

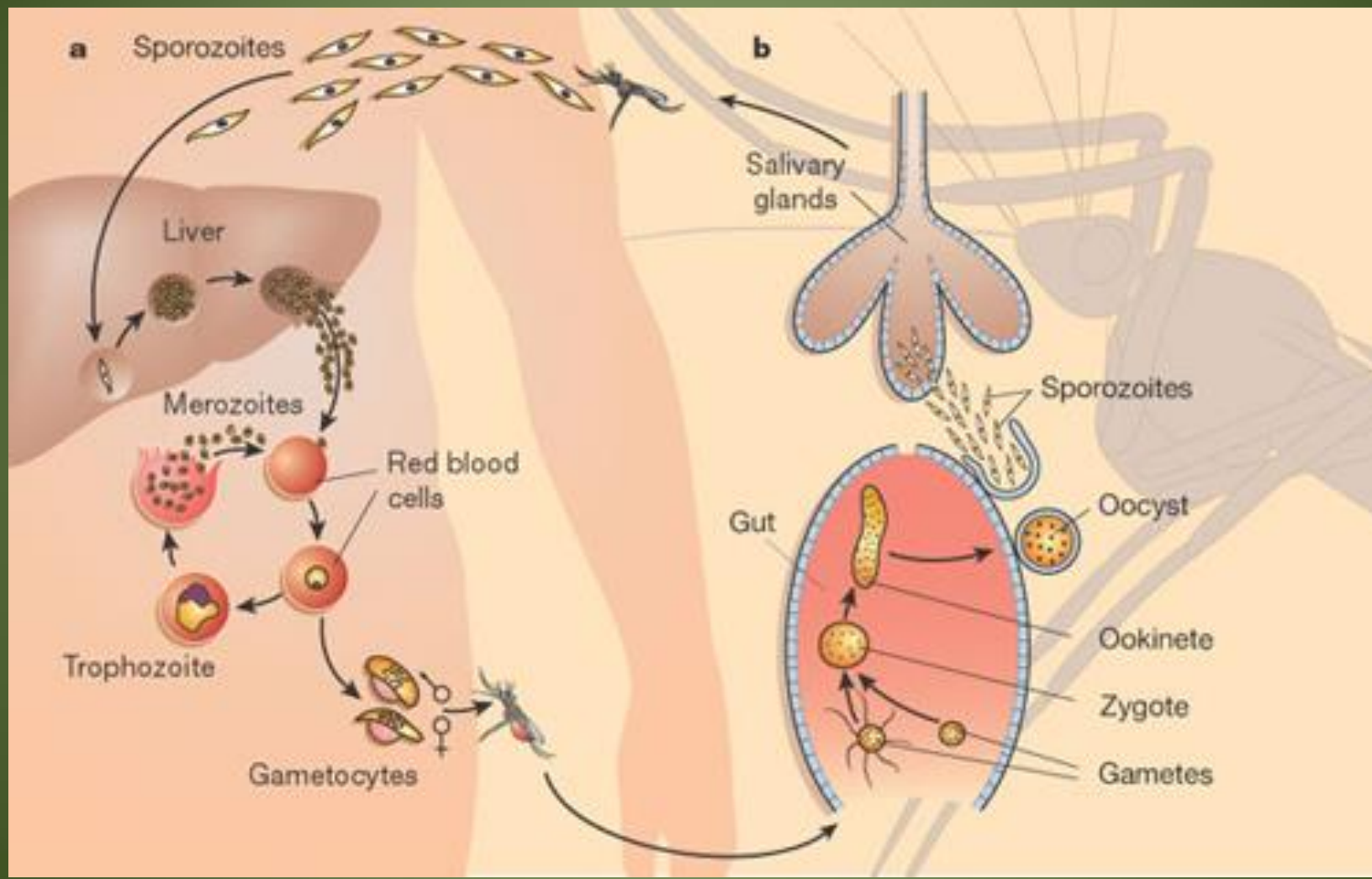
Blood Parasites In Overwintering
Rusty Blackbirds
(Mississippi, Arkansas)

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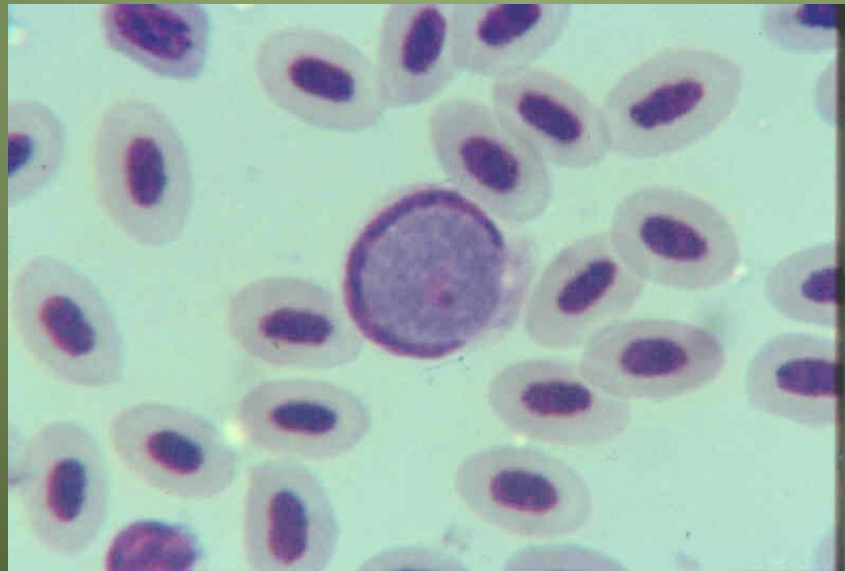
Five blood parasites are regularly encountered in avian blood.

All have life cycle that involves insect vector/host.



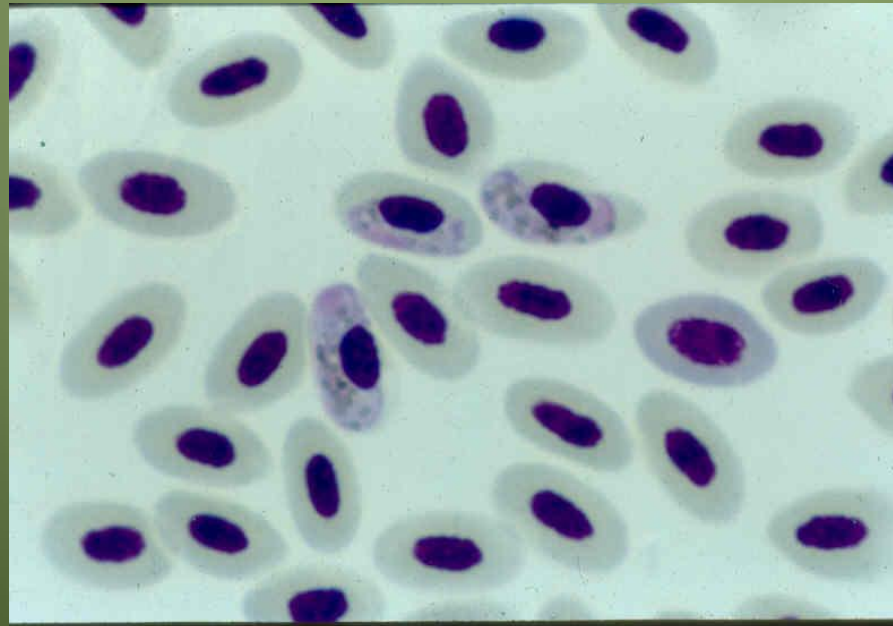
Leucocytozoon sp.

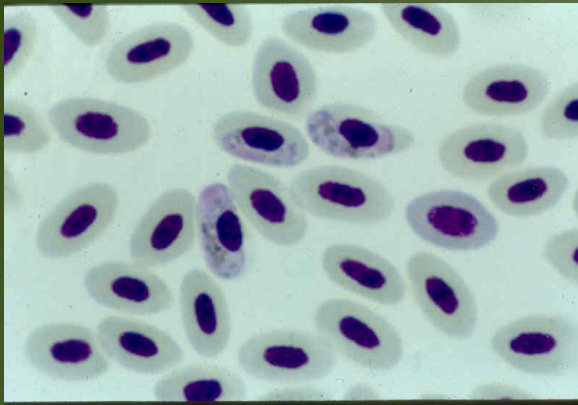
Vectors of *Leucocytozoon* are biting midges (Diptera: Ceratopogonidae) and simuliid flies (Diptera: Simuliidae). The gametocyte stage, seen here, occurs within an erythrocyte or erythroblast, pushing the cells nucleus to the side.



Haemoproteus sp.

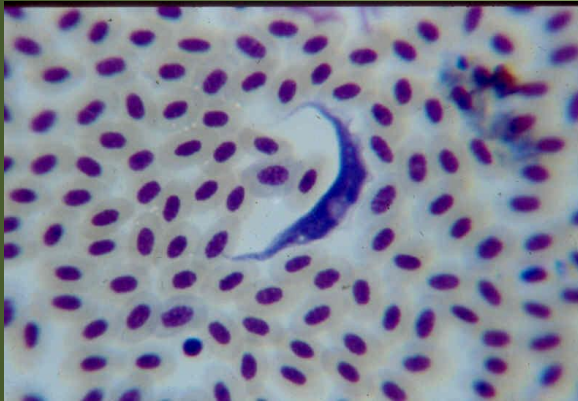
Haemoproteus vectors are usually biting midges (Diptera: Ceratopogonids) and hippoboscid flies (Diptera: Hippoboscidae). Horse flies in the Family Tabanidae have also been identified as potential vectors. As many as 50% of erythrocytes can be infected.





Other Haematozoa seen:

- *Plasmodium*
- *Trypanosoma*
- *Microfilaria*



FAQs:

How common are blood parasites?

Common in most species birds.

Prevalence related to habitat features

Variation in prevalence

Pathogenicity?

Host/parasite relationship is old

Parasitic relationships → Commensalistic

Can be a significant mortality factor.

Prevalence of blood parasites in Rusty Blackbirds (*Euphagus carolinensis*) sampled in Arkansas and Mississippi during the winter months.

ABBR. Leuco.= *Leucocytozoan* sp., Haem.= *Haemoproteus* sp. , Plasm.= *Plasmodium* sp., Tryps.= *Trypanosoma* sp., Micro.=microfilarial larvae.

YEAR	Sample Size	Number Infected	% Infected	Leuc.	Haem.	Plasm.	Tryps.	Micro.
2005/06	52	30	58	27	3		2	1
2006/07	50	24	48	22	1	1	1	
2007/08	51	20	39	17	2	0		1

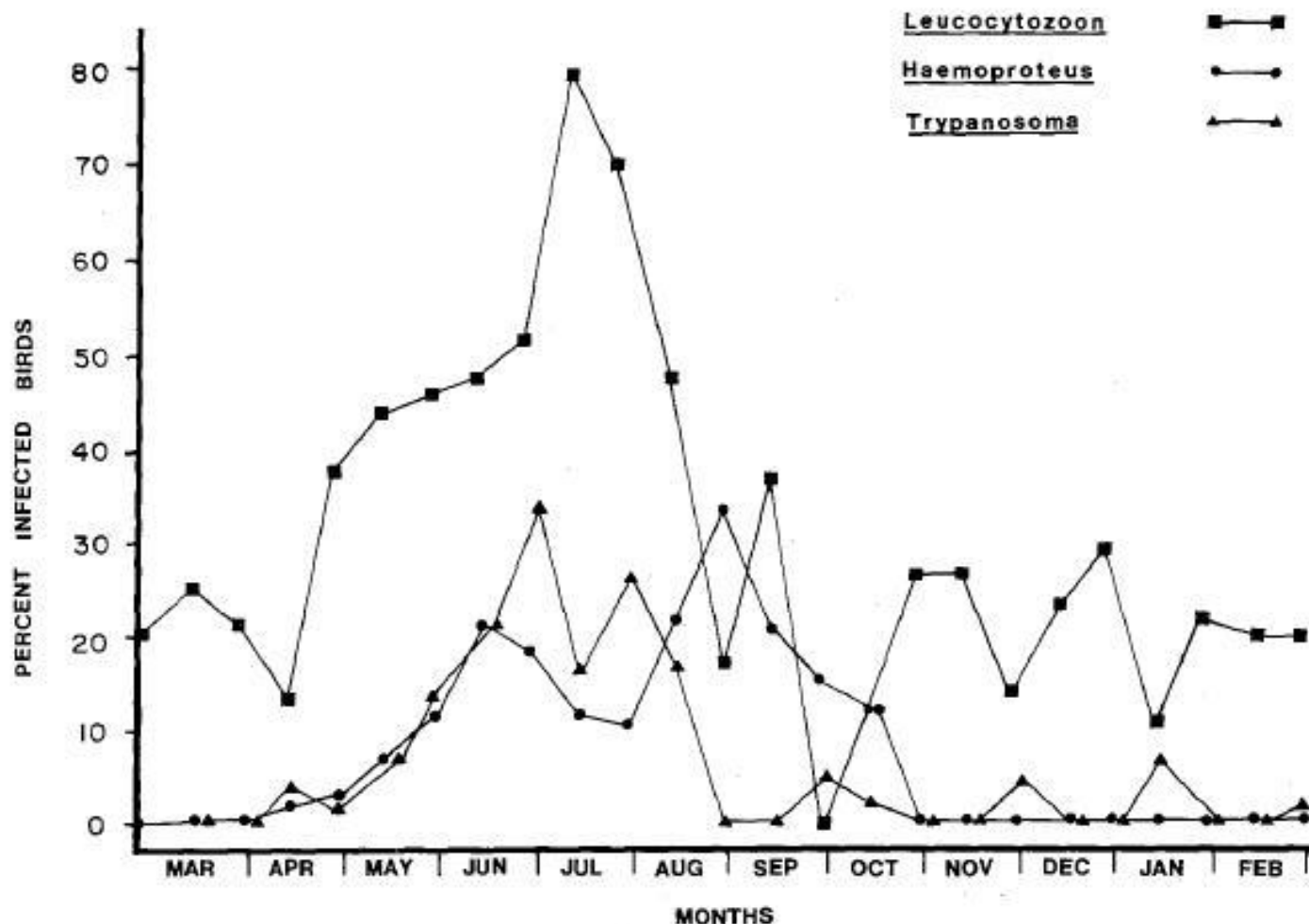


FIGURE 1. Seasonal prevalences of *Leucocytozoon* spp., *Haemoproteus* spp. and *Trypanosoma* spp. in birds in central Vermont from March 1982 to March 1985. Results for each half-month period in each of the 3 yr were summed.

Sexual differences. Three winters combined

Male prevalence 56% (37/66)

Female prevalence 46% (32/69)

Females consistently have lower infection rates.

Year	Sex	N	# Infect.	% Infect.
2005/06	Male	20	13	65%
	Female	28	15	53%
2006/07	Male	29	14	48%
	Female	19	9	45%
2007/08	Male	17	10	59%
	Female	22	8	36%

Prevalence of blood parasites in Rusty Blackbirds (*Euphagus carolinensis*) sampled in Arkansas and Mississippi during the winter 2005-2006 arranged by site

Site	N	Number infected	% Infected	Leuc.	Haem.	Plasm.	Tryps.	Micro.
Deer Creek	17	11	65	11			1	
Greenville	8	4	50	4				
Johnson	4	2	50	1			1	
Leroy Percy	23	13	57	11	3			1

Prevalence of blood parasites in Rusty Blackbirds (*Euphagus carolinensis*) sampled in Arkansas and Mississippi during the winter 2006-2007 arranged by site.

Site	N	Number infected	% Infected	Leuc.	Haem.	Plasm.	Tryps.	Micro.
Deer Creek	18	10	56	10				
Sunflower	9	3	33	2	1			
Bryce	8	4	50	4		1		
Ballard	6	4	67	4				
Johnson	6	1	17	1				
Panther Creek	2	2	100	1			1	
Arcoloa	1	0	0					

Literature regarding blood parasites in Rusty Blackbirds

Location	Season	N	% Infect	Source
North America	Breeding	23	83%	Grenier et al. 1975
	Winter		?????	

Prevalence of haematozoa in summer Rusty Blackbird populations

Location	Sex	N	# Inf.	% Inf.	Leuc	Plas	Tryp
Maine 07	Male	6	4	67%	3		2
	Female	6	4	67%	4	1	
	TOTAL	12	8	67%	7	1	2
Alaska 07	Male	3	2	67%	2		
	Female	12	3	25%	3		
	TOTAL	15	5	33%	5		
Alaska 08	Male	7	5	71%	5		
	Female	14	7	50%	6		1
	TOTAL	21	12	57%			

??? Significance ???

Prevalence in overwintering birds is higher than was expected.
Prevalence in breeding populations lower than reported.

A relapse of haematozoa could indicate weakened or compromised
Immune system.

Stress is known to trigger a relapse.

Certainly represents a physiological cost to the infected bird.

Females show lower prevalence in both summer and winter than males.
(Exception: Maine summer 07)