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**HAEMOPROTEUS BURHINUSA NEW SPECIES FROM
THE STONE CURLEW, BU RHINUS OEDICN EMUS
SAHARAE (REICHENOW) IN IRAQ**

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ABSTRACT

Haemoproteus burhinus is described from the stone curlew, **Burhinus oedienemus saharae** (Reichenow) from Al-Attariya, 45 km SE Baghdad city middle of Iraq. It is related to but differs from **H. peireci** in that it hypertrophied the erythrocyte and the erythrocyte nucleus is always laterally displaced in microgametocytes.

INTRODUCTION

The stone curlew, **Burhinus oedienemus saharae** (Reichenow) (Burhinidae, Charadriiformes) is a common bird in many parts of Iraq all over the year. Its numbers are highly increased especially during the migration periods in spring and autumn. It inhabits the desert and semidesert areas usually in flocks (Allouse, 1961) .

So far, no parasite had been reported from this bird neither in Iraq except for reporting negative results for blood parasites examinations (Mohammad, 1991), nor

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abroad (McClure et al., 1978; Bennett et al., 1978; Bennett et al., 1982). Among the avian family Burhinidae only *Haemoproteus* sp. was reported from *Burhinus senegalensis* in Africa (Hamerton, 1936; Rousselot, 1953; McClure et al., 1978)

MATERIALS AND METHODS

Blood films were made from 16 birds in Al-Attariya, middle of Iraq on 1st-3rd November 1990.

Blood smears were made from blood drawn from the femoral or brachial artery and sometimes from the heart, air dried and fixed in absolute methanol. The slides then were stained with Giemsa's stain according to the protocols of Bennett (1970) and then examined for blood parasites. Photomicrographs were done with Olympus Research Microscope (Vanox), while drawings were made with the aid of a camera lucida. Measurements are expressed as the means followed (in parentheses) by the standard deviations. The number of specimens measured is indicated by N and the nuclear displacement ratio by NDR.

RESULTS

Fourteen birds out of 16 (87.5%) were found infected with a hitherto undescribed haemoproteid. Table 1 represents a measurement comparison between uninfected erythrocytes and those infected with macro- and microgametocytes respectively, and this would show a clear hypertrophy in the infected ones. while table 2 express

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the mean measurements of macro-and microgametocytes of *H. burhinus* sp. n. which would show a strong dimorphism between them .

Haemoproteus burhinus sp. n. (Figs. 1-10)

Type Host : The Stone Curlew, *Burhinus oedicnemus saharae* (Reichenow) **Type Locality :** Al-Attariya, 45 km SE Baghdad City, Middle of Iraq (44 45 E, 33 15 N)

Date of Collection : 1-3 November 1990

Immature gametocytes : (Fig. 1) Youngest forms seen initiate growth in fully mature erythrocytes, polar to the erythrocyte nucleus in position. The parasites lack the amoeboid structure.

Macrogametocytes : (Figs. 2-6) Parasite of a large size. Fully mature macrogametocytes completely encircle the erythrocyte nucleus ; cytoplasm finely granular, staining faint blue with Giemsa's stain ; pigment granules small, black, usually scattered throughout the cytoplasm ; parasite nucleus of small size, compact, dense, irregular in shape, and staining deep pink with Giemsa's stain .

Microgametocytes : (Figs. 7-10) Parasite of large size. General configuration is completely different from that of macrogametocyte. The parasite never encircle the erythrocyte nucleus ; host cell nucleus always displaced laterally almost to erythrocyte periphery ; cytoplasm staining deep pink with Giemsa's stain, pigment granules medium size, black, clumped at one or both ends of the

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parasite, usually less in number than in macrogametocyte; parasite nucleus of large size, diffuse and ill-defined.

Type Material : Blood film No. NB665 deposited in the collection of The Invertebrates and Parasitology section, Iraq Natural History Museum, University of Baghdad taken from stone curlew by the author on November 1990.

Paratype Material : Blood films Nos. NB666, NB667, NB668 (same informations for type material).

DISCUSSION

The haemoproteids are well known to be family specific (Bennett *et al.* 1982), and since no species had been described from the avian family burhinidae, therefore it is reasonable to consider this parasite as a new taxon .

Haemoproteus burhinus sp. n. is similar to *H. peircei* of the family Ciconidae (Ciconiformes) reported by Forrester *et al.* (1977) depending on Wenyon's illustration in; 1. the macrogametocyte completely encircle the erythrocyte nucleus, and 2. the pigment granules are larger in microgametocyte than those of macrogametocyte. However, both species could be separated by ; 1. *Haemoproteus burhinus* highly hypertrophied the erythrocyte (table 1) while no hypertrophy occurs in *H. peircei* infection, and 2. the erythrocyte nucleus is always (but not sometimes as *H. peireci* infection) laterally displaced in microgametocyte .

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Table 1. A comparison of unparasitized and parasitized erythrocytes (N = 30)

	unparasitized erythrocyte	erythrocyte macro-	parasit. micro-
Erythrocyte			
length	11.4(1.6)	12.3(1.4)	12.5(1.1)
width	7 (0.5)	8.2(0.9)	7.3(1.0)
area	62.7(6.2)	71.1(8.3)	70.4(8.1)
Erythrocyte nucleus			
length	6.3(0.6)	5.9(0.7)	5.5(0.7)
width	2.2(0.2)	2.0(0.1)	2.7(0.2)
area	12.2(1.9)	10.3(1.9)	16.6(2.3)
% area of nucleus to total area	19.4(3.5)	13.3(2.1)	23.6(3.5)
NDR		0.5	0.9

Table 2. Measurements of macro - and microgametocytes of *Haemoproteus burhinus* sp. n. (N = 30).

	macrogametocyte	microgametocyte
Parasite		
length	21.8(4.1)	12.0(1.5)
width	3.2(0.1)	4.7(0.5)
area	51.5(9.3)	56.2(10.4)
% erythrocyte-parasite complex	62.14	74.33
Parasite nucleus		
length	2.8(0.2)	7.3(1.0)
width	2.2(0.2)	4.6(0.2)
area	4.1(0.8)	37.5(4.3)
% area of parasite	5.9	49.6
No. of pigment granules	15.6	8.2

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The immature macrogametocyte gradually encircles the host cell nucleus as it grows, and once it becomes fully mature the erythrocyte nucleus is then completely encircled. While the microgametocyte gradually pushes the nucleus toward the cell border and when it is fully mature it is difficult to differentiate between the erythrocyte and its nucleus borders.

The results clearly show a strong dimorphism between macro- and microgametocyte, not only in staining characters but in NDR (0.5 for macro-, 0.9 for micro-) and in the number and size of pigment granules (15.6 small size in macro-, 8.2 medium size in micro-).

The collection site (Al-Attariya) seems to support high vector potentiality since the infection rate is very high (87.5%) and a large number of different stages of the parasite could be easily seen in a single blood film. For this, the described haemoproteid probably establishes a good population among the members of this bird species.

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وصف نوع جديد من طفيليات الدم في طير الكروان الصحراوي في العراق

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الغلاصة

تم وصف نوع جديد من طفيليات الدم

Haemoproteus burhinus sp. n.

من طير الصحراوي الذي جمع من منطقة العطارية (وسط العراق) . أن هذا النوع الجديد يشابه النوع **H. peircei** ولكن يتميز بأنه يضخم حجم الكرية الدموية الحمراء المصابه ويزيح نواة الكرية الحمراء دائما الى الجانب ذي الامشاج الذكرية .

