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## AVIAN HEMATOZOA OF SOME BIRDS FROM TCHAD

NORMAN A. WILLIAMS,<sup>1</sup> GORDON F. BENNETT<sup>1</sup> and P. M. TRONCY<sup>2</sup>

**Abstract:** A total of 389 birds of 32 species representing 14 families from Tchad were examined for blood parasites. Eighty-nine (22.9%) harbored infections of *Haemoproteus* (64%), *Plasmodium* (12.4%), *Trypanosoma* (1.1%), *Atoxoplasma* (= *Lankesterella*) (5.6%), and microfilaria (28.1%). Species of *Leucocytozoon* were not observed in the present study. The occurrence of the different genera differed markedly between bird families; members of the Ploceidae comprised 85% of the infected birds.

### INTRODUCTION

The abundance and distribution of hematozoa of the African avifauna have been recorded from various areas.<sup>4,5,6</sup> Recent studies by Bennett and Herman<sup>2</sup> and Bennett, Okia and Cameron<sup>3</sup> have attempted to identify these parasites to specific level and to present data indicating their prevalence. Past records from the Tchad area<sup>1</sup> indicated that *Haemoproteus* infections were found in two species of passerine birds. The results are presented here to provide further baseline information on the prevalence, species composition and distribution of the hematozoan fauna of some birds, primarily passeriforms, from Tchad. The study area was located south of Lake Tchad in the transitional Sahel area of the Sahara. The area is characterized by a lowland plain receiving scant annual rainfall.

### MATERIALS AND METHODS

Birds were obtained by a variety of means, mainly by mist netting, in the environs of N'Djamena (Ft-Lamy), Tchad. Blood films were made, air-dried, fixed in 100% methanol and stained with Giemsa's stain. Birds were collected from September 1973 to July 1974.

### RESULTS AND DISCUSSION

Blood films from 389 birds of 32 species representing 14 families were examined for hematozoans. A total of 89 (22.9%) birds harbored one or more parasites (Table 1). The genus *Haemoproteus* (64%) was the most frequently encountered, represented by at least six species: *H. enucleator* (Alcedinidae), *H. nettionis* (Anatidae), *H. columbae* (Columbidae), *H. fringillae/oryzivorae* (Estrildidae and Ploceidae), *H. montezi* (Nectarinidae), and *H. sturnii* (Sturnidae). Microfilaria were the second most common parasites found (28.1%). Avian species of *Plasmodium* (12.4%) were represented by *Plasmodium polare* (*Dendrocygna viduata*), *P. relictum* (in 1 *Euplectes orix*), *P. rouxi* (in 1 *E. orix*), *P. cathemerium* (in 2 *Ploceus melanocephala*), and 3 concomitant infections of *P. relictum* and *P. rouxi* (in 3 *E. orix*). Five infections of *Atoxoplasma* (= *Lankesterella*) in *Euplectes orix* were not determined beyond generic level.

The present results indicate that avian hematozoa are encountered in a diverse avifauna in Tchad. Prevalence differs markedly among the species examined, due to a variety of factors. Undoubtedly, the ecological niches occupied by different bird species (nesting and feeding

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TABLE 1. Hematozoa in birds from Tchad.

Family and species	Total birds	Infected birds	Haem.*	Plasm.	Tryp.	Micro.	Other
<b>ALCEDINIDAE</b>							
<i>Isidina picta</i>	3	1	1				
<b>ANATIDAE</b>							
<i>Dendrocymba viduata</i>	6	1		1			
<i>Nettion auritus</i>	1	1	1				
<i>Plectropterus gambensis</i>	1	1	1				
<i>Sarkidiornis melanota</i>	1	1	1				
<b>COLUMBIDAE</b>							
<i>Sireptopelia turtur</i>	2	1	1				
<i>Turtur abyssinicus</i>	6	1	1				
<b>ESTRIDIDAE</b>							
<i>Lonchura cucullata</i>	2	1	1			1	
<i>Uraeginthus bengalus</i>	14	2	2				
<b>NECTARINIDAE</b>							
<i>Nectarinia pulchella</i>	4	1	1				
<b>PLOCEIDAE</b>							
<i>Euplectes orix</i>	97	30	5	8		17	5
<i>Passer luteus</i>	3	2	2				
<i>Ploceus cucullatus</i>	11	6	6		1	2	
<i>Ploceus melanocephalus</i>	42	22	18	2		3	
<i>Quelea quelea</i>	151	16	14			2	
<b>STURNIDAE</b>							
<i>Lamprotornis chalybeus</i>	4	2	2				
Uninfected species (see below)	41						
<b>TOTALS</b>	<b>389</b>	<b>89 (22.9%)</b>	<b>57</b>	<b>11</b>	<b>1</b>	<b>25</b>	<b>5</b>

\* Haem.—*Haemoproteus*, *Plasm.*—*Plasmodium*, *Tryp.*—*Trypanosoma*, *Micro.*—*Microfilaria*, *Other.*—*Atoxoplasma* (= *Lankesterella*).  
 UNINFECTED SPECIES: BUCERATIDAE—*Tockus nasutus* (1); COLIIDAE—*Colinus macrorostris* (2); COLUMBIDAE—*Oena capensis* (11);  
*Sireptopelia decipiens* (1); *Sireptopelia senegalensis* (2); CUCULIDAE—*Centropus senegalensis* (1); ESTRILDIDAE—*Estrilda troglodytes* (6); *Lagotis senegalensis* (2); FRINGILLIDAE—*Serinus leucopygius* (3); HIRUNDINIDAE—*Hirundo aethiopica* (2); LANIIDAE—*Laniarius bar-  
 batus* (1); PLOCEIDAE—*Passer griseus* (2); *Petronia dentata* (1); *Vidua* sp. (1); PYCNONOTIDAE—*Pycnonotus barbatus* (3); *Pycnonotus  
 cafer* (2); Total = 41.

strata) present the insect vectors with varying host-seeking difficulties. Differing host-vector susceptibility and age-immunity possibly affect the prevalence. Time of year with respect to precipitation (seasonality) will directly influence the abundance and temporal distribution of vectors and, therefore, indirectly the occurrence of blood parasites. There is no evidence from this study to indicate seasonality of occurrence, very likely due to the small sample size obtained.

The low overall prevalence documented in this study is a reflection of several factors. The lack of species of *Leucocytozoon* is very likely attributable to a

lack of suitable simuliid vectors. The topography of the region undoubtedly provides little suitable habitat for the larval stages of these insects. Scanty rainfall would tend to depress the abundance of vectors of the other parasites. Blood film diagnosis of trypanosomes by blood smear examination is at best, inadequate and conservative. The high prevalence of microfilaria seen must therefore indicate a much higher prevalence in the avifauna. In the apparent absence of simuliid vectors in the area, possibly the important vector groups of microfilaria in this region are the Ceratopogonidae and Culicidae.

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