SOME PARASITES OF FERAL WESTERN KOB (*Kobus Kob kob*) OF LAKE KAINJI NATIONAL PARK, NIGERIA

A.N. OKAEME, E.A. AJIBOYE & T.I.I. IBOWOYE

National Institute for Freshwater
Fisheries Research,
New Bussa, Nigeria.

(Received 13 June 1987; accepted for publication 10 August 1987)

ABSTRACT

The parasites of kob based on physical, faecal and blood examination has revealed that kob habour ticks which include *Rhipicephalus evertsi, Rhipicephalus nymph, Amblyomma variegatum*; lice, *Damalinia* sp; and fed upon by by biting fly *Culicoides*. sp. Helminth ova found were *Strongyl* sp. and *Fasciola*. sp.; protozoan. *Babesia* sp. in blood and *Eimeria* sp. in faeces.

The significance of tick as vector of parasites of domestic animals and the potential risk of kob as reservoir of the parasites these vectors transmit are discussed. The prevalence of *Strongyl* sp. and *Fasciola* sp. ova as reflection of worm burden and potential pasture contamination are highlighted.

Key Words: The Western kob, parasites, reservoir, vector, game reserve, epizootiology

INTRODUCTION

The parasites of Western Kob, *Kobus kob kob* is of interest because kob is an abundant game ungulate in the savanna region of West Africa and has a productive potential (Okaeme, 1985a) for game ranching.

In East Africa, studies of the parasites in a related species, Ugandan Kob, *Kobus kob thomasi* which is limited to helminthiasis revealed that kob is a host to the following helminth species, *Avitellina buechner, Monezia expansa, M. monardi, Taenia gonvamai, Mammonogamus loxodontis* and *Neolingutula nuttali* (Mustafa 1973). Also protozoan parasites of *Sarcocystis*. sp, and *Trypanosoma congolenses* have been reported (Baker, *et al*. 1967; Kaliner *et al*. 1971; Mwambu and Woodford, 1972). However, the reports on parasites of Western Kob which are few and mainly helminths include *Haemochus* sp, *Ascaris* sp, *Fasciola* sp., *Oesophagostomum* sp., and *Strongyle* ova (Ogunji *et al*, 1982; Crocket, 1983; Okaeme, 1985b). This paper examines the parasites of Kob based on thorough physical examination of the external body, faecal droppings, and blood of immobilized feral kobs.

MATERIALS AND METHODS

Study area and Kob distribution

Twelve Western Kobs, seven females and five males were immobilized at Borgu sector of the Kainji Lake National Park. The Borgu sector of the park has an area of 3970km^2 within the Guinea Savanna Zone. The

animals are found concentrated in the reserve along the Oli river complex and its tributaries. It is estimated that Kob has a population of over 2,500 with a mean density of 5.67 per km^2 within the park (child, 1974). During the rains Kobs are usually found in areas dominated by perennial grasses near water and during the dry season they prefer areas of new flush after burning. This is because they are essentially grazer (Wanzie 1978).

Equipment

The Kobs were immobilized using Immobilone® containing Etorphine hydrochloride, 2.45mg; Acepromazine maleate, 10mg; and Chlorocresol 0.1% in saline (Reckitt and Colman Pharm. Division, Hull, U.K.), at a dose of 8-12mg/Kob delivered by remove injection using Cap chur Parsasm (Palmer Chemical and Equipment Co., Georgian, U.S.A.). The capture gun is fitted with projectile self released syringe with needle.

Ectoparasite Collection

Following immobilization as described by Okaeme *et al* (1987) the animal is approached, examined physically including the ear and use of hand lense of any ectoparasite. Recovered ectoparasites were preserved in 50% alcohol in labelled bottles. Ectoparasites were examined later in the laboratory with X40 Nikkon dissecting microscope using keys (Hoogstrall, 1956, Soulsby 1968).

Faecal sample collection

After physical examination, faeces were recovered manually from the rectum of the animals using two to three fingers wrapped in polythene bag. On reaching and collecting the faeces, the bag is flipped over to retain the faeces. Similarly seven fresh faecal droppings were also collected from grasses near where the Kobs were captured.

The faeces were examined for oocyst, egg and trophozoites using zinc sulphate floation and direct saline wet mount (Meyer and Olsen 1975). Iodine stain was added to elaborate eggs and debris. Examination was under low power (100x) stereomicroscope and eggs identified using description and photomicrographs of Soulsby (1969b).

Blood Parasites

Blood collected from the ear veins of individual immobilized Kobs were made, for each animal, five thin and five thick blood smear, allowed to dry in the field and then carefully protected by wrapping with tissue paper. The blood slide were stained later in the laboratory with Giemsa's stain and examined under high power (x100) oil emersion stereomicroscope. Confirmatory examination was at the Veterinary Investigation Laboratory Kaduna Branch Office.

RESULTS

Ticks *Rhipiciphalus* spp adults (1-7) and nymph stages (2-6) were found to infest 25-41.7% of the kob while *Amblyomma variegatum* (2-8) adult 30% of the kobs (Table 1). One lice species *Damalinia* sp. 3-16 in number were also found on 25% of the kob. The ticks were recovered mainly from the abdomen, genitalia, leg and interdigital space and the lice in groups on shoulders and along the back. From the blood examinations one of the female kob had an erythrophagoytic stage of *Babesia* sp. 10-24 per 200 RBC.

Helminth infection based on egg per gram of faeces as revealed by faecal examination were 50-200epg for *Strongyl* ova in 36.8% of Kob; 5-300epg for *Fasciola* ova in 15.8% and 200-400 oocyst for *Eimeria*. sp.

Table 1
Parasites from feral Kob at the Kainji Lake National Park as revealed by physical, blood and faecal examination

Parasites	No. animal examined	No. infected	% infection
TRICHODECTIDAE:			
Damalinia sp.	12	3	25
IXODIDAE:			
Rhipicephalus evertsi	12	3	25
Rhipicephalus sp nmph	12	5	41.7
Amblyomma vareigatum	12	4	30
Culicoides sp.	12	3	25
PIROPLASMIDAE:			
Babesia sp.	12	1	8.3
HELMINTH:			
Strongyl ova	19	7	36.8
Fasciola	19	3	15.8
Eimeria oocyst	19	2	10.5

DISCUSSION

The recovery of *R. evertsi* and *A. variegatum* two host and three host ticks respectively is an indication that kob is a host and could be affected and or serve as reservoir for parasites to which these ticks are vectors. *Amblyomma variegatum* is a known vector of *Cowdria ruminatum* and *Theilera mutans* while *Rhipicephalus* spp. is responsible for theileriosis and *borrelia theileria* of cattle (Barnett, 1974; Bram 1983). If the vectors of these parasites of domestic animals were found on Kob, there is the risk potential that kob could serve as reservoir in the life cycle of the tick and in the sustenance of the parasites these ticks transmit where these parasites are endemic in domestic and game animal. At the Kainji National Park where cattle are frequently infiltrating (Okaeme, 1986) into the park the salvatic transmission of the vector and parasites are possible. The identification of *Babesia* sp. in kob is worthy of note. Although the vector of this parasite *Boophilus decoloratus* a one host tick was not recovered from kob, indication is that the tick does feed on kob, for this is the one possible way in which the parasite was acquired. Since babesiosis is host specific and a herd problem the prevalence rate would be much higher than revealed from this study. Blood fed *Gulicoides* sp. were also found on kob. The blood fed flies is of epidemiological significance because *Gulicoides* is a vector of blue tongue disease of sheep (Dipeolu, 1977). The blood feeding of a wild animal by *Culicoides* is an indication of host range and invariable the role kob may play as possible host of blue tongue. Also the recovery of *Damalinia* sp. probably *D. parkeri* of antelopes (Mustafa, 1973) aspect is worth of note. Thus the roles ticks, lice and culicoclides may play in the epizootiology of disease and control in kob therefore needs further investigation.

The prevalence of *Strongyle* and *Fasciola* ova in faeces of kob is a significant indicator to helminth problems, worms load and potential pasture contamination with hel-

minths eggs found in faceces. Although clinical cases of helminthiasis, such as diarrhoea was not recorded in the field, there is usually some correlation between worm burden and egg production if sufficient number of healthy and those showing clinical symptoms of the disease are sampled especially in small size ruminant as kob (Schillhorn van Veen 1986). Cultured Strongyl infected faeces of kob (Crockett 1983) yielded larvae of *Haemonchus* spp., *Trichostrongylus* spp. *Oesophagostomum* spp. These helminths species including those of fascioliasis are the important economic gastro- intestinal helminthiasis diseases of ruminants in Nigeria (Chiejina 1986). Also the isolation of these helminths from a wild animal is an indication of potential cross infection as a result of cattle infiltration into Kainji Lake National Park (Okaeme, 1985b. 1986), since pasture contamination of the park is inevitable.

The significance of the study is the identification and first record report of ectoparasites and endoparasites of kob, that may result in disease problem in the production of kob. Also the role kob may play as potential reservoir in the understanding of the epizootiology of diseases caused by the vectors and parasites in domestic and wild animal population, sharing the same habitat with kob.

ACKNOWLEDGEMENTS

We are grateful to the staff of the Diagnostic Laboratories, National Veterinary Research Institute, Kaduna and Ilorin for their assistance. We are thankful to field assistance by Messrs J. Agbontale, M. Wari and the typist R.B. Adedeji. The Director, Dr. J.S.O. Ayeni, Kainji Lake Research Institute for the financial support and permission to publish findings.

REFERENCES

BAKER, J.R. SACHS, R. and LAUFER, L. (1967) Trypanosomes of wild animals in an area north-west of Serengeti National Park, Tanzania. Z. *Tropenmed* and *Parasit 18*: 280-284.

BARNETT, S.F. (1974) Economic aspects of protozoal tick- borne diseases in livestock in parts of the world other than Britain. *Bull. Off. Int. Epiz., 81*: 183-196.

BRAM, R.A. (1983) Tick-borne livestock diseases and their vectors. The global problem. *In* Ticks and tick-borne diseases, FAO Animal Production an Health Paper, *36*: 7-11.

CHIEJINA, S.N. (1986) The epizootiology and control of parasitic gastroenteritis of domesticated ruminants in Nigeria. *Helminthological Abstract Series A 55*: 413-429

CHILD, G.S. (1974) An ecological survey of the Borgu Game Reserve *FAO, F:SF/NIR 24 Tech. Report4*: 1-30.

CROCKETT, E.C. (1963) Preliminary survey of some helminth parasites of game animals in Kainji Lake National Park: Borgu Sector. *M.Sc. thesis, University of Ibadan, Nigeria*, 149pp.

DIPEOLU, O.O. (1977) Potential vectors of Blue tongue in Nigeria. *Bull. Anim. Hlth. Prod. Afr. 25*: 17-24.

HOOGSTRAAL, H. (1956) African Ixodoidea, Vol. 1, Ticks of the Sudan. *Research Report Naval Medical U.S. Navy.*

KALIMER, G. SACHS, FAY, L.D. and SCHIEMAN, B. (1971) Presence of Sacrocystosis in East African game animals. *Tropenmedizin and Parasitologie, 22*: 156-164.

MEYER, M.O. and OLSEN, O.W. (1975) Essentials of parasitology. 2nd ed. W.M.O. Brown Comp Iowa.

MUSTAFA, H.H. (1973) Fame and Diseases in livestock and man in East Africa – A survey of relevant work. *Diploma Dissertation College of African Wildlife Management Nweka Moshi Tanzania* 126pp.

NWAMBU, P.M. and WOODFORD, M.H. (1972). Trypanosomes from game

animals of Queen Elizabeth Park Western Uganda. *Trop. Anim. Hlth. Prod. 4*: 152-155

OGUNJU, F.O.; AKINBOADE, O.A.; DIPEOLU O.O. (1982) Gastrointestinal parasites and bacterial flora of wild animals in the Borgu game reserve in Nigeria. *Int. J. Soon. (*: 62-65.

OKAEME, A.N. (1985a) Domestication of Kob in a Sub-humid Zone. *The Nigerian Field 50*: 21-28.

OKAEME, A.N. (1985b) Helminth egg count of some wild animals in the Kainji Lake National Park. *Int. J. Zoon. 12*: 152-155.

OKAEME, A.N. (1986) Ectoparasites and gastrointestinal parasites of nomadic cattle infiltrating into Kainji Lake National Park, Nigeria. *Int. J. Zoon. 13*: 40-44.

OKAEME, A.N.; AGBELUSI, E.A.; MSHELBWSALA, J.; WARI, M.; NGULGE, A.; HALIRU, M. (1968) Effects of Immobilone and Revivon in the immobilization of Western Kob (*Kobus kob kob*). *Afr. J. Ecol. 16*: 63-68.

SCHILLHORN VAN VEEN, T.W. (1986) Methods for diagnosis of parasitism in small ruminants. *Food Animal Practice, 2*: 335-344.

SOULSBY, J.L. (1968) Helminths. Arthropods and Protozoa of domesticated animals. 6th edition ELBS 78pp.