

**PARASITES OF SOME FREE-LIVING WILD ANIMALS  
AND FRESHWATER FISH SPECIES  
IN SOUTH AFRICA**

**by**

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J.D.F. Boomker  
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## SUMMARY

This collection of papers comprises four sections. The first section deals with the helminth and arthropod parasites recovered from a variety of mammalian hosts, and consists of four chapters. The first chapter deals with the taxonomy of the parasites of mammalian hosts, where some 15 nematode species were either newly described, redescribed or descriptions amended, and the immature stages of an oestrid fly and the adults of two hippoboscids described. The second describes the seasonal occurrence of arthropod and helminth parasites recovered from approximately 1 380 antelope, scrub hares, warthogs and bushpigs. In the third chapter some miscellaneous natural and experimental findings of helminths in free-living hosts are presented, amongst others several new host-parasite associations and the proceedings of symposia, while the fourth chapter deals with the pathology of natural infections of impalas with *Cooperiodes hepaticae*, kudu with *Elaeophora sagitta* and buffaloes with *Parafilaria bassoni*.

The second section deals with the parasites of freshwater fishes. In the taxonomic part of this section, Chapter 1, one trematode genus is redescribed, and one new trematode species and 14 new nematode species described. In the second chapter, the seasonal occurrence of the helminth parasites of approximately 700 freshwater fish representing 14 species is presented.

The third part deals with the helminths of lizards, snakes and crocodiles, where a new *Paraspirura* species, a new *Madathamugadia* species and some 14 new species, subspecies and forms of subspecies of the oxyurid genera *Spauligodon*, *Skrjabinodon*, *Thelandros* and *Tachygonetria* were described. A comprehensive host-parasite list of snakes and lizards is included, as is an equally comprehensive host-parasite list of the pentastome parasites of crocodiles.

In the fourth part, two new *Tetrameres* species are described and the population dynamics of guineafowls and Swainson's spurfowl discussed. A complete list of the helminth parasites of guineafowls is listed, together with an extended host list of these parasites.

## INTRODUCTION

My love affair with worms started in 1968 when, as a very low form of life, a “learner technician”, I joined the then Department of Agriculture in the Section of Helminthology at the Onderstepoort Veterinary Research Institute. Dr. Anna Verster, under whom I was working, showed me where the worms were, that were sent from all over South Africa and that needed to be identified, and also told me where the books were to be found. Thus, after struggling with clearing agents, glass slides, books and articles for about two days, I was immensely proud of myself for finally managing to identify *Haemonchus contortus*, arguably the commonest parasitic worm in sheep in the world!

After qualifying as a veterinarian I started working in the Section of Pathology at the Veterinary Research Institute where I remained for three years. During this time I was tasked with necropsies of game animals and fish, and also investigated mortalities in these animals. This led to a number of publications (Boomker, Coetzer & Scott, 1977; Boomker, Imes, Cameron, Naude & Schoonbee, 1977; Boomker & Henton, 1980) which I have not included here. I maintained my interest in worms and with a colleague described the occurrence of a giant liver fluke, *Fascioloides magna*, in the liver of a bovine imported from the United States of America (Boomker & Dale-Kuys, 1977).

In 1977 I joined the University of Pretoria as a lecturer. This is where I met Professor Ivan Horak, who was to play an important role in my life, not only as a friend but also as a mentor and co-worker. While I did a project in the Kruger National Park on the seasonal occurrence of helminth parasites in freshwater fishes, he did one on the seasonal occurrence of helminths of impalas and warthogs, and we assisted each other with our respective projects. When Prof. Horak went to take up the Directorship of the Tick Research Unit at Rhodes University, I took over the kudu parasite project from him – he did the ectoparasites and I did the internal parasites (Boomker, Horak & De Vos, 1989; Horak, Boomker, Spickett & De Vos, 1992). Together we spent many happy hours “worming” and “ticking” in the hot climates of the eastern Transvaal (Mpumalanga) and Natal, and produced a number of papers on the parasites of wild animals that will not easily be equalled.



On one such an expedition I met Drs. Michael Keep and Jacques Flamand from the then Natal Parks Board, who invited me to do parasite surveys in the Natal Parks. A chance as good as that could not be declined or ignored and lead to several publications on a variety of antelope, with Prof. Horak again doing the ectoparasites. Thus, the seasonal occurrence of the helminths and ectoparasites of reedbuck (Horak, Keep, Flamand & Boomker, 1988; Boomker, Horak, Flamand & Keep, 1989), and nyala (Boomker, Horak & Flamand, 1991; Horak, Boomker & Flamand, 1995; Boomker, Booysse, Watermeyer, De Villiers, Horak & Flamand, 1996) were published, as were the parasite species composition and burdens of the rare red and blue duikers (Boomker, Booysse & Keep, 1991; Boomker, Horak & Flamand, 1991).

In 1984 I joined the newly created Faculty of Veterinary Science at the Medical University of Southern Africa (Medunsa), where I was appointed associate professor in Helminthology. Prof. Richard Reinecke, the then head of the Department of Parasitology at the University of Pretoria allowed me to take the material that I had collected over the years with me and to complete the data processing and reporting. The 15 years I spent at Medunsa were probably the most productive years of my life as far as publications are concerned.

Taxonomy and systematics have always fascinated me and I was fortunate enough to discover a number of helminth parasites new to science. Their descriptions gave me great satisfaction and I am pleased to have made a small contribution to the known biodiversity of this country. It also gave me the opportunity to immortalize some of my colleagues and friends by naming species after them! In 1992 I was invited to study newer trends in the approach to taxonomy and systematics under Professor Alain Chabaud at the Museum National d'Histoire Naturelle in Paris, France, where I also met Drs. Odile Bain, Marie-Claude Durette-Desset and Annie Petter. These specialists have taught me a great deal about the nematodes, and I was fortunate to be able to work and publish with them. I have described 13 new nematode species from mammals, and a trematode and 12 nematodes from fishes, either by myself or with mainly the French friends.

The postgraduate students that I supervised, especially the two German students (who sometimes referred to themselves as 'the germs'), did a sterling job on their respective topics. The parasites of reptiles have not been studied much and are highly specialized, to such an extent that for some of the genera there are forms of subspecies! These parasites belong mostly to the Order Oxyurida, which in South

Africa are poorly known. Dr. Stephan Hering-Hagenbeck studied the oxyurids of a variety of geckos and lizards and also described a number of new species (Hering-Hagenbeck & Boomker, 2000; Hering-Hagenbeck, Boomker, Petit, Killick-Kendrick & Bain, 2000; Hering-Hagenbeck, Petter & Boomker, 2000a, b).

Dr. Kerstin Junker chose to address the difficult and fascinating subject of the crocodile Pentastomida, all of whom have indirect life cycles. As adults they parasitize the lungs of crocodiles and the intermediate hosts are freshwater fishes. She succeeded in describing the life-cycle of *Sebekia wedli* (Junker, Boomker & Booyse, 1998), found and described the unknown males of *Alofia simpsoni* (Junker, Boomker & Bolton, 1999) and *Leiperia cincinnalis* (Junker, Boomker, Swanepoel & Taraschewski, 2000). She also described a new species of *Subtriquetra* from freshwater fishes, and the new genus and species, *Pelonia africana*, the first pentastomid to be described from a chelonian from Africa (Junker, Boomker & Booyse, 1998; Junker & Boomker, 2002).

During 1999 the Veterinary Faculty at Medunsa was closed and amalgamated with that of the University of Pretoria. At the time I joined the Department of Veterinary Tropical Diseases and in 2005 Dr. Junker was awarded a post-doctoral fellowship by the Claude Leon Foundation. Since much material had already been collected from guineafowls from the KNP and the Eastern Cape Province, she decided to address their parasites. She continued with the game-bird parasites when she was awarded a University of Pretoria post-doctoral fellowship. From this research emanated the descriptions of two new species of nematodes (Junker & Boomker, 2007; Junker, Davies, Jansen, Crowe & Boomker, 2008), and several publications dealing with the helminth population dynamics in gamebirds. This part of the study fascinated me, not only because of the numbers and species of helminths recovered, but also the diversity in the different age classes of birds.