys sampled. Body weight was calculated using linear measurement. Data generated was analyzed using logistic regression model and ANOVA.

RESULTS

A total of ten [10] breeds of donkeys were identified each with its varying coat color which is presented in Table 1. More male donkeys were presented 149 (55.8%) in the various markets for sale compared to female donkeys 118 (44.2%) as seen in Table 2. Analysis of the various breeds revealed that the Eho breed was the most predominant 114 (42.69%) followed by Auraki 72 (26.9%). The third most predominant breed was Akaza 24 (8.9%) with the Asasa and Tattabari being the least numbering 2 (0.74%) Table 3. Significant differences ($p<0.05$) were observed between the various breeds for some of the body parameters examined – height at withers (HW), chest circumference (CC) and body weight (BW). However, no significant difference was observed among the breeds in body length BL ($p>0.05$) Tables 4.

Table-1: **Donkey breeds and colour description in Sokoto**

Breed name	Colour mark
Auraki	Light to medium with white muzzle, legs, ventral abdomen, blacks dorsal & shoulder stripes.
Azaka	Dun with pale cream on most parts of the body with black or brown dorsal % shoulder stripes.
Asasa	Mixture of white and dark reddish brown.
Bakin Jaki	Dark brown to black with white muzzle, median part of leg, ventral aspect of abdomen as well as black dorsal and shoulder stripes.
Duna	Completely dark brown to black, sometimes with few white patches on the fore head or back.
Eho	Light to dark ash colour white muzzle, legs and ventral abdomen as well as black dorsal and shoulder stripes.
Fari	Grey to white colour.
Goho	Completely ash colour with black muzzle and black dorsal and shoulder stripes.
Jangora	Reddish brown with white muzzle, legs, ventral abdomen and black dorsal and shoulder stripes.
Tattabari	Same colour with auraki or eho but with white patches on the body and black dorsal and shoulder stripes.

Table-2: **Sex distribution of donkeys in Sokoto and their MEAN, SD, SEM and RANGE**

	Markets								
Gender	**Tangaza**	**Sokoto**	**Achida**	**Illela**	**N**	*Mean*	*Stand dev.*	*Std Error of mean*	*Range*
Male	36	14	27	72	149	37.25	24.86	12.43	58
Female	44	11	33	30	118	29.50	13.72	6.86	33
Total	**80**	**25**	**60**	**102**	**267**				

α = 0.05

Table-3: **Breed distribution of donkeys in Sokoto**

	Breeds														
Gender	**Eho**	**Duna**	**Bakinjaki**	**Tattabari**	**Gohoo**	**Fari**	**Akaza**	**Auraki**	**Jangora**	**Asasa**	*N*	*Mean*	*Strd Dev*	*Mean*	*Range*
Male	80	5	4	1	2	3	9	41	3	1	149	14.90	25.81	8.17	79
Female	34	10	9	1	6	5	15	31	6	1	118	11.80	1169	3.70	33
Total	**114**	**15**	**13**	**2**	**8**	**8**	**24**	**72**	**9**	**2**	**267**				

α=0.05

Table-4: **Anova results of body parameters in donkeys**

Body Parameter	**Df**	**F**	**P-value**	**Remarks**
HW	9.257	3.229	0.001	***
BL	9.257	0.810	0.607	NS
CC	9.257	3.217	0.001	***
BW	9.257	3.805	0.001	***

α=0.05
***= significant at p<0.001
NSnotsignificant

DISCUSSION

Donkeys are usually recognized by their colour coat and a particular colour that may be appealing to some owners may not be to others. In the present study, ten breeds of donkeys were identified. It may appear that some breeds are more popular to the buyers and traders than others and are therefore found more in a particular market than others. The number of breeds identified in the present study differs from that reported by [5] who reported that six breeds were identified in their study. In other studies reported by [7] and [10] however, only five breeds were reported to be identified. Similarly, according to [4] indicated that only four breeds were available in Nigeria. The seemingly wide variation between the present study and others might be because of the different understanding of the traders and owners regarding the naming of the various breeds. Alternatively, it could also be attributed to the possibility of a particular breed being given different name by various persons involved in the donkey trade and rearing. The dividing line between Baki and Duna may not usually be very clear cut and the two may be referring to the same black breed. This possibility is because of the existence of huge trans-border movement of donkeys and the naming and trading of donkeys with Niger republic.

The light to dark ash coloured Eho breed, with its white muzzle, legs and ventral abdomen as well as black dorsal and shoulder stripes was the most predominant breed in the present study followed by Auraki breed. This is in agreement with finding of [5]. The preponderance of these two breeds may be because of the ease with which they can be handled and restrained as well as the possibility of management practices peculiar to each household. Alternatively, it could be simply due to their aesthetic appeal and popularity to the people in the area. The apparently low numbers of Asasa and Akaza breeds has been reported to be due to their being exotic breeds in the study area while on the other hand, the low numbers of Goho and Tattabari has been attributed to the fact that these breeds are simply rare breeds [7, 10]. Also, only low numbers of Duna and Bakinjaki breeds were obtained in the present study. These are the completely black coloured breeds and their low numbers may not be unconnected to relative their unpopularity among donkeys' owners and traders [5].

Some breeds like Asasa and Akaza have been reported to be exotic while the Tattabari and Goho breeds are not easily found in the study area [7]. This may explain the relative low numbers of these in the present study.

The preponderance of male donkeys in the various markets in the present study may be attributed to their being hardier and therefore able to withstand more strenuous work than the females or simply because of preference by traders and buyers. According to [12], however, male donkeys are of more interest to producers for the purpose of using them principally for breeding and for other reasons that the owners may see as important. More so, male donkey breeding can be a

profitable business in most areas of the sahel region. This ensures continuous replacement of the donkey stock over time. Of the body parameters examined in the present study and in all the donkeys sampled, the body length was almost equal to heights at withers. Similar results have been reported by [13].

In terms of management of the donkey in all the areas sampled, these animals are managed without any special attention being given to their health, feeding and housing. In terms of feeding, especially in the dry season, these donkeys are released in the field or farms to scavenge crop residues and other house scraps in the villages. This practice has also been observed and is also a common practice similarly in the dry areas of Kano, also in northern Nigeria [3]. This practice has been attributed to the fact that donkeys seldom need any additional feed as free – range animals [14]. Furthermore, it has also been reported that donkeys in Nigeria are reared or maintained with little or simply no additional supplementation in the form of either straw, grains or other household wastes [14, 15]. Mineral supplementation of the donkey feed by way of giving *kanwa* is done only by some few farmers in all the study areas.

None of the donkey owners in any of the markets visited indicated providing any form of housing for his donkey, instead they are only herded together in the field. According to some authors [14, 16], donkeys are not generally housed in any proper houses although some few donkey owners who are economically sound do provide some of fenced surrounding using thatch materials. The hardy nature of the donkey and its ability to withstand harsh environmental conditions coupled with the lack of finance by the owners may be asserted as being some of the reasons why these are not provided with any meaningful housing.

Despite the prominent role donkeys play in the agricultural system, they have serious poor management and in particular, lack of any health care [3, 16]. Although donkeys are known to suffer from a number of health issues [16, 17], none of the donkey owners indicated having to deal with any serious disease problem in their animals. Wounds on the body resulting from use of farm or carriage implements, or cruelty or fighting between the donkeys are some of the common health problems reported by the owners. It might seem likely that most of the owners are either unaware of the need to give proper attention to the health of their donkeys or it is due outright negligence or cruelty that they don't dim it necessary to cater for the health of their donkeys.

In conclusion, it is pertinent to say that the donkey continue to play a great role in the socio-economic life of the rural people in the study area especially in the aspects of provision of farm power, traction and transport of both people, their families, farm produce and other household goods across distant places. It is also suggested that more in depth study on the phenotypic characteristics of the donkey be undertaken or be given serious attention in the study area. This will help to fully define the true phenotypic characteristics of these animals thus, helping to do away with the mix- up of the names of the donkey in the study area and elsewhere in Nigeria.

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