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HAEMATOZOA OF EAST AFRICAN BIRDS: I. BLOOD PARASITES OF BIRDS FROM MARSABIT, NAKURU, NGULIA AND EAST RUDOLF IN KENYA

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Abstract: Blood smears were obtained from 116 birds of 46 species from four locations in Kenya. The parasites observed included species of *Plasmodium*, *Haemoproteus*, *Leucocytozoon* and *Trypanosoma*. *T. everetti* is recorded for the first time from East Africa.

INTRODUCTION

The presence of blood parasites in birds from the Northern Frontier District of Kenya has recently been recorded.[6] During the routine trapping of birds for ringing, blood smears from some birds in other areas were obtained to continue observations on their blood parasites. This is the first of a number of papers which will subsequently be produced. Blood smears were obtained from 116 birds of 46 species.

MATERIALS AND METHODS

Almost all the birds were trapped in mist-nets, and during ringing operations thin smears were made of blood taken from a peripheral wing vein. Smears were air-dried, fixed in methyl alcohol and stained with Giemsa's solution at a strength of 1:10 at pH 7.2 for 1 hr. Microscopic examination was carried out initially under low magnification (x10 objective) and then under a x90 oil immersion objective for a more detailed morphological examination of the parasites seen.

RESULTS AND DISCUSSION

A list of the birds examined and the parasites found is given in Tables 1-4. The avian nomenclature follows that of White for which a full list of references is given in Peirce and Backhurst.[6] This reference also lists relevant literature on the previously recorded haematozoan parasites of East African birds.

Mount Marsabit

As on the previous occasion the prevalence of blood parasites was low (Table 1). Only two (9.5%) of the birds examined were positive. *Plasmodium* (*Haemamoeba*) *relictum* was found in a *Luscinia luscinia*, and *Trypanosoma everetti* in *Phyllastrephus fischeri placidus*.

Ngulia

A total of 12 birds (44.4%) harboured haematozoan parasites (Table 2). *Trypanosoma everetti* was found in one *Pytelia melba*, and *Haemoproteus orizivorae* in two *Sylvia communis*. The parasite in *Coracias garrulus* morphologically resembled *Haemoproteus coraciae*, and the *Leucocytozoon* in *S. communis* was indistinguishable from *L. monardi*. It was not possible to evaluate the taxonomic status of the small *Plasmodium* parasite in the two *Coturnix delegorguei*. Both infections were fairly light and schizonts scanty. The parasite resembled *P.* (*Novyella*) *vaughani* although the gametocytes were smaller than those usually observed with such infections. It is planned to obtain further samples from *C. delegorguei* in the hope of determining the identity of the *Plasmodium* parasite.

TABLE 1. Blood parasites found in birds on Mount Marsabit, 2°15'N., 37°57'E., 1615m a.s.l., (November 1972)

Host	Number/Number examined/positive	Parasites found			
		H	P	L	T
ESTRILDIDAE:					
Pytelia melba (Melba finch)	2/0	—	—	—	—
FRINGILLIDAE:					
Serinus atrogularis (Yellow-rumped Seed-eater)	1/0	—	—	—	—
LANIIDAE:					
Laniarius funebris (Slate-coloured Boubou)	1/0	—	—	—	—
MUSCICAPIDAE : SYLVIINAE					
Camaroptera brachyura (Grey-backed Camaroptera)	3/0	—	—	—	—
Sylvia nisoria (Barred Warbler)	1/0	—	—	—	—
S. atricapilla (Blackcap)	2/0	—	—	—	—
MUSCICAPIDAE : TURDIINAE					
Turdus abyssinicus (Northern Olive Thrush)	3/0	—	—	—	—
Luscinia luscinia (Sprosser)	3/1	—	1	—	—
Oenanthe isabellina (Isabelline Wheatear)	1/0	—	—	—	—
PYCNONOTIDAE:					
Phyllastrephus fischeri placidus (Fischer's Greenbul)	4/1	—	—	—	1*
Total	21/2	0	1	0	1

* Denotes a new host record

H = *Haemoproteus*, P = *Plasmodium*, L = *Leucocytozoon*, *T* = *Trypanosoma*

TABLE 2. Blood parasites found in birds at Ngulia, 3°00'S., 38°13'E., 920m a.s.l., (November 1971)

Host	Number/Number examined/positive	Parasites found			
		H	P	L	T
PHASIANIDAE:					
Coturnix delegorguei (Harlequin Quail)	4/2	—	2*	—	—
CUCULIDAE:					
Clamator jacobinus (Black and White Cuckoo)	1/1	1	—	—	—
CAPRIMULGIDAE :					
Caprimulgus inornatus (Plain Nightjar)	1/0	—	—	—	—
CORACIIDAE:					
Coracias garrulus (European Roller)	2/1	1	—	—	—
CAPITONIDAE:					
Lybius lacrymosus (Spotted-flanked Barbet)	1/0	—	—	—	—
Trachyphonus darnaudii (d'Arnaud's Barbet)	1/1	—	—	1*	—
INDICATORIDAE:					
Indicator minor (Lesser Honey-guide)	1/0	—	—	—	—
ESTRILDIDAE:					
Pytelia melba (Melba finch)	2/2	2	—	—	1
LANIIDAE:					
Eurocephalus anguitimens (White-crowned Shrike)	3/0	—	—	—	—
Laniarius funebris (Slate-coloured Boubou)	1/0	—	—	—	—
MOTACILLIDAE:					
Tmetothylacus tenellus (Golden Pipit)	1/0	—	—	—	—
MUSCICAPIDAE : SYLVIINAE					
Camaroptera brachyura (Grey-backed Camaroptera)	1/0	—	—	—	—
Sylvia communis (Whitethroat)	2/2	2*	—	1*	—
S. nisoria (Barred Warbler)	1/1	1*	—	—	—
MUSCICAPIDAE : TURDIINAE					
Cercotrichas galactotes (Rufous Bush Chat)	2/0	—	—	—	—
Luscinia luscinia (Sprosser)	1/1	1	—	—	—
Irania gutturalis (White-throated Robin)	1/0	—	—	—	—
PYCNONOTIDAE:					
Pycnonotus barbatus dodsoni (White-eared Bulbul)	1/1	—	—	1*	—
Total	27/12	8	2	3	1

TABLE 3. Blood parasites found in birds at Nakuru, 0°22'S., 36°05'E., 1750m a.s.l., (September-October 1971)

Host	Number/Number examined/positive	Parasites found		
		H	P	R
ANATIDAE:				
Anas capensis (Cape Wigeon)	6/6	—	—	6*
A. hottentota (Hottentot Teal)	1/0	—	—	—
CHARADRIIDAE:				
Recurvirostra avosetta (Avocet)	2/0	—	—	—
Vanellus armatus (Blacksmith Plover)	1/0	—	—	—
LARIDAE:				
Sterna leucoptera (White-winged Black Tern)	1/0	—	—	—
SCOLOPACIDAE:				
Calidris ferruginea (Curlew Sandpiper)	2/0	—	—	—
C. minuta (Little Stint)	2/0	—	—	—
Philomachus pugnax (Ruff)	8/1	—	1*	—
Tringa stagnatilis (Marsh Sandpiper)	4/0	—	—	—
T. glareola (Wood Sandpiper)	2/0	—	—	—
Gallinago gallinago (Snipe)	1/0	—	—	—
ALCEDINIDAE:				
Ceryle rudis (Pied Kingfisher)	1/0	—	—	—
HIRUNDINIDAE:				
Hirundo rustica (European Swallow)	1/1	—	—	1*
Riparia riparia (European Sand Martin)	1/1	—	—	1*
R. cincta (Banded Martin)	1/0	—	—	—
Delichon urbica (House Martin)	1/1	—	—	1*
Total	35/10	0	1	9

R = Rickettsia

TABLE 4. Blood parasites found in birds at Kharsa Waterhole (east of Lake Rudolf) 3°37'N., 36°18'E., 450m a.s.l., (June 1973)

Host	Number/Number examined/positive	Parasites found		
		H	P	L
ALAUDIDAE:				
Eremopteryx signata (Chestnut-headed Sparrow Lark)	28/8	8*	—	—
Galerida cristata somaliensis (Crested Lark)	1/0	—	—	—
EMBERIZIDAE:				
Emberiza striolata saturatior (House Bunting)	1/0	—	—	—
Total	30/8	8	0	0

Nakuru

Ten (28.5%) of the 35 birds were parasitized with intraerythrocytic organisms, although only one bird (2.8%) harboured a protozoan (Table 3). This was *Philomachus pugnax* infected with *Plasmodium* (*Giovannolaia*) *circumflexum*, and appears to be the first *Plasmodium* sp. recorded from this host. More significantly, at the time of examination, it was the first record of *P.* (*G.*) *circumflexum* from the African continent, although it has since been recorded from birds in Uganda.[1] *P. pugnax* is a Palaearctic migrant and could therefore have become infected in Europe or Asia where *P.* (*G.*) *circumflexum* is known to occur.[2] However, the presence of a patent parasitaemia in the bird from Nakuru, together with the records from Uganda, does suggest that the parasite may have a much wider distribution in Africa.

The other nine birds were parasitized with Rickettsia-like organisms similar to the anaplasmoid forms described previously from *Turdus abyssinicus*.[5]

Kharsa Waterhole

Eight (26.6%) of the birds, all *Eremopteryx signata*, were parasitized with an unidentified species of *Haemoproteus*. The parasite was not *H. alaudae*, the only species hitherto described from the family Alaudidae.

In addition to the birds recorded in Tables 1-4, three were examined during October, 1971 from Kariobangi (Nairobi), 1°17'S. 36°49'E, 1820m, a.s.l. These were *Vidua macroura* (Pin-tailed Whydah), *Motacilla flava* (Yellow Wagtail) and *Ploceus cucullatus* (Black-headed Weaver), the latter in which the presence of *P.* (*H.*) *relictum* was determined; a new host record for this parasite.

The presence of *T. everetti* was of particular interest as this was described only recently[3] from *Estrilda t. troglodytes* in Nigeria. These records are therefore the first from East Africa and suggest that this parasite has a wider geographical distribution.

Oosthuizen and Markus[4] reported with some doubt the presence of *Haemoproteus* in *Clamator jacobinus* in Rhodesia. The present results confirm that in Kenya this bird is a host of a *Haemoproteus* sp. Those species of *Haemoproteus* and *Leucocytozoon* not determined is due to either the level of parasitaemia being too low, or for subsequent examination following the accumulation of more material for taxonomic studies.

Only two birds harboured mixed infections, one *P. melba* with *T. everetti* and *Haemoproteus,* and one *S. communis* with *H. orizivorae* and *L. monardi.* No microfilariae were seen in any of the birds examined, and as had been observed during the previous survey[6] the highest prevalence of parasitized birds was at the lower elevations.

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