

A note on endoparasites of wild ostriches (*Struthio camelus*) in the Mokolodi Nature Reserve, Gaborone, Botswana

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ABSTRACT

A study was undertaken to investigate the prevalence of endoparasites of wild ostriches at Mokolodi Nature Reserve, Gaborone, over a 7-month period. Large numbers of strongyle eggs were recovered from faecal material in April and September and a decline in the strongyle egg counts was evident during June and July. Noteworthy was the absence of helminth eggs in faecal samples collected from chicks and coccidia oocysts from any of the ostriches.

Key words: Botswana, endoparasites, nature reserve, wild ostriches.

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Commercial ostrich farming is mostly practised in South Africa, the United States of America, Australia and Zimbabwe³ and it is now also popular in Western Europe. Although Botswana harbours a large number of wild ostriches, estimated at 60 000 by aerial surveying¹, the industry is still in the early stages of development⁵. Ostriches are prized not only for their feathers and skins but also for their meat which is low in cholesterol¹⁰. Some of the major constraints to ostrich-rearing are nutritional deficiencies, poor management and unsanitary conditions. There is little information on the health status of ostriches in the wild.

The purpose of this study was to investigate the prevalence of endoparasites and the consequences of their presence in wild ostriches.

The study was conducted in the Mokolodi Nature Reserve, 14 km southwest of Gaborone, Botswana. The reserve is about 10 000 ha in extent with a vegetation cover consisting of *Acacia* and *Combretum* trees and shrubs. The grassland referred to here as veld has several grass species, among which are species of *Eragrostis* and *Cenchrus* growing abundantly on lithosols typical of the area. The Mokolodi area receives an average annual rainfall of about 880 mm, most of which falls during

summer (October to April).

The nature reserve is home to two types of breeding ostriches namely: the Kalahari Blue and the African Black, which roam extensively over the veld in search of food. No supplementary feeding is provided.

Drinking water is readily available at a dam. Eighty adult ostriches and 18 chicks reared in the reserve were used as a source of faecal material in the present study. In total, 140 faecal samples were randomly collected from the different mounds of freshly voided faeces around the watering points at the dam. As a precaution against collecting the wrong faeces, binoculars was used to observe the birds defaecating. The faecal samples collected every two weeks were stored in capped polystyrene bottles and transported on ice (4 °C) to the laboratory to prevent hatching and sporulation of worm eggs and coccidia oocysts, respectively. The faecal samples were examined qualitatively and quantitatively for worm eggs and coccidia oocysts using a modified MacMaster slide technique¹¹. All nematodes on or within the engraved lines were counted.

Screening for cryptosporidial oocysts was carried out as described previously.¹¹

Of the 140 faecal samples collected, 101 yielded strongyle eggs. The monthly recovery of these eggs from the samples is shown in Table 1. Strongyle eggs were recovered throughout the study period from March to September with highest average number of eggs per gram (epg)

recorded in September followed by April and March. Neither helminths, helminth eggs nor coccidia oocysts were recovered from faecal samples of chicks.

As many as 78.5 % of the faecal samples ($n = 140$) yielded strongyle eggs upon analysis using conventional methods. Neither adult nematodes nor cestodes were seen in the faecal samples from the adult ostriches or chicks. However, round worms and tapeworms have been reported in ostriches in captivity^{5,7}. For instance, the proventricular nematode *Libystrongylus douglasi* (wire worm) was recovered from ostrich chicks in Australia². The same authors also reported on another nematode, *Codiostomum struthionis*, from the large intestine of adult ostriches. *Houtynia struthionis*, a tapeworm of ostriches, has been reported from the Cape Province, South Africa^{6,13}. Tapeworms are known to cause physical obstruction in the gut lumen of ostriches. However, none was reported in the present study although they have been seen in farmed ostriches by the authors (unpubl. data).

Coccidia oocysts were not recovered from any of the faecal samples from adults or chicks. There have, however, been reports of the isolation of a coccidia species, *Isospora struthionis*, from ostriches in a Russian zoo¹⁴ and an *Eimeria* species from ostriches in North America^{8,12}. Cryptosporidial infection has been associated with the prolapse of the phallus and cloaca in ostrich chicks⁹. Cryptosporidial oocysts were found in the faeces of ostriches in Canada that had been imported from Botswana⁴. None of the latter

Table 1: Monthly average strongyle egg counts (epg) in the faeces of adult ostriches at Mokolodi Nature Reserve.

Month	No. of samples	Average epg
March	15	287.5
April	15	335.0
May	13	270.0
June	14	142.5
July	16	185.0
August	12	222.5
September	16	345.0

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was seen in the faecal samples from ostriches in this study.

In conclusion, examination of faeces from the wild ostriches kept extensively in the Mokolodi Nature Reserve revealed low nematode egg counts. If ostriches were to be farmed under such a system it is unlikely that endoparasites would cause problems. The possibility remains, however, of a build-up of these parasites in the presence of moist conditions that invariably prevail at the dam.

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The encyclopedia of arthropod-transmitted infections

Edited by M W Service

2002. CABI Publishing, Wallingford, United Kingdom, 579 pp. (with black and white illustrations and diagrams). Price £99.50. ISBN 0 85199473 3.

This encyclopedia is a well-referenced and authoritative collection of 150 concise descriptions of viral, bacterial, spirochaetal, protozoal and filarial arthropod-transmitted infections of humans and animals. The editor, assisted by a panel of five advisors, has succeeded and is to be commended on assembling the contributions of 88 authors to produce this informative reference work.

The selected infections have been alphabetically arranged and occasional cross-references enable the reader, accustomed to a common name of a disease, to find an appropriate entry under the corresponding scientific nomenclature. The texts of individual infections follow a fairly uniform structure of subheadings. There are, however, sufficient variation and change of emphasis for the casual reader to peruse the contents with ongoing interest. Major disease complexes such as malaria, theileriosis and animal trypanosomiasis are presented in greater detail and illustrate the broader implications of the parasite–host relationships.

The distribution, aetiology, clinical signs and diagnosis of each infection are covered in sufficient detail to enable the reader to recognise the condition and the circumstances under which it may occur. As the title of the encyclopedia would suggest, emphasis and more detail are devoted to the vectors, mode of transmission, life cycles and the host range which in many entries are illus-

trated by clear and simple diagrams. In addition to the descriptions of specific infections, brief overviews are included on the biology of arthropod families in which recognised vectors are classified, for example, the Ceratopogonidae and Glossinidae. Where relevant, potential mechanical vectors have been included in the descriptions.

This is a practical handbook reflecting the experience of the contributors, who have included recent developments in control measures, prophylactic immunisation where available, selection of therapeutic drugs and dosage regimes. Emerging diseases are well documented, and those of international and topical interest, including West Nile virus infection, Rift Valley Fever and other haemorrhagic fevers, will be found in the text. Historically established infections are included, with updated and relevant information on control strategies and their present status.

The contents of this book and the style of the text make it acceptable to both student and graduate in the disciplines of medicine, veterinary science and microbiology, while as a ready source of reference it will appeal to parasitologists, clinical virologists and human and animal health practitioners.

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