

HELMINTHS RECOVERED FROM THE BONTBOK, *DAMALISCUS DORCAS DORCAS* (PALLAS, 1766)

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ABSTRACT

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A report is given on the helminths collected from 4 bontbok, *Damaliscus dorcas dorcas*, which died following capture at the Bontbok National Park, Swellendam, and transfer to the National Zoological Gardens, Pretoria. Seven of these helminths are new host records. Lungworms submitted to the institute for identification over the last 2 years are also reported; these were all *Dictyocaulus magna*. The various scientific and common names that have been applied to the bontbok in the past are reviewed.

INTRODUCTION

The bontbok, *Damaliscus dorcas dorcas* (Pallas, 1766), is no longer in immediate danger of extinction but its continued survival is still a matter of grave concern (Simon, 1966). Because this antelope is rare little is known of its helminth fauna. In 1960 when the Bontbok National Park was resited from Bredasdorp to Swellendam a number of these animals died (Van der Walt & Ortlepp, 1960). The helminths recovered from them are recorded by Ortlepp (1961, 1962).

This paper records the helminths recovered from bontbok during the last 2 years.

MATERIALS AND METHODS

Eight bontbok (4 ewes and 4 rams) were captured at the Bontbok National Park, Swellendam and transferred to the National Zoological Gardens, Pretoria, where they arrived on 12 September 1973. Within 3 days 2 animals had died and postmortem examination revealed capture myopathy and intestinal parasitism. Their worm burdens were such that the remaining animals were treated with laevamisole* at 15 mg/kg intramuscularly. Despite this treatment a ewe died 3 days later and the survivors were treated with thiabendazole** at 50 mg/kg *per os*. Three days later another ewe died.

Helminths were recovered from the gastro-intestinal tracts of all the animals and on the last 2 total worm collections were carried out.

In addition during the last 2 years lungworms have been submitted to the Institute for identification on 8 occasions from bontbok from the Bontbok National Park, Swellendam; the Cape Point Nature Reserve and the Wiesenhof and the Tygerberg Zoological Gardens.

Descriptions by the following authors were used to identify these helminths: Mönnig (1932a; 1933) and Travassos (1937) for *Cooperia*; Mönnig (1932b) for *Dictyocaulus*; Becklund & Walker (1967) for *Nematodirus*; Mönnig (1932b) for *Ostertagia* and Mönnig (1925) for *Trichostrongylus*.

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RESULTS

The helminths recovered from these animals as well as those recorded by Ortlepp (1961, 1962) are listed in Table 1.

TABLE 1 Helminths recovered from bontbok

<i>Paramphistomum microbothrium</i> Fischöder, 1901
† <i>Gyrocotyle rugosa</i> Diesing, 1850
* <i>Cysticercus tenuicollis</i>
<i>Cooperia hungi</i> Mönnig, 1931
* <i>Cooperia neitzi</i> Mönnig, 1930
* <i>Dictyocaulus magna</i> (Mönnig, 1932)
* <i>Haemonchus</i> sp.
<i>Impalalia tuberculata</i> Mönnig, 1923
<i>Nematodirus spathiger</i> (Railliet, 1896)
* <i>Ostertagia hamata</i> Mönnig, 1932
<i>Pneumostrongylus cornigerus</i> Ortlepp, 1962
<i>Protostrongylus capensis</i> Ortlepp, 1962
* <i>Strongyloides</i> sp.
* <i>Trichostrongylus rugatus</i> Mönnig, 1925
† This record must be treated with reserve (see text)
* New host record

A single *Cysticercus tenuicollis*, the larval stage of *Taenia hydatigena* Pallas, 1766 of the dog and other canines, was attached to the mesentery of 1 animal.

All 4 animals were parasitized by *Ostertagia hamata*, *Nematodirus spathiger* and *Trichostrongylus rugatus*. In addition a *Cooperia neitzi* male and a *Strongyloides* female were recovered from the 1st and a *Haemonchus* female from the 3rd animal.

The abomasum of the 3rd animal contained 1 300 *O. hamata* as well as the single *Haemonchus*. The small intestine contained 8 000 nematodes, *N. spathiger* and *T. rugatus*, in a ratio of 56:44. The abomasum of the animal treated with laevamisole and thiabendazole contained 2 300 *O. hamata* and the small intestine 5 600 *N. spathiger* and *T. rugatus* in a ratio of 80:20. The *N. spathiger* remaining in this animal were dead and partially digested.

No lungworms were found in these 4 bontbok. A composite faecal specimen from the 4 surviving animals, however, contained larvae of *Dictyocaulus magna* as well as larvae that resemble those of *Protostrongylus*†. Lungworms submitted to the Institute from bontbok on 8 occasions previously were all *D. magna*.

DISCUSSION

Prior to 1960, *Gyrocotyle rugosa* was the only helminth recorded from the bontbok. This record must, however, be treated with reserve, as the identity of its host is questionable for 2 reasons. Firstly, this parasite is a cestodarian and as such usually parasitizes fish and other marine animals. Secondly, according to Round (1968), Diesing described this parasite from *Antilope pygarga* in 1850 but in 1859 he stated that the record from an antelope was an error.

† Subsequently one of these animals died and both *Pneumostrongylus cornigerus* and *Protostrongylus capensis* were recovered from it

Nevertheless Round considers it correct, mainly because according to him Von Linstow also recorded it from sheep in Bechuanaland (Botswana), but Lynch (1945), in a review of the genus *Gyrocotyle*, states that the host was incorrectly identified.

Even if the record of *G. rugosa* from an antelope is accepted, the true identity of the host, *Antilope pygarga*, remains uncertain. The material Diesing described was probably collected during the first half of the 19th century when there was a great deal of confusion in both the scientific and the common names of South African antelopes (Skead, 1958).

Pallas in 1766 used the specific name *dorcas* for the bontbok but in 1767 he used *pygarga*. According to Ellerman, Morrison-Scott & Hayman (1953) the Springbuck, *Antidorcas marsupialis* (Zimmerman, 1780) was referred to by Thunberg as *Capra pygargus* in 1789 and as *Antilope pygarga* in 1811. Skead (1958) states the common name "bontbok" or "bontebok" was also used for the blesbuck, *Damaliscus dorcas phillipsi* Harper, 1939. While the term "harnessed antelope", which is also applied to the bushbuck, *Tragelaphus scriptus ornatus* Pocock, 1900, was used for the bontbok by both Lichtenstein and Sparrman. The confusion is further increased by the fact that Thunberg in 1788 referred to the bontbok as *Capra scripta*.

It is unlikely that information on the exact locality from which Diesing's material originated would be of any assistance in determining the identity of his *Antilope pygarga*. The natural distribution of the bontbok was restricted to the coastal belt from Caledon to Mossel Bay in the southwestern Cape Province while the blesbuck occurred from the eastern Cape Province through the northeastern Cape Province and the Orange Free State into southern Transvaal (Ansell, 1971). The springbuck had a wider distribution and occurred on the plains of the Karoo, Orange Free State and Transvaal into Botswana (Bechuanaland) (Skinner, personal communication, 1973). In the western Cape Province its distribution impinged on that of the bontbok (De Graaff, personal communication, 1973).

According to Barnard & Van der Walt (1961) Smuts recovered *Paramphistomum*, *Haemonchus*, *Ostertagia* and *Trichostrongylus* and Ortlepp obtained *Paramphistomum*, *Haemonchus contortus* (Rudolphi, 1803), *N. spathiger* and *Trichostrongylus* from bontbok that died in the National Park of Bredasdorp. Ortlepp (1961), however, does not list either *H. contortus* or *Trichostrongylus* from this host, nor can records of these 2 species be traced in the records of the Section of Helminthology of this Institute.

Martinaglia (1937) records *H. contortus*, *Trichostrongylus axei* (Cobbold, 1879) and *Trichostrongylus colubriformis* (Giles, 1892) from blesbuck but Round (1968) erroneously lists them as parasites of bontbok. The helminths listed by Ortlepp (1961, 1962), viz. *Paramphistomum microbothrium*, *Cooperia hungi*, *Impalaia tuberculata*, *N. spathiger*, *Pneumostrongylus cornigerus* and *Protostrongylus capensis*, thus appear to be the only records from this antelope that can be accepted as authentic.

Before the Bontebok National Park was resited at Swellendam, *Paramphistomum microbothrium*, *Pneumostrongylus cornigerus* and *Protostrongylus capensis* were common in these animals (Van der Walt & Ortlepp, 1960). After their transfer to Swellendam *P. microbothrium* was no longer recovered from them. It would appear therefore that the intermediate host of this trematode, *Bulinus tropicus* (Krauss, 1848), is either absent or present only in small numbers in the present National Park. Although neither *Pneumostrongylus cornigerus* nor *Protostrongylus capensis* was recovered from the 4 bontbok that died at the Pretoria Zoological Gardens, the faeces of the remaining animals contained first stage larvae resembling those of *Protostrongylus*. The intermediate hosts of *Pneumostrongylus cornigerus* and *Protostrongylus capensis* are unknown, but they are probably terrestrial molluscs; these records indicate the presence of the intermediate host of at least 1 of the 2 lungworms in the Park.

The lungworm *D. magna* was not recorded from bontbok before they were transferred to Swellendam. Shortly after this transfer 6, and a year later 14, springbuck from the Mountain Zebra National Park, Cradock, were also introduced into the newly established Park (De Graaf, personal communication, 1973). *D. magna*, a well known parasite of the springbuck, was undoubtedly introduced at the same time and subsequently introduced to the Cape Point Nature Reserve and the Zoological Gardens with transferred bontbok.

D. magna was originally described from the blesbuck (Mönnig, 1932b) but is widely distributed in springbuck; Ortlepp (1962) states that it is very common in these animals in the S.A. Lombard Nature Reserve in the western Transvaal and also records it from Mariental, South West Africa. More recently it has also been recovered from 2 springbuck which died in the Bontbok National Park as well as from another animal which died in Bloemfontein, Orange Free State (unpublished data). Since *D. magna* occurs both in the springbuck and the blesbuck, it is to be expected that it will be transmissible to the bontbok, which is subspecifically related to the blesbuck.

Mönnig (1932b) and Ortlepp (1961) also record *O. hamata* and Le Roux (1930) *T. rugatus* from the springbuck. It is more than likely that the latter 2 parasites were also introduced into the present Bontebok National Park by the springbuck from the Mountain Zebra National Park.

These observations illustrate the consequences of exposing a population of animals in a restricted environment to helminths that are foreign to it. If a given species of antelope is to be introduced into a Park every effort must be made to prevent the simultaneous introduction of helminths which may endanger the very species it is intended to conserve.

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REFERENCES

- ANSELL, W. F. H., 1971. Order Artiodactyla In J. Meester & H. W. Setzen (eds.). The mammals of Africa. An identification manual. Washington: Smithsonian Institution Press.
- BARNARD, P. J. & VAN DER WALT, K., 1961. Translocation of the bontebok from Bredasdorp to Swellendam. *Koedoe*, 4, 105-109.
- BECKLUND, W. W. & WALKER, MARTHA L., 1967. *Nematodirus* of domestic sheep, *Ovis aries*, in the United States with a key to the species. *J. Parasit.*, 53, 777-781.
- ELLERMAN, J. R., MORRISON-SCOTT, J. C. S. & HAYMAN, R. W., 1953. Southern African Mammals 1758 to 1951: A reclassification. London: British Museum.
- LE ROUX, P. J., 1930. Helminthiasis of domestic stock in the Union of South Africa. *Jl S. Afr. vet. med. Ass.*, 1, 43-65.
- LYNCH, J. E., 1945. Redescription of the species of *Gyrocotyle* from the ratfish, *Hydrolagus colliei* (Lay & Bennett), with notes on the morphology and taxonomy of the genus. *J. Parasit.*, 31, 418-446.
- MARTINAGLIA, G., 1937. Some considerations regarding the health of wild animals in captivity. *S. Afr. J. Sci.*, 33, 833-844.
- MÖNNIG, H. O., 1925. A new *Trichostrongylus* from South African sheep. *Trans. R. Soc. S. Afr.*, 12, 243-247.
- MÖNNIG, H. O., 1932a. New strongylid nematodes of antelopes (Preliminary notes). *Jl S. Afr. vet. med. Ass.*, 3, 1-5.
- MÖNNIG, H. O., 1932b. Wild antelopes as carriers of nematode parasites of domestic ruminants. Part II. *18th Rep. Dir. vet. Serv., Dept. Agric. Un. S. Afr.*, 153-172.
- MÖNNIG, H. O., 1933. Wild antelopes as carriers of nematode parasites of domestic ruminants. Part III. *Onderstepoort J. vet. Sci. Anim. Ind.*, 1, 77-92.
- ORTLEPP, R. J., 1961. 'n Oorsig van Suid-Afrikaanse helminte veral met verwysing na die wat in ons wildherkouers voorkom. *Tydskr. Natuurwet.* 1, 203-212.
- ORTLEPP, R. J., 1962. Lungworms from South African antelopes. *Onderstepoort J. vet. Res.*, 29, 173-181.
- ROUND, M. C., 1968. Check list of the helminth parasites of African mammals of the orders Carnivora, Tubulidentata, Proboscidea, Hyracoidea, Artiodactyla and Perissodactyla. *Tech. Commun. Commonw. Bur. Helminth.*, 38, 1-252.
- SIMON, N., 1966. Red data book. Vol. 1, Mammalia. Lausanne: IUCN.
- SKEAD, C. J., 1958. Mammals of the Uitenhage and Cradock districts C.P. in recent times. *Koedoe*, 1, 19-59.
- TRAVASSOS, L., 1937. Revisao da Familia Trichostrongylidae Leiper, 1912. *Monografias Inst. Oswaldo Cruz.*, 1, 1-512.
- VAN DER WALT, K. & ORTLEPP, R. J., 1960. Moving the bontebok from Bredasdorp to Swellendam. *Jl S. Afr. vet. med. Ass.*, 31, 459-463.