

# SOME PARASITES OF THE COMMON CROW, *CORVUS BRACHYRHYNCHOS* BREHM, FROM OHIO<sup>1, 2</sup>

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## ABSTRACT

Thirty-one species of parasites were taken from 339 common crows over a twenty-month period in Ohio. Of these, nine are new host records: the cestodes *Orthoskrjabinia rostellata* and *Hymenolepis serpentulus*; the nematodes *Physocephalus sexalatus*, *Splendofilaria quiscali*, and *Splendofilaria flexivaginalis*; and the arachnids *Laminosioptes hymenopterus*, *Syringophilus bipectinatus*, *Analges corvinus*, and *Gabucinia delibata*. Twelve parasites not previously reported from the crow in Ohio were also recognized. Two tables, one showing the incidence and intensity of parasitism in the common crow in Ohio, the other listing previous published and unpublished records of common crow parasites, are included.

## INTRODUCTION

Although the crow is of common and widespread occurrence east of the Rockies, no comprehensive, year-round study of parasitism in this bird has been reported. Surveys of parasites of common crows, collected for the most part during the winter season, have been made by Ward (1934), Morgan and Waller (1941), and Daly (1959). In addition, records of parasitism in the common crow, reported as a part of general surveys of bird parasites, are included in publications by Ransom (1909), Mayhew (1925), Cram (1927), Canavan (1929), Rankin (1946), Denton and Byrd (1951), Mawson (1956; 1957), Robinson (1954; 1955).

This paper contains the results of a two-year study made in Ohio, during which 339 crows were examined for internal and external parasites.

## MATERIALS AND METHODS

Juvenile and adult crows were shot in the field and wrapped individually in paper bags prior to transportation to the laboratory. Nestling crows were taken alive from their nests. The birds were either examined immediately after returning to the laboratory or placed under refrigeration, at 3°C, for not more than 72 hours. The age of each bird was determined by the methods described by Good (1952). Arthropod parasites were removed by washing each bird in a detergent bath consisting of five grams of "Dreft" in two quarts of water. A fine-toothed comb facilitated the removal of ectoparasites. The bath water was strained through a double layer of cheese cloth and the ectoparasites were then collected from the cloth with the aid of a dissecting microscope. Ectoparasites were preserved in Hoyer's medium; Acanthocephala, cestodes, and trematodes were fixed in Lavdowsky's FAA solution and stained with Semichon's Carmine; nematodes were fixed in warm FAA or 75% alcohol and cleared in either glycerin-alcohol or lacto-phenol. Microfilariae were obtained by macerating the lungs in Ringer's solution and by preparation of blood smears from the liver or heart. Giemsa's or Wright's stain was used to stain the smears. Oocysts of coccidia were obtained by use of the method described by Morgan and Hawkins (1948).

## RESULTS AND DISCUSSION

Thirty-one different species of parasites (table 1), distributed as follows among seven taxonomic groups, were collected from 339 crows: Protozoa—3 species, Acanthocephala—1, Cestoda—5, Trematoda—4, Nematoda—10, Insecta—3, Acarina—5. Two new species, *Splendofilaria flexivaginalis* Jones 1961, and

<sup>1</sup>Taken from a dissertation submitted to the Graduate School of The Ohio State University in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

<sup>2</sup>Manuscript received January 4, 1967.

*Laminosioptes hymenopterus* Jones and Gaud 1962, were found and nine new host records were recorded.

A higher percentage of protozoan infections was found in immature crows than in adult crows. The incidence of tapeworm infections was essentially the same between the two age groups, although *Anomotaenia constricta* infected a higher percentage of immature birds, while *Hymenolepis variabilis* occurred in a higher percentage of mature birds. With the exception of *Echinostoma revolutum*, trematode infections were most frequent in mature crows. Those nematodes

TABLE 1  
Incidence and intensity of parasitism in 180 adult (A) and 159 immature (I)  
common crows from Ohio

Species of parasites	Site of infection	Per cent of each age group infected (Incidence)		Number of parasites harbored (Intensity)	
		A	I	A	I
Protozoa					
<i>Haemoproteus danilewskii</i>	* (1)	6.6	14.5	—	—
<i>Leucocytozoon sakharoffi</i>	(2)	0.6	5.0	—	—
<i>Isopora</i> sp.	(3)	7.7	19.5	—	—
Acanthocephala					
<i>Mediorhynchus grandis</i>	(3)	4.5	5.6	1-7	1-45
Cestoda					
<i>Orthoskrjabinia rostellata</i>	(3)	—	0.6	—	2
<i>Hymenolepis corvi</i>	(3)	26.1	23.2	1-32	1-63
<i>Anomotaenia constricta</i>	(3)	24.4	35.8	1-28	1-23
<i>Hymenolepis serpentulus</i>	(3)	1.7	1.3	2-18	1-4
<i>Hymenolepis variabilis</i>	(3)	46.6	37.1	1-37	1-35
Trematoda					
<i>Echinostoma revolutum</i>	(3)	1.7	2.5	2-14	1-6
<i>Amphimerus speciosus</i>	(4)	0.6	—	2	—
<i>Brachylecithum americanum</i>	(4)	3.9	—	5-30	—
<i>Conspicuum macrorchis</i>	(5)	5.0	1.2	1-5	1
Nematoda					
<i>Capillaria anatis</i>	(6)	32.2	58.5	1-235	1-147
<i>Capillaria contorta</i>	(7)	63.9	58.5	1-40	1-35
<i>Porrocaecum ensicaudatum</i>	(3)	1.1	4.2	2	1-2
<i>Syngamus trachea</i>	(8)	—	0.6	—	2
<i>Physocephalus sexalatus</i>	(9)	2.8	5.7	1-75	1-25
<i>Microtetrameres helix</i>	(10)	38.9	28.3	1-172	1-69
<i>Acuaria anthuris</i>	(11)	47.8	33.3	1-18	1-13
<i>Diplotrriaena tricuspis</i>	(12)	1.7	9.4	2-4	1-9
<i>Splendidofilaria flexivaginalis</i>	(14)	21.1	55.3	1-15	2-25
<i>Splendidofilaria quiscali</i>	(13)	6.1	22.6	2-8	1-15
Arachnida					
<i>Laminosioptes hymenopterus</i>	(15)	0.6	—	8	—
<i>Analges corvinus</i>	(15)	48.4	16.3	100+	100+
<i>Trouessartia corvina</i>	(15)	72.8	64.1	100+	100+
<i>Gabucinia delibata</i>	(15)	71.1	81.8	100+	100+
<i>Syringophilus bipectinatus</i>	(15)	1.1	—	7	—
Insecta					
<i>Philoapterus corvi</i>	(15)	50.6	34.6	2-76	2-25
<i>Myrsidea albiceps</i>	(15)	67.2	61.0	1-145	1-278
<i>Brüelia rotundata</i>	(15)	40.6	43.4	1-100	1-47

\*The numbers in parentheses indicate the locations in the host: (1) Erythrocyte (2) Leucocyte (3) intestine (4) Bile duct (5) Gall Bladder (6) Cloaca and intestinal mucosa (7) Mucosa of Esophagus (8) Trachea (9) Mesentery and intestinal mucosa (10) Mucosa of proventriculus (11) Beneath horny lining of gizzard (12) Body cavity (13) Beneath meninges and in cerebral hemispheres (14) Encysted in splenic mesentery (15) Skin and Feathers.

that were embedded in the mucosa, such as *Capillaria contorta*, *Microtetrameres helix*, and *Acuaria anthuris*, occurred in the mature crows more frequently than in the immature birds. With two exceptions, *Gabucinia delibata* and *Briuelia rotundata*, the incidence of arthropod infections was greatest among adult birds. In general, adult birds harbored a larger number of parasites than did immature birds. These conclusions are based on the data presented in table 1.

#### Protozoa

For published records of *Haemoproteus danilewskii* Kruse 1890 and *Leucocytozoon sakharoffi* Sambon 1908 see table 2.

#### *Isospora* sp.

Except for minor differences in size, the specimens of this parasite that I found were very similar to those described by Ray (1952) as *Isospora corviae* from *Corvus macrorhynchus*, the Himalayan crow. Ray found only subspherical oocysts measuring 0.015–0.023 mm (0.020) by 0.014–0.0215 mm, while I found both spherical and subspherical forms. The spherical forms were 0.020 to 0.021 mm in size, while the subspherical forms were in the same size range as those reported by Ray (1952). The oocysts from the common crow contained a single, non-polar, refractile granule and did not possess a residual body. Boughton (1930) found a wide range of variability in the mean size of the oocysts of the species *Isospora lacazii*. Furthermore, his study indicated that morphological data should be supplemented by cross-infection experiments in order to correctly identify *Isospora* from passerine birds. Thus, in light of the apparent need for additional studies of this group, the writer has not given a species designation to the specimens found in this study.

#### *Acanthocephala*

The published records of *Mediorhynchus grandis* Van Cleave 1916 are listed in Table 2.

#### Cestoda

*Orthoskrjabinia rostellata* (Rogers, 1941) Spassky 1947 was originally described from *Cardinalis cardinalis* in Oklahoma. The present report is a new host record for this parasite.

Published records of *Hymenolepis corvi* (Mayhew 1925) Fuhrmann 1932, *Hymenolepis variabilis* (Mayhew 1925) Fuhrmann 1932, and *Anomotaenia constricta* (Molin 1858) Cohn 1900 are listed in table 2. The present report is a new host record for *Hymenolepis serpentulus* (Shank 1788) Weinland 1858.

#### Trematoda

Daly (1959) found *Echinostoma revolutum* (Froelich 1802) Looss 1899 in the crow in Virginia.

*Amphimerus speciosus* (Stiles and Hassall 1896) Barker 1911 was first described by Stiles and Hassall (1896) from *Corvus americanus* in Maryland and Washington, D. C.

Locality records of *Brachylecithum americanum* Denton 1945 and *Conspicuum macrorchis* Denton and Byrd 1951 are listed in table 2.

#### Nematoda

*Capillaria anatis* (Schrank 1790) Travassos 1915 was originally described from specimens taken from *Anas querquedula*. It has not been previously reported from *Corvus brachyrhynchus* in the United States, although Mawson (1956b) found *Capillaria collaris*, a synonym of *Capillaria anatis* according to Madsen (1952), in crows in Canada.

*Syngamus trachea* (Montagu 1811) Chapin 1925 has been found infecting at least eleven different orders of birds (Madsen 1952). *Syngamus gracilis*, a synonym of *Syngamus trachea* according to Madsen (1952), has been found in *Corvus brachyrhynchos* in Pennsylvania (Chapin 1925; Canavan 1931), in Oklahoma (Ward 1934), in Alaska (Cram 1936), and in New York State (Goble and Kutz 1945). The studies of Lewis (1925) indicate that wild birds, such as starlings, are important disseminators of gapeworms to domestic fowls.

*Physocephalus sexalatus* (Molin 1860) Diesing 1861 occurred as an encysted third-stage larva in the abdominal mesentery and intestinal mucoea. In pigs and related animals, it may develop to the adult stage. Although it has been reported from a variety of birds (Cram 1930), the writer found no previous record of its occurrence in the common crow.

*Splendidofilaria quiscali* (von Linstow 1904) Odetoynbo and Ulmer 1960 was originally described from the cranial cavity of the grackle. The present report is a new host record for this parasite.

*Splendidofilaria flexivaginalis* Jones 1961 was originally described from the common crow in Ohio. No additional records of this parasite have been reported.

Published and unpublished records of *Capillaria contorta* (Creplin 1839) Travassos 1915, *Porrocaecum ensicaudatum* (Zeder 1800) Baylis 1920, *Microtetrameres helix* Cram 1927, *Acuaria anthuris* (Rudolphi 1819) Railliet, Henry, and Sissoff 1912, *Diplotriaena tricuspis* (Fedtschenko 1874) Seurat 1915 are listed in table 2.

#### Arachnida

*Laminosioptes hymenopterus* Jones and Gaud 1962 was originally described from the common crow in Ohio. *Laminosioptes cysticola* Megnin 1880, occurring in the subcutaneous tissues of fowl, is the only other member of this genus that has been reported in the literature.

*Syringophilus bipectinatus* Haller 1880 was described from a specimen taken from the quill of a fowl in Europe. Baker and Wharton (1956) have reported additional hosts of this parasite. The present report is a new host record.

The writer found no previous report of *Gabucinia delibata* (Robin 1877) Oudemans 1905 and *Analges corvinus* Robin and Megnin 1877 from *Corvus brachyrhynchos*.

*Trouessartia corvina* (Koch 1840) Canestrini 1899 has not been previously reported from the crow in Ohio.

#### Insecta

Published and unpublished records of *Philoapterus corvi* (Linnaeus 1758) Harrison 1916, *Myrsidea albiceps* (Piaget 1880) Harrison 1916, and *Brüelia rotundata* (Osborn 1896) Hopkins and Clay 1952, are listed in table 2.

#### SUMMARY

Nine species of parasites found in this study represent new host records for *Corvus brachyrhynchos*. They are the cestodes *Orthoskrjabinia rostellata* and *Hymenolepis serpentulus*; the nematodes *Physocephalus sexalatus*, *Splendidofilaria flexivaginalis* and *Splendidofilaria quiscali*; the arachnids *Laminosioptes hymenopterus*, *Syringophilus bipectinatus*, *Analges corvinus*, and *Gabucinia delibata*.

Records of parasites not previously published from crows in Ohio are the protozoa *Haemoproteus danilewskii*, *Leucocytozoon sakharoffi*, and *Isospora* sp.; the cestodes *Hymenolepis variabilis* and *Anomotaenia constricta*; the trematode *Conspicuum macrorchis*; and the nematodes *Capillaria anatis*, *Porrocaecum ensicaudatum*, *Syngamus trachea*, *Microtetrameres helix*, *Acuaria anthuris* and *Diplotriaena tricuspis*.

TABLE 2

*Published and unpublished records of parasites taken from the common crow,  
exclusive of present study*

Parasite	Record	Locality
Protozoa		
Sporozoa		
<i>Plasmodium relictum</i>	Coatney (1936)	Nebraska
	Morgan and Waller (1941)	Wisconsin
<i>Haemoproteus danilewskii</i>	Coatney and West (1938)	Nebraska
	Coatney and Jellison (1940)	Montana
	Herman (1938)	Cape Cod
	Morgan and Waller (1941)	Wisconsin
<i>Leucocytozoon sakharoffi</i>	Coatney and West (1938)	Nebraska
	Morgan and Waller (1941)	Wisconsin
<i>Isospora</i> sp.	Boughton (1938)	Minnesota
	Morgan and Waller (1941)	New Jersey
		Wisconsin
Mastigophora		
<i>Trypanosoma</i>	Coatney and West (1938)	Nebraska
	Morgan and Waller (1941)	Wisconsin
Acanthocephala		
<i>Mediorhynchus grandis</i>	Van Cleave (1918)	Maryland
		Ohio; Illinois
		Kentucky
Platyhelminthes		
Cestoda		
<i>Hymenolepis corvi</i>	Mayhew (1925)	Illinois
	Morgan and Waller (1941)	Iowa; Wisconsin
<i>Hymenolepis variabilis</i>	Mayhew (1925)	Illinois
	Morgan and Waller (1941)	Wisconsin
<i>Anomolaenia constricta</i>	Ransom (1909)	Nebraska
	Williams (1929)	Nebraska
<i>Taenia cylindracea</i>	Ward (1934)	Oklahoma
<i>Lateripores teres</i>	Ward (1934)	Oklahoma
Trematoda		
<i>Conspicuum macrochis</i>	Denton and Byrd (1951)	Texas
<i>Brachylecithum americanum</i>	Denton (1945)	Georgia
	Fendinger (1952)	Ohio
<i>Amphimerus speciosus</i>	Stiles and Hassall (1896)	Maryland
<i>Collyriclum faba</i>	Morgan and Waller (1941)	Iowa
Nemathelminthes		
Nematoda		
<i>Acuarua anthuris</i>	Williams (1929)	Nebraska
	Ward (1934)	Oklahoma
	Cram (1934)	Maryland
	Morgan and Waller (1941)	Iowa; Wisconsin
	Mawson (1956c)	Canada
<i>Diplotrriaena tricuspis</i>	Morgan and Waller (1941)	Iowa; Wisconsin
<i>Porrocaecum ensicaudatum</i>	Mawson (1956a)	Canada
<i>Subulura papillosa</i>	Ward (1934)	Oklahoma
<i>Amidostomum</i> sp.	Ward (1934)	Oklahoma
<i>Trichostrongylus pergracilis</i>	Ward (1934)	Oklahoma
<i>Capillaria contorta</i>	Morgan and Waller (1941)	Iowa
<i>Capillaria collaris</i>	Mawson (1956b)	Canada
<i>Syngamus gracilis</i>	Chapin (1925)	Pennsylvania
	Canavan (1931)	Pennsylvania
	Ward (1934)	Oklahoma
<i>Syngamus trachea</i>	Goble and Kutz (1945)	New York
<i>Microtetrameres helix</i>	Cram (1927)	Maryland
	Ward (1934)	Oklahoma
	Morgan and Waller (1941)	Iowa; Wisconsin
<i>Splendidofilaria flexivaginalis</i>	Jones (1961)	Ohio

TABLE 2. *Continued*

Parasite	Record	Locality
Arthropoda		
Mallophaga		
<i>Degeeriella rotundata</i>	Osborn (1896) Ward (1934) Peters (1936)	Iowa Oklahoma Maryland North Carolina South Carolina Florida
<i>Myrsidea americana</i>	Morgan and Waller (1941) Kellogg (1896)	Iowa; Wisconsin Maryland North Carolina South Carolina
<i>Myrsidea interrupta</i>	Osborn (1896)	Iowa
<i>Menopon mesoleucum</i>	Morgan and Waller (1941) Ward (1934)	Iowa Oklahoma
Acarina		
<i>Haemophysalis leporis-palustris</i>	Peters (1936)	Maryland
<i>Trouessartia corvina</i>	Peters (1936)	Maryland North Carolina New York South Carolina
<i>Liponyssus bursa</i>	Ward (1934)	Oklahoma
Analgesidae	Morgan and Waller (1941)	Iowa; Wisconsin
<i>Laminosioptes hymenopterus</i>	Jones and Gaud (1962)	Ohio
Diptera		
<i>Lynchia americana</i>	MacArthur (1948)	Wisconsin
<i>Ornithoica confuenta</i>	Johnson (1925)	New England States

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