

Research Article



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Haematozoa of the ducks in the middle of Iraq

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Abstract

A total of 192 anatid birds belong to 10 species and 4 genera were examined for their blood parasites in the middle of Iraq. Three haemosporidian species were detected, *Haemoproteus* sp., *Leucocytozoon* sp., and *Plasmodium relictum*. Distribution of parasites among hosts, and their infection rates were provided. Results were discussed in view of the recent pertinent literature.

Keywords: Haematozoa, wild ducks, Iraq, *Haemoproteus* sp., *Leucocytozoon* sp., *Plasmodium relictum*.

Introduction

Wild ducks comprise 29 species and represent about 7% of the total number of the birds recorded from Iraq (Allouse, 1960; Salim *et al.*, 2006; Porter *et al.*, 2010). Most of our duck fauna is wintering migratory birds coming in autumn and leaving in spring except populations of four species; ruddy shelduck *Tadorna ferruginea*, marbled teal *Marmaronetta angustirostris*, red-crested pochard *Netta rufina* and ferruginous duck *Aythya nyroca* which are known to be residents and breed in Iraq. This group of birds is subject to various vectors of blood inhabiting parasites. They were hunted in thousands by net and sold in local markets in different parts of Iraq for their meat or domestication at houses especially the larger species like swans, geese and mallard.

Although many works had been carried out in Iraq dealing with haematozoa of birds like that of Al-Janabi *et al.* (1980); Shamsuddin and Mohammad (1980); Zangana (1982); Mohammad (1990, 1996, 2001, 2002, 2003, 2004, 2014, 2015 a,b); Mohammad and Al-Naeimi (2000); Mohammad *et al.* (2001, 2002); Jasim (2006); Al-Berwari and Saeed (2012); Mohammad and Al-Moussawi (2013); Abed *et al.* (2014). But none of them devoted to study the blood

parasites of ducks; instead they examined few duck individuals within a larger group of studied birds.

The aim of this work is to determine the identity of parasites detected in the blood smears of some ducks in the middle of Iraq.

Materials and Methods

Study area: The middle of Iraq area encounters Baghdad, Wasit, Babylon, Kerbala, Al-Najaf Al-Ashraf, Al-Diwaniya provinces. All of these provinces fall within 441 Lower Tigris and Euphrates ecoregion which includes the region Tigris Euphrates Alluvial salt marsh (PA0906) which is characterized by marshlands and seasonally inundated plains and here the waters of Turkey, Syria, Iraq and the western mountains of Iran collect before entering the Gulf, and it is with a subtropical, hot, and arid climate (CBD Fourth National Report-Iraq, 2010).

Blood sampling of ducks: A total of 192 ducks belonging to 4 genera and 10 species were examined. Examining the ducks was possible through the kind

cooperation of the local net hunters and allowing the author to get the blood samples in major cities of the middle of Iraq where they use to sell ducks in temporary shops during autumn, winter and spring. Their cooperation allows getting relatively large number of samples. Places of collection were from Al-Dalmaj Marsh, Wasit and Al-Diwaniya provinces, Al-Najaf city, Al-Najaf Al-Ashraf province, Baghdad city, Baghdad province, Hilla city, Babylon province and few specimens of ruddy sheldduck from Al-Ukhaidher fort in the desert south of Kerbala city, Kerbala province, during the period from January to December 2015. Thin blood smears were made immediately from the brachial vein of each bird, air dried, fixed in absolute methanol or ethanol, and stained with Giemsa's stain at strength 1:10 at pH 7.2 for one hour. The identification was made with the aid of suitable literatures and keys.

Results and Discussion

Table 1 summarizes the results of examination of the present material. It would show that 10 species of

ducks were examined, belong to 4 genera. Thirteen ducks out of 192 (6.8%) were found infected with one of the haematozoan parasites; *Haemoproteus* sp., *Leucocytozoon* sp., and *Plasmodium relictum* (table 1). This infection rate is near that recorded by Mohammad (2015 b) in wigeon *Anas penelope* which counted 8.1% but differs widely from that of Mohammad (2015 a) in ferruginous duck *Aythya nyroca* which counted 14.8%. These results may reflect the vector potentiality between breeding sites outside Iraq mostly Russia and Europe and of wintering sites in Iraq since the migratory bird the wigeon *A. penelope* showed result resembled that of present result which differed with the resident bird *A. nyroca* infection rate. These data may indicate high vector potentiality of the Iraqi habitats. However, the present infection rate seems very low when compared with that given by Bennett *et al.* (1991) and Dey *et al.* (2008) who reported 76% and 60% infection rate in ducks with haematozoa in Canada and Bangladesh respectively.

Table 1: Duck species, no. examined, no. infected, and parasite species.

Duck species	No. examined		No. infected		% infection		Total %	Parasite species		
	♂	♀	♂	♀	♂	♀		<i>Haemopr oteus</i> sp.	<i>Leucocyt ozoon</i> sp.	<i>Plasmo dium relictum</i>
<i>Anas acuta</i>	5	3	-	-	-	-	-	-	-	-
<i>Anas clypeata</i>	3	5	-	-	-	-	-	-	-	-
<i>Anas crecca</i>	18	23	1	-	5.56	-	2.4	1	-	-
<i>Anas Penelope</i>	6	6	-	-	-	-	-	-	-	-
<i>Anas platyrhynchos</i>	46	33	8	3	17.4	9.1	13.9	4	4	3
<i>Anas querquedula</i>	4	2	-	-	-	-	-	-	-	-
<i>Anas strepera</i>	2	3	-	-	-	-	-	-	-	-
<i>Aythya nyroca</i>	8	10	-	1	-	10	5.56	-	1	-
<i>Tadorna ferruginea</i>	2	1	-	-	-	-	-	-	-	-
<i>Marmaronetta angustirostris</i>	7	5	-	-	-	-	-	-	-	-
Total	101	91	9	4	8.9	4.4	6.67	5	5	3

Three species of ducks were infected, *Anas crecca*, *A. platyrhynchos* and *Aythya nyroca* with infection rates of 2.7%, 13.9% and 5.6% respectively. The first two are migratory birds, thus infection might be acquired at their breeding sites.

In regard to infection in both host mates, males represent 69.2% of total infected ducks. This is rather hard to explain and might be related to sample size which needs much more material to retrieve a reliable conclusion regarding this matter.

In regard to the incidence of parasites, many haemoproteid parasite species had been recorded from ducks (Bennett *et al.*, 1982). The haematozoan *Haemoproteus* sp. (fig. 1) was recorded from one male of *A. crecca* and from 2 males and 1 female of

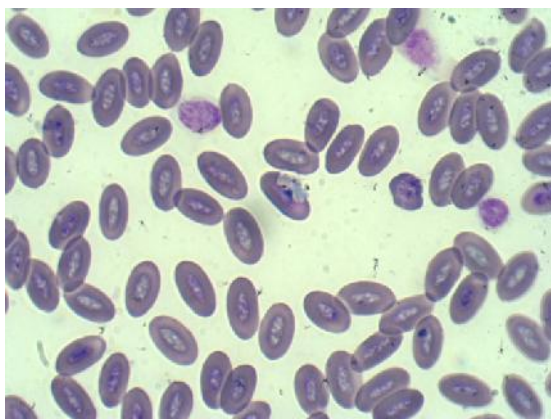


Fig.1: *Haemoproteus* sp. from *Anas crecca*

A. platyrhynchos. Specific identity of this parasite could not be assigned as the parasites seen in the periphery blood were immature. *Leucocytozoon* sp. (fig. 2) was observed in 3 males and one female of *A. platyrhynchos* and one female of *A. nyroca*. Specific identity could not be specified due to the rarity of this parasite in view of the light infection noticed in infected hosts. Finally, the *Plasmodium relictum* infection was recorded in the three female mallards only. This parasite has a huge range of vertebrate hosts, including numerous representatives of many bird orders (Valkiunas, 2005). It was recorded in a wide range of anatid birds (Bennett *et al.*, 1982). It was reported in the middle of Iraq from the marbled teal *Marmaronetta angustirostris* and the wigeon *Anas penelope* (Mohammad, 2014, 2015b).

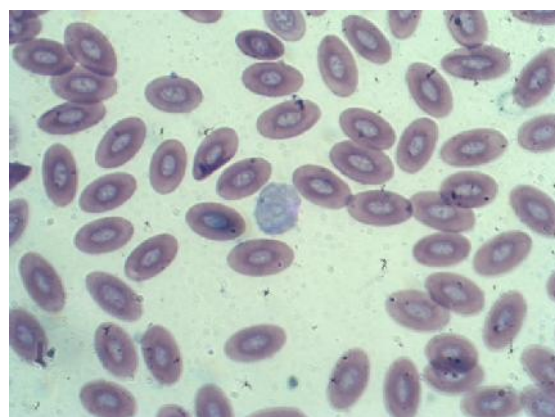


Fig. 2: *Leucocytozoon* sp. from *Aythya nyroca*

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