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BLOOD PARASITES OF MALLARD AND PINTAIL DUCKS FROM CENTRAL ALBERTA AND THE MACKENZIE DELTA, NORTHWEST TERRITORIES

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Abstract: Blood films from 60 mallard (*Anas platyrhynchos*) and 67 pintail (*A. acuta*) ducks, collected in Alberta and the Mackenzie Delta, Northwest Territories, during 1973 and 1974, were examined for blood parasites. Twenty-two (37%) of the mallards and fourteen (21%) of the pintails were infected with one or more species of hematozoa. Infections of *Leucocytozoon simondi* occurred more frequently (86%) than *Haemoproteus nettionis* (22%) in the infected birds. *Trypanosoma avium* occurred in one individual of each species of duck; one pintail harbored an unidentified microfilaria. Differences of prevalence between species are predicted on the basis of host attractancy to vectors and/or host habitat selection, and are discussed.

INTRODUCTION

Intense interest in the hematozoa of the Anatidae was first kindled when heavy mortality of ducks was initially recorded,[9] and further substantiated by work on the life cycle of *Leucocytozoon simondi* (=*L. anatis*).[7] The blood parasite problem in North American waterfowl was summarized and a need for further studies was indicated.[4] The distribution of the avian hematozoa of ducks has been summarized for North America,[3] references for which can be found in a recent bibliography.[5] The purpose of this study was to document the presence of blood parasites in mallards and pintails in Central Alberta and the Mackenzie Delta, N.W.T.

MATERIALS AND METHODS

Sixty adult female mallards (*Anas platyrhynchos*) and 67 adult female pintails (*A. acuta*) were collected during 1973 and 1974 from Central Alberta and the Mackenzie Delta, N.W.T. Blood smears were made from heart blood, and subsequently air-dried, fixed in absolute methanol, and stained with Giemsa's solution, (pH 7.2). Quantification of parasite intensities was made under 100x magnification and was expressed as a mean, the number of parasites seen per 20,000 erythrocytes divided by the number of infected birds.

Mallards and pintails (Table 1) were collected in aspen parkland near Tofield, Alberta, during the periods 25 April-24 May 1973, and 23 April-7 May 1974. Mallards and pintails (Table 1) were collected near Inuvik, N.W.T., during the periods 1-27 June 1973, and 31 May-14 June 1974.

RESULTS

In Central Alberta in 1973, 43% of the mallards and 21% of the pintails were infected with one or more species of hematozoa. Nineteen percent of the mallards and 14% of the pintails were infected in 1974. In both species of ducks, *L. simondi* represented 76% of the infections in 1973 and 100% in 1974. *Haemoproteus nettionis* was present in 1973 in 31% of the mallards

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TABLE 1. Prevalence of **Leucocytozoon** and **Haemoproteus** in Mallard and Pintail Ducks of Central Alberta and Mackenzie Delta, N.W.T.

	No. examined			No. infected*				Leucocytozoon		Haemoproteus	
	1973	1974	Total	1973	(%)	1974	(%)	1973	1974	1973	1974
Mallards											
Central Alberta	30	21	51	13	(43)	4	(19)	10	4	5	0
Mackenzie Delta	6	3	9	4	(67)	1	(33)	3	1	2	0
Total	36	24	60	17	(47)	5	(21)	13	5	7	0
Pintails											
Central Alberta	28	21	49	6	(21)	3	(14)	6	3	0	0
Mackenzie Delta	15	3	18	4	(27)	1	(33)	3	1	1	0
Total	43	24	67	10	(23)	4	(17)	9	4	1	0
Totals	79	48	127	27	(34)	9	(19)	22	9	8	0

* The total of infections may exceed the total number of infected birds as a result of multiple infections in individual birds.

but was absent in both species of ducks in 1974.

In the Mackenzie Delta region in 1973, 67% of the mallards and 27% of the pintails were infected. In both species, *L. simondi* constituted 46% of the infections. Thirty-three percent of both species were infected in 1974. *L. simondi* constituted 67% of the infections in mallards during this period. *H. nettionis* was present in 14% of both species in 1973 and was absent in 1974. *Trypanosoma avium* was present in one individual of each species, and one microfilaria was found in one pintail in 1973. The mean intensity of *L. simondi* infections in mallards was 2.67 per 20,000 erythrocytes and in pintails was 1.69; mean intensity of *H. nettionis* in mallards was 13.7 and in pintails was 1.0. These figures indicate a chronic infection level as seen in adults.

DISCUSSION

Mallard and pintail ducks from Central Alberta showed a relatively lower prevalence of blood parasites than their arctic counterparts in both 1973 and 1974. This is not in agreement with the hypothesis that arctic vertebrates are less frequently parasitized than non-arctic vertebrates.[6] In both areas, each year, mallards were more frequently parasitized than were pintails (Table 1). This suggests that mallards are more attractive to, or are ecologically more favorably situated for contact with, suitable vectors. A study has indicated that a greater proportion of mallards nest closer to water than pintails,[8] thus supporting the latter hypothesis. Migratory bird band returns suggest that both species utilize the Pacific Flyway enroute to Alberta and the Mackenzie Delta. It has been hypothesized that *Leucocytozoon* is more prevalent in the interior flyways, occurring rarely in ducks examined from California.[4] Ducks of the Atlantic Flyway are frequently infected.[1,2] The possibility exists that there is an East-West, rather than an interior-coastal flyway difference. Although experimental evidence is lacking, a greater proportion of pintails may succumb to infections.

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