

## Investigation into the common diseases of donkeys (*Equus asinus*) in Botswana

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### Abstract

The major diseases of donkeys in Botswana, which were diagnosed by the National Veterinary Laboratory (NVL) between January 1994 and December 1998 were rabies (31%), babesiosis (18%), dourin (13%) and strongylosis (13%). Both *Babesia caballi* and *B. equi* have been diagnosed by NVL. Vaccinations of dogs against rabies, tick control and complement fixation test certification of imported equines against dourine would control rabies, babesiosis and dourine respectively. Donkeys may have a higher tolerance to *Strongyles* sp and therefore appropriate reference values should be investigated and used by the NVL. The species of strongyles affecting donkeys in Botswana are not known and need to be investigated.

### Introduction

Donkeys (*Equus asinus*) are an important means of transport in rural Botswana. They are used mainly for carrying loads, such as firewood and water drums and are also commonly used for riding, mainly by children and women. Despite their importance, several constraints hinder their use in Botswana. These include nutrition, a free-range management system, lack of suitable donkey implements, farmer attitudes, wandering, diseases and poor health (Aganga and Maphorisa, 1994).

Knowledge of diseases of donkeys is scanty, and is often extrapolated from knowledge of diseases of horses (Pearson *et. al.*, 1997). Although the pathogens that equids can have might be similar, the behaviour of diseases is occasionally different. For instance, donkeys are less susceptible to African Horse Sickness than are horses, (Coetzer and Erasmus, 1994), but the two are equally susceptible to *Trypanosoma brucei* (Connor, 1994). Their susceptibility to disease may be different from horses, and may be close to that of zebras.

Control of equine diseases by quarantine, import/export embargos, and movement restrictions can be easily implemented in horses, facilitated by the intensive management practices in horse racing. Control in the communal donkeys is more difficult.

Apart from investigations of the incidence of dourine (*Trypanosoma equiperdum*) by Masupu and Majok

(1998), little work on diseases of donkeys in Botswana has been undertaken. This paper reports some of the common diseases of donkeys in Botswana.

### Methodology

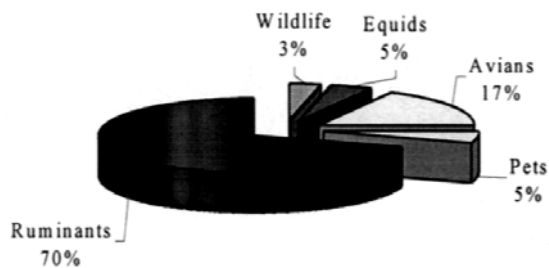
Secondary data from the National Veterinary Laboratory (NVL) was used. Records of cases of donkeys attended to by NVL between 1994 and 1998 were reviewed and analysed. A summary of the cases received in the five-year period was recorded. The frequencies of the different causes of diseases in the five-year period were compared.

### Results

Domesticated ruminants (cattle, sheep and goats) and equids (horses and donkeys) accounted for 70.1% and 4.2% of the cases received by the NVL, respectively, between January 1994 and December 1997.

The commonest diseases of the donkey were Rabies (31%), Babesiosis (18%), Dourine (13%), and Strongylosis (13%). Other viral infections of equids were diagnosed. These included Equine Influenza Virus (5%), Equine Viral Arteritis (one case), and African Horse Sickness (one case). Single cases of fungi, anaemia, peritonitis and strangles were also recorded.

**Figure 1: Species received by the National Veterinary Laboratory from 1994 to 1997**



**Table 1: Species samples received by the National Veterinary Laboratory from January 1994 to December 1997**

	1994	1995	1996	1997	Total
Bovine	653	887	575	1319	<b>3434</b>
Caprine	532 <sup>2</sup>	595 <sup>2</sup>	659	952	<b>2738</b>
Pets	114	19	103	116	<b>452</b>
Avian	454	356	456	342	<b>1608</b>
Equine	102	96	107	115	<b>420</b>
Ovine	n/a <sup>1</sup>	n/a <sup>1</sup>	36	226	<b>362</b>
Wildlife	64	64	62	112	<b>302</b>
<b>Total</b>	<b>1919</b>	<b>2117</b>	<b>2098</b>	<b>3182</b>	<b>9316</b>

<sup>1</sup> n/a : Ovine figures not available

<sup>2</sup>Caprine and ovine grouped together

**Table 2: Summary of diseases of *Equus asinus* processed by the National Veterinary Laboratory (1994-1998)**

Disease agent	1994	1995	1996	1997	1998	Total
Babesiosis	0	1	4	1	1	<b>7</b>
Rabies	0	5	4	3	0	<b>12</b>
Dourine	0		3	1	1	<b>5</b>
African Horse Sickness	0	0	0	0	1	<b>1</b>
Equine Influenza Virus	0	0	2	0	0	<b>2</b>
Equine Viral Arteritis	0	0	0	0	1	<b>1</b>
Strongylosis	0	0	3	1	1	<b>5</b>
Strangles	0	0	0	1		<b>1</b>
Peritonitis	0	0	0	1	0	<b>1</b>
Other respiratory tract infections	0	0	0	2	0	<b>2</b>
Anaemia	0	0	0		0	<b>1</b>
Fungi	1	0	0	0	0	<b>1</b>
<b>Total</b>	<b>1</b>	<b>6</b>	<b>16</b>	<b>11</b>	<b>5</b>	<b>39</b>

## Discussion

Ruminants accounted for 70% of the cases attended by the NVL, with fewer cases from equids (5%), pets (5%) and wildlife (3%). The low volume of equine cases could be due to several factors: the economic value attached to ruminants by both farmers and government, public awareness of equine diseases and relative populations of equids and ruminants. Regardless of the reasons, the low volume of equine cases may be an indicator of the low level of health attention they receive, rather than the number of diseases they have.

At NVL, intestinal helminthiasis is routinely diagnosed by a faecal egg count. If faecal egg cultures were done it would be possible to identify the strongyles from the morphology of the larvae. Hence egg counts are combined together as strongyles. Nonetheless, in Zimbabwe, small strongyle populations of the genera *Cylicostephanus sp.*, *Cyathostomum sp.*, *Cylicocyclus sp.*, *Cyathostomum sp.*, and *Triodontophorus sp.* were the predominant species found in donkey (Esker and Pandey, 1989). These are known to be less pathogenic than the larger *Strongyles sp.* (Pandey and Esker, 1989).

Normal faecal egg counts are usually extrapolated from horse values by the NVL. Equids are said to have mild, moderate and severe nematode infestation if their faecal egg counts are 500, 800 to 1000 and 1500 to 2000 eggs per gram respectively. It has been suggested that donkeys and zebras could harbour higher egg counts than horses (R. Benges, pers comm, 1995). This phenomenon needs further investigation.

In Moretele 1 district, South Africa, egg counts of donkeys kept under four different management systems were investigated. Donkeys kept in small yards at all times had higher egg counts than those kept in larger areas, allowed to roam freely and only kept in enclosures prior to working. (Wells *et al.*, 1998). The latter management system is very similar to that found in Botswana where donkeys are traditionally not kept in roofed structures, and often spending nights in the range, only occasionally brought into wooden enclosures (Aganga and Maphorisa, 1994). This management system may indirectly reduce the worm burden in communal donkeys in Botswana.

The apparent incidence of dourine (*Trypanosoma equiperdum*) in the Kgalagadi district has been

documented (Masupu and Majok, 1998). The apparent prevalence of equine dourine in the Kgalagadi District was 20% per extension area, and 10% per district. In endemic areas other equids like zebras are reservoirs of *Trypanosoma equiperdum*. The usual control measures of import and export certification of horses become difficult to apply especially where the disease is endemic within communal areas. Nonetheless the only control measures are on certification of imported horses as free from dourine using the complement fixation test. Masupu and Majok (1998) have suggested enforcement of a nationwide testing of the equine populations for freedom of dourine. This might be difficult to use as a means of eradication of dourine, considering the large dourine reservoirs in the domesticated equids and the sylvatic populations.

Both *B. caballi* and *B. equi* have been diagnosed by NVL. Donkeys are known to be equally as susceptible as horses to *B. equi* and *B. caballi*. *B. caballi* is less pathogenic than *B. equi*. Babesiosis accounted for 18% of the cases confirmed by NVL. Therefore tick control should be carried out for equids. Currently the only tick control practised is for ruminants.

Rabies was the main disease diagnosed in donkeys. It accounted for 31% of the cases. It has been postulated that rabies is a problem of domesticated dogs, and its occurrence in other domesticated species indicates the level of immunisation of the domesticated dogs (A. Adom, per. com., 1994). Vaccination programmes aimed at higher coverage of domesticated dogs and cats would be essential in controlling rabies in domesticated animals.

## Conclusion

The major diseases of donkeys in Botswana, which were diagnosed by the NVL between January 1994 and December 1998 were rabies (31%), babesiosis (18%), dourine (13%) and strongylosis (13%). Both *Babesia caballi* and *B. equi* have been diagnosed by NVL. Vaccinations of dogs against rabies, tick control and complement fixation test (CFT) certification of imported equines for dourine would control rabies, babesiosis and dourine respectively. Donkeys may have a higher tolerance to *Strongyles sp.* and therefore appropriate reference values should be investigated and used by the NV. The species of strongyles affecting donkeys in Botswana are not known and need to be investigated.

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