

BLOOD PARASITES OF SOME WATERFOWL FROM VICTORIA, AUSTRALIA

Authors: BENNETT, GORDON F., GREINER, ELLIS C., WHITELEY, P. L, and NORMAN, F. I.

Source: Journal of Wildlife Diseases, 13(2) : 202-204

Published By: Wildlife Disease Association

URL: <https://doi.org/10.7589/0090-3558-13.2.202>

The BioOne Digital Library (<https://bioone.org/>) provides worldwide distribution for more than 580 journals and eBooks from BioOne's community of over 150 nonprofit societies, research institutions, and university presses in the biological, ecological, and environmental sciences. The BioOne Digital Library encompasses the flagship aggregation BioOne Complete (<https://bioone.org/subscribe>), the BioOne Complete Archive (<https://bioone.org/archive>), and the BioOne eBooks program offerings ESA eBook Collection (<https://bioone.org/esa-ebooks>) and CSIRO Publishing BioSelect Collection (<https://bioone.org/csiro-ebooks>).

Your use of this PDF, the BioOne Digital Library, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Digital Library content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne is an innovative nonprofit that sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

BLOOD PARASITES OF SOME WATERFOWL FROM VICTORIA, AUSTRALIA

GORDON F. BENNETT,¹ ELLIS C. GREINER,¹ P. L. WHITELEY² and F. I. NORMAN²

Abstract: A total of 316 anatids (5 species) from Serendip Wildlife Research Station, Lara, Victoria, were examined for blood parasites. Twenty-two of the ducks (all five species) harbored *Haemoproteus nettionis* and one also harbored *Plasmodium relictum*. None of 12 dusky moorhens (*Gallinula tenebrosa*) were infected. There was no significant difference in the prevalence of *H. nettionis* between species or age groups of ducks. No evidence of infection with *Leucocytozoon*, *Trypanosoma* or microfilaria was obtained.

INTRODUCTION

The hematozoa of Australian birds have been little studied and, with the exception of the classic work of Cleland and Johnson in the first two decades of the century, and the later summary by Mackerras and Mackerras,⁶ there are few published reports⁵ of the distribution or prevalence of avian hematozoa in Australia. Recently, during routine banding operations, there was an opportunity to examine a number of waterfowl from Serendip Wildlife Research Station, (38° 01' S, 144° 25' E), Lara, Victoria, and this report summarizes the results.

MATERIALS AND METHODS

Blood smears were made from web punctures of 316 ducks captured on 9-11 December 1974, and 6-8 January 1975, at Serendip, Lara, Victoria. The smears were air-dried, fixed in 100% methanol and stained in Giemsa's stain. In addition, blood smears taken from the middle toe of 12 dusky moorhens *Gallinula tenebrosa* also were examined. The centrifuge technique for the detection of trypanosomes and microfilaria as described by Bennett¹ was carried out on 40 blood samples from ducks. The stained smears

were examined at the International Reference Centre for Avian Haematozoa in St. John's, Newfoundland.

RESULTS AND DISCUSSION

A total of 316 anatids (5 species) were examined for blood protozoa and 22 birds (7.0%) harbored one or more hematozoa (Table 1). None of the dusky moorhens were infected. All infected ducks harbored *Haemoproteus nettionis* Johnson and Cleland, while a single grey teal (*Anas gibberifrons*) also harbored *Plasmodium relictum* (Grassi and Felletti). Gilruth *et al.*³ described *Proteosoma* (= *Plasmodium*) *biziuræ* (later synonymized with *P. relictum*⁴) from the musk duck, *Biziura lobata*. Most infections were light, in the order of 1 parasite/10,000 erythrocytes.

There was little difference in the prevalence of *H. nettionis* in adult and juvenile birds (Table 1) but none of the ducklings were infected. These ducklings may have been sampled when they were too young to demonstrate a patent infection of *H. nettionis*, whose prepatent period was shown by Fallis and Wood² to be 14-21 days. The prevalence of *H. nettionis* in the five species of ducks

¹ Department of Biology and International Reference Centre for Avian Haematozoa, Memorial University of Newfoundland, St. John's, Newfoundland, Canada.

² Ministry of Conservation, Fisheries and Wildlife Division, Arthur Rylah Institute for Environmental Research, Heidelberg, Victoria, Australia, 3084.

TABLE 1. Hematozoa in Australian Waterfowl.

	Total examined	Birds infected	<i>H. nettionis</i>	<i>P. relictum</i>
ANATIDAE				
<i>Anas castanea</i> (Eyton) (Chestnut teal)				
Adult	64	4(6.3%)	4	
Juvenile	55	4(7.3%)	4	
Duckling	7	0	—	
Total	126	8(6.3%)	8	
<i>Anas gibberifrons</i> S. Müller (Grey teal)				
Adult	85	7(8.2%)	7*	1*
Juvenile	73	3(4.1%)	3*	
Duckling	2	0	—	
Total	160	10(6.3%)	10	1
<i>Anas superciliosa</i> Gmelin (Australian black duck)				
Adult	5	0		
Juvenile	9	1(11.8%)	1	
Total	14	1(7.1%)	1	
<i>Chenonetta jubata</i> (Latham) (Australian wood duck)				
Adult	7	2(28.6%)	2*	
Juvenile	2	0	0	
Total	9	2(22.2)	2	
<i>Tadorna tadornoides</i> (Jardine & Selby) (Mountain duck)				
Juvenile	6	1(16.6%)	1	
Duckling	1	0	—	
Total	7	1(14.3%)	1	
Totals				
Adult	161	13(8.1%)		
Juvenile	145	9(6.2%)		
Duckling	10	0		
Total:	316	22(7.0%)		

*New Australian host record.

sampled was somewhat variable. In three species, *A. castanea*, *A. gibberifrons* and *A. superciliosa*, the prevalence of parasites was virtually identical (Table 1), whilst the other two anatids, *Chenonetta jubata* and *Tadorna tadornoides*, had markedly higher prevalence of *H. nettionis*. However, the sample size of the latter two species was so small that little significance can be attached to these differences.

The anatids were sampled during the middle of the summer, presumably a period of increased vector activity. The origin of most juvenile birds, and indeed adults, sampled at Serendip is uncertain for only chestnut teal, and to a much lesser extent black duck, grey teal and mountain duck, breed at or in the immediate vicinity of the station. Presumably juvenile chestnut teal are infected at Serendip, but the other species may receive *H. nettionis* elsewhere, move into

the area and act as a source for further transmission of the parasite. The absence of *Leucocytozoon simondi* Mathis and Leger in the sample is perhaps surprising in view of the common occurrence of this parasite in anatids in the northern hemisphere; however, to date this genus, although recorded from other birds, has not been recorded in Anseriformes in Australia. The absence of both trypanosomes and microfilaria is more difficult to explain, although a thin film diagnostic technique is far from ideal for these parasites. However, the hematocrit centrifuge technique on 40 ducks also failed to demonstrate these parasites.

The survey indicates that while blood parasites do occur in anatids at Lara, Victoria, the prevalence of parasitism is low and the major species encountered, *H. nettionis*, has not, as yet, been incriminated as a factor in controlling waterfowl populations.

Acknowledgements

The financial support of the National Research Council of Canada to the senior author is gratefully acknowledged.

LITERATURE CITED

1. BENNETT, G. F. 1962. The hematocrit centrifuge for laboratory diagnosis of hematozoa. *Can. J. Zool.* 40: 124-125.
2. FALLIS, A. M. and D. M. WOOD. 1957. Biting midges (Diptera: Ceratopogonidae) as intermediate hosts for *Haemoproteus* of ducks. *Can. J. Zool.* 35: 425-435.
3. GILRUTH, J. A., G. SWEET and S. DODD. 1910. Notes on blood parasites. *Proc. R. Soc. Victoria* 23: 231-241.
4. HERMAN, C. M. 1963. The occurrence of protozoan blood parasites in Anatidae. *Trans. 6th Congr. Int. Union Game Biol.* pp. 341-349.
5. LAVERY, H. J. 1967. Studies of waterfowl (Anatidae) in North Queensland. 2. Parasite Records. *Queensland J. Agric. Anim. Sci.* 24: 126-129.
6. MACKERRAS, M. J. and I. M. MACKERRAS. 1960. The haematozoa of Australian birds. *Aust. J. Zool.* 8: 226-260.

Received for publication 13 September 1976