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BLOOD PARASITES OF SOME BIRDS FROM GHANA

MICHAEL WINK¹ and GORDON F. BENNETT²

Abstract: A total of 135 birds of 26 species in 13 families was examined for blood parasites; 43 birds (31.9%) of 13 species were infected; species of the Ploceidae were the most heavily infected. Species of *Haemoproteus* occurred most commonly (29 birds) while *Leucocytozoon* and *Plasmodium* species were virtually absent. There was no significant difference in the prevalence of hematozoa in birds from the mature rainforest and those in a savannah-urban setting.

INTRODUCTION

The hematozoa of African birds was the subject of intensive taxonomic study during the first two decades of this century. Interest in the subject waned, however, and subsequently only sporadic studies on avian blood parasites are reported. Recently, a revival of interest in the subject has occurred, and a number of workers have published the results of their surveys, surveys which have been concentrated for the most part, on the eastern side of the continent. Few recent studies have been carried out on the west coast of Africa and there is little information on the occurrence, prevalence and distribution of the different species and genera of blood parasites encountered in this region of Africa. Studies by Wink⁷ mainly on the passeriform fauna of Ghana provided the opportunity to study the blood parasites of some of them. This report summarizes the findings and provides information on the avian hematozoa of 137 birds of 26 species from the Accra-Bunso region of Ghana.

MATERIALS AND METHODS

Birds were obtained by mist-netting or hunting (*Corvus albus*) at Accra (5.35° N, 0.15° W) and at Bunso (6.17° N, 0.27° W), during the period February to April, 1973 by the first author, a

period representing the dry season for this area. The Accra area consists of parks and gardens (outskirts of the city) and savannahs with thicket clumps. Bunso lies in the rainforest zone where cacao, oil palms and bananas are cultivated in the neighbourhood of large areas of primary and secondary rainforest. Blood was taken by cutting the bird's claw. Blood films were air-dried, fixed in 100% methanol and stained with Giemsa's stain.

RESULTS AND DISCUSSION

A total of 135 birds representing 26 species of 13 families was examined for blood parasites; 43 birds (31.9%) were infected with blood parasites (Table 1). Species of *Haemoproteus* were the most commonly occurring parasites, present in 29 birds and were represented by *Haemoproteus lannii* in *Lanius senator*, *H. raymundi* in *Cyanomitra olivacea*, *H. pratasi* in *Francolinus achantensis*, *H. sanguinus* in the Pycnonotidae, and *H. fringillae* and *H. orizivora* in the Estrildidae, Ploceidae and Sylviidae. Species of *Leucocytozoon* occurred in only four birds, namely *Leucocytozoon fringillinarum* in *Lagonosticta rufopicta* and *Ploceus nigerimus*, *L. brimonti* in *Pycnonotus barbatulus* and *L. neavei* in *Francolinus achantensis*. *Plasmodium* species were uncommon, with only a single individual of *Cyanomitra olivacea* harboring *Plasmo-*

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TABLE 1. Blood parasites of some birds from Ghana.

	Birds examined		L.	H.	Pl.	T.	M.
	total	infected					
ESTRILDIDAE							
<i>Lagonosticta rufopicta</i>	14	1	1				
LANIIDAE							
<i>Lanius senator</i>	1	1		1			
NECTARINIIDAE							
<i>Cyanomitra olivacea</i>	3	2		1	1	1	
<i>Nectarinia seimundi</i>	1	1				1	
PHASIANIDAE							
<i>Francolinus achantensis</i>	1	1	1	1		1	1
PLOCEIDAE							
<i>Passer griseus</i>	21	11		9		2	2
<i>Ploceus (Textor) cucullatus</i>	16	11		9		1	1
<i>Ploceus nigerrimus</i> (= <i>Ploceus castaneofuscus</i>)	6	3	1	2			
<i>Hyphanturgus brachypterus</i>	1	1					1
<i>Ploceus atrogularis</i>	18	4		3			1
PYCNONOTIDAE							
<i>Pycnonotus barbatus</i>	5	4	1	1		2	
<i>Eurillas</i> (= <i>Andropadus</i>) <i>virens</i>	4	1		1			
SYLVIIDAE							
<i>Hippolais polyglotta</i>	1	1		1			
TURDIDAE							
<i>Turdus olivaceus</i>	6	1					1
NEGATIVE BIRDS: *							
	37						
TOTAL	135	43	4	29	1	8	7
PERCENT		31.9	3.0	27.5	0.7	6.0	5.2

* **NEGATIVE BIRDS**—**ALCEDINIDAE**: *Halcyon senegalensis* (3); *Ispidina picta* (2); **CAPITONIDAE**: *Pogoniulus scolopaceus* (1); **CORVIDAE**: *Corvus albus* (9); **CUCULIDAE**: *Chrysococcyx caprius* (2); **ESTRILDIDAE**: *Lonchura (Spermestes) cucullata* (3); **NECTARINIIDAE**: *Cyanomitra verticalis* (3); **PLOCEIDAE**: *Vidua lorenzi* (1); **SYLVIIDAE**: *Camaroptera brachyura* (7); *Cisticola lateralis* (1); **TURDIDAE**: *Saxicola rubetra* (2); **ZOSTEROPIIDAE**: *Zosterops senegalensis* (3).

dium vaughani. Eight individuals harbored trypanosomes (Table 1), representing the *T. avium* complex. Microfilaria, which occurred in seven birds (Table 1), were not identified.

The Ploceidae were the most heavily parasitized of the avian families studied, with the majority of the infections composed of *Haemoproteus fringillae* and *H. orizivora*. Ploceids also are recorded as being heavily parasitized in other parts of Africa.^{3,4,6} Multiple infections were not common—only four individuals harbored more than a single blood parasite. The low multiple infection ration (9%), coupled with the low prevalence of infection (32%) indicates that the transmission potential of the area is low. The low multiple infection ratio is similar to

that experienced in other surveys in Africa, but is in sharp contrast to the situation observed in North America, where multiple infections are commonplace,⁵ and a multiple infection ratio of 50% or more is not unusual.

Prevalence of blood parasites in birds sampled in the tropical rain forest of the Bunso area was remarkably similar to that noted in birds from the savannah-urban area around Accra (Table 2). It would appear, on the basis of this sample, that the vector potential of both areas is similar. This is somewhat at variance with the results obtained in Uganda,⁴ where it was found that birds obtained from a forested area had a markedly lower prevalence of blood parasites than those from the urban surrounds of a small city (Entebbe).

TABLE 2. Prevalence of blood parasites in birds from the Bunso and Accra regions.

	Total birds		L.	H.	Pl.	T.	M.
	examined	infected					
Bunso	32	11(34.4%)	2	7	1	3	1
Accra	103	32(37.1%)	2	22	0	5	6

The parasite burden of these birds is similar in species distribution to those recorded for similar populations in Tchad,⁶ Uganda,⁴ and Kenya, Tanzania and Zaire.³ The low prevalence of *Leucocytozoon* is presumably due to lack of an abundance of suitable breeding sites

for the simuliid vectors in the local region as compared with North America.^{1,2} The general prevalence of blood parasites in the area is in the same order of magnitude as for other regions of similar climatic and topographic features in Africa.

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LITERATURE CITED

1. BENNETT, G. F. 1960. On some ornithophilic blood-sucking Diptera in Algonquin Park, Ontario, Canada. *Can. J. Zool.*, 38: 377-389.
2. ———, M. F. CAMERON and E. WHITE. 1975. Hematozoa of the passeriforms of the Tantramars Marshes, New Brunswick. *Can. J. Zool.*, 53: 1432-1442.

3. ——— and C. M. HERMAN. 1976. Blood parasites of some birds from Kenya, Tanzania and Zaire. *J. Wildl. Dis.* 12: 59-65.
4. ———, N. O. OKIA and M. F. CAMERON. 1974. Avian hematozoa of some Ugandan birds. *J. Wildl. Dis.*, 10: 458-465.
5. GREINER, E. C., G. F. BENNETT, E. M. WHITE and R. F. COOMBS. 1975. Distribution of Avian Hematozoa in North America. *Can. J. Zool.*, 53: 1762-87.
6. WILLIAMS, N. A., G. F. BENNETT and P. A. TRONCY. 1976. Avian hematozoa of some birds from Tchad. *J. Wildl. Dis.*, 12: In press.
7. WINK, M. 1976. Palaearktische Zugvögel in Ghana/West Africa. *Bonn. Zool. Beitr.* 27: 67-86.

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