

Reprinted from

THE JOURNAL OF THE ELISHA MITCHELL SCIENTIFIC SOCIETY

Volume 84, Number 2—Summer, 1968

ARTHROPODS FROM PASSERINE BIRDS
OF NORTH CAROLINA

LARRY D. HENDRICKS AND RICHARD C. AXTELL

Department of Zoology and Entomology

North Carolina State University, Raleigh, N. C.

Arthropods from Passerine Birds of North Carolina

LARRY D. HENDRICKS AND RICHARD C. AXTELL

Departments of Zoology and Entomology, North Carolina State University, Raleigh, N. C.

This study was undertaken to determine the families of arthropods that infest passerine birds of central North Carolina. Little work has been done with the ectoparasites of birds in this area. The study is not intended to provide a complete list of the arthropods that might be recovered from such birds, due to the limited number of birds taken.

Materials and Methods

The birds were taken with a 0.177 caliber LaCross air rifle and a twelve-gauge shotgun with birdshot.

All were collected between April 1 and May 14, 1966, in Wake, Lee, Johnston, Franklin, Person, Warren, and Vance counties. They were identified with the aid of a field guide by Peterson (1964).

The birds were sealed in plastic bags immediately after collection and examined within 1 to 8 hrs. in all cases. The hosts were washed thoroughly in a large-mouth one-gallon jar filled with a solution of warm water and approximately $\frac{1}{2}$ gram of commercial detergent. The bird was shaken vigorously in the tightly sealed jar for 2 to 4 minutes and the washings were filtered through a Buchner funnel. The residue retained on the filter paper was transferred to 70% alcohol in a 10-inch glass dish and examined with the aid of a stereoscopic microscope. The nares were opened with bone clippers and examined under a stereoscopic microscope. The throat was opened at the level of the bronchi and the trachea, nasal passages, and nostrils flushed with a warm water-detergent solution by means of a syringe. The effluent was examined with the aid of stereoscopic microscope. Representative specimens of each species of arthropods were slide-mounted in CMC-10 nonresinous mounting medium (Turtox®).

Mites were identified to families by the authors, using the keys of Baker (1949), Baker and Wharton (1952), and Baker et al. (1958). The ticks were identified with the aid of keys from Herms and James (1965). In the class Insecta, the Mallophaga were identified using the keys of Emerson (1953), and the thrips were identified with the aid of Borror and DeLong (1964).

Results and Discussion

Eight families of Passeriforms were examined in this survey. Representatives of two classes, Arachnida and Insecta, of the phylum Arthropoda were recovered. The results are presented in Table I. New host and locality records were determined by consulting Brimley (1938), Hicks (1959), and Peters (1933, 1936).

The order Acarina was represented by four suborders. Suborder Mesostigmata was represented by two families, Dermanyssidae and Rhinonyssidae. Suborder Trombidiformes was represented by five families: Cheyletidae, Eriophyidae, Tetranychidae, Trombiculidae and Harpyrhynchidae. Suborder Sarcoptiformes was represented by three families: Analgesidae, Dermoglyphidae, and Proctophyllodidae. Suborder Ixodides was represented by one representative of Ixodidae, *Haemaphysalis leporis-palustris* Packard.

The genus *Neochelyletia* Baker of the family Cheyletidae is composed of predacious mites. The effectiveness of their predation seems to be suggested by the fact that the bird on which they were abundant harbored only one other mite in very small numbers.

Two of the families of "feather mites," Proctophyllodidae and Dermoglyphidae, were by far the most commonly encountered mites in relation to the numbers of individuals present and to the number of birds on which they occurred.

The class Insecta was represented by two orders, Mallophaga and Thysanoptera. The family Philopteridae of the order Mallophaga contained most of the insects recovered. Two of the three thrips recovered were early-stage nymphs and could only be identified to family (Thripidae).

The following arthropods that were recovered are directly or indirectly of economic or medical significance to man: the mite, *Ornithonyssus sylviarum* (Canestrini and Fanzagò); the tick *Haemaphysalis leporis-palustris* Packard; the plum nursery mite, *Aculus fockeui* Nalepa; the clover mite *Bryobia praetiosa* Koch; and the chiggers, *Trombicula* sp. The class Insecta was represented by three families of significance: Philopteridae, Menoponidae, and Thripidae.

List of birds a

Purple Martin (transient)	(M) Family A
	<i>Anhernia</i>
	(M) Family D
	<i>Pteronys</i>
	(M) Family P
	<i>Trouessa</i>
	(L) Family M
	<i>Myrsidea</i>
Blue Jay (1), <i>Cy</i>	(M) Family E
	<i>Aculus f</i>
	(M) Family A
	<i>Analgop</i>
	(M) Family P
	<i>Proctoph</i>
	(L) Family P
	<i>Philopte</i>
Common Crow (Permanent)	(M) Family F
	<i>Harpyrh</i>
	(M) Family T
	<i>Trombic</i>
	(M) Family I
	<i>Gabucin</i>
	(M) Family I
	<i>Trouessa</i>
	(L) Family I
	<i>Philopte</i>
Mockingbird (1)	(M) Family I
	<i>Harpyrh</i>
	(M) Family I
	<i>Pterode</i>
	(L) Family I
	<i>Bruelia</i>
Brown Thrasher (M)	(M) Family I
	<i>Ptilony</i>
	(M) Family I
	<i>Bryobia</i>
	(M) Family I
	<i>Pterode</i>
	<i>Proctop</i>
	(T) Family I
	<i>Haema</i>
	(1) Family I
	<i>Heterot</i>
Cedar Waxwing (Winter and t)	(M) Family I
	<i>Analgop</i>
	(M) Family I
	<i>Pterony</i>
	(M) Family I
	<i>Pterode</i>

Table I

List of birds and parasites collected from each¹

Purple Martin (1), <i>Progne subis</i> (L.)—Summer and transient	(1) Family Thripidae Unidentified larva (2)
(M) Family Analgesidae <i>Anhernialges</i> sp. (155)*	Starling (1), <i>Sturnus vulgaris</i> (L.)—Permanent
(M) Family Dermoglyphidae <i>Pteronyssus</i> sp. (300)*	(M) Family Dermoglyphidae <i>Pteronyssus</i> sp. (11)*
(M) Family Proctophyllodidae <i>Trouessartia</i> sp. (470)*	(M) Family Proctophyllodidae <i>Trouessartia</i> sp. (25)*
(L) Family Menoponidae <i>Myrsidea dissimilis</i> (Kellogg) (11)	House Sparrow (1), <i>Passer domesticus</i> (L.)—Permanent
Blue Jay (1), <i>Cyanocitta cristata</i> (L.)—Permanent	(M) Family Analgesidae <i>Analges</i> sp. (20)*
(M) Family Eriophyidae <i>Aculus fockeui</i> Nalepa (75)*†	(M) Family Proctophyllodidae <i>Trouessartia</i> sp. (125)*
(M) Family Analgesidae <i>Analgopsis</i> sp. (19)*	(L) Family Philopteridae <i>Bruelia subtilis</i> (Nitzsch) (20)*
(M) Family Proctophyllodidae <i>Proctophyllodes pica</i> (Koch) (27)*	Eastern Meadowlark (1), <i>Sturnella magna</i> (L.)—Permanent
(L) Family Philopteridae <i>Philopterus cristata</i> Malcomson (75)*	(M) Family Cheyletidae <i>Neochyletiella</i> sp. (37)*
Common Crow (12), <i>Corvus brachyrhynchos</i> (Brehm)—Permanent	(M) Family Proctophyllodidae <i>Proctophyllodes trisetosus</i> Ewing & Stover (5)*
(M) Family Harpyrhynchidae <i>Harpyrhynchus</i> sp. (170)*†	(T) Family Ixodidae <i>Haemaphysalis leporis-palustris</i> Packard (1)
(M) Family Trombiculidae <i>Trombicula</i> sp. (2)*	Redwinged Blackbird (2), <i>Agelaius phoeniceus</i> (L.)—Permanent
(M) Family Dermoglyphidae <i>Gabucinia</i> sp. (1,200)*	(M) Family Analgesidae <i>Mesalges johnstoni</i> Spory (17)*
(M) Family Proctophyllodidae <i>Trouessartia corvina</i> (Koch) (300)*	(M) Family Proctophyllodidae <i>Proctophyllodes egglestoni</i> Spory (90)*
(L) Family Philopteridae <i>Philopterus ocellatus</i> (Scopoli) (5)*	(L) Family Philopteridae <i>Philopterus agetaii</i> (Denny) (17)*
Mockingbird (1), <i>Mimus polyglottos</i> (L.)—Permanent	<i>Bruelia ornatissima</i> (Giebel) (12)*
(M) Family Harpyrhynchidae <i>Harpyrhynchus</i> sp. (15)*†	Rufous-sided Towhee (1), <i>Pipilla erythrophthalmus</i> (L.)—Permanent
(M) Family Proctophyllodidae <i>Pterodectus</i> sp. (58)*	(M) Family Analgesidae <i>Analgopsis</i> sp. (43)*
(L) Family Philopteridae <i>Bruelia</i> sp. (10)*	(M) Family Proctophyllodidae <i>Proctophyllodes</i> sp. (73)*
Brown Thrasher (1), <i>Toxostoma rufum</i> (L.)—Permanent	(T) Family Ixodidae <i>Haemaphysalis leporis-palustris</i> Packard (5)*
(M) Family Rhinonyssidae <i>Philonyssus</i> sp. (26)*†	Chipping Sparrow (1), <i>Spizella passerina</i> (Bechstein)—Summer
(M) Family Tetranychidae <i>Bryobia praetiosa</i> Koch (1)*	(M) Family Dermanyssidae <i>Orinthonyssus sylviarum</i> Canestrini & Fanzago (10)*
(M) Family Proctophyllodidae <i>Pterodectus</i> sp. (370)*	(M) Family Tetranychidae <i>Tetranychus</i> sp. (1)*
(T) Family Ixodidae <i>Haemaphysalis leporis-palustris</i> Packard (2)*	(M) Family Analgesidae <i>Analgopsis</i> sp. (78)
(1) Family Thripidae <i>Heterothrips</i> sp. (1)*†	(M) Family Proctophyllodidae <i>Proctophyllodes</i> sp. (280)*
Cedar Waxwing (1), <i>Bombycilla cedrorum</i> (Vieillot)—Winter and transient	Song Sparrow (1), <i>Melospiza melodia</i> (Wilson)—Winter
(M) Family Analgesidae <i>Analgopsis</i> sp. (14)*	(M) Family Cheyletidae <i>Neochyletiella</i> sp. (7)*
(M) Family Dermoglyphidae <i>Pteronyssus</i> sp. (55)*	(M) Family Analgesidae <i>Analgopsis</i> sp. (15)*
(M) Family Proctophyllodidae <i>Pterodectes</i> sp. (150)*	(M) Family Proctophyllodidae <i>Proctophyllodes</i> sp. (75)*

¹(M)=mites, (T)=ticks, (L)=lice, and (1)=other Insecta. *=New host records for North Carolina. †=New host records. The numbers in parentheses are the numbers of that species collected in this survey. Birds' names and order are according to the A.O.V. check-list, Fifth Edition (1957). The resident status of each bird is included.

Summary

Twenty-five birds of the order Passeriformes, representing eight families, were collected in North Carolina and examined for arthropods, both parasitic and accidental. Four suborders of the order Acarina were recovered. Represented were: suborder Mesostigmata, two families; suborder Trombidiformes, five families; suborder Sarcoptiformes, three families; and suborder Ixodides, one family. Representatives of the family Proctophyllodidae of the suborder Sarcoptiformes were the most commonly encountered parasites, being recovered from seven of the eight families of birds.

The orders Mallophaga and Thysanoptera of the class Insecta were recovered, the first was represented by two families and the second by one.

ACKNOWLEDGMENTS

The writers wish to acknowledge the assistance of the following specialists who determined most of the arthropods: D. E. Johnston (Rhinonyssidae and Harpyrhynchidae), R. D. Price (Philopteridae and Menoponidae), E. W. Baker (Cheyletidae and Tetranychidae), H. H. Keifer (Eriophyidae), W. T. Atyeo (Analgesidae, Dermoglyphidae and Proctophyllodidae), and L. J. Stannard (Thripidae).

LITERATURE CITED

- A.O.V. 1957. Check-list of North American Birds. Fifth Edition. American Ornithologists' Union, Baltimore.
- BAKER, E. W. 1949. A review of the mites of the family Cheyletidae in the U. S. National Museum. Proc. U. S. Nat. Mus. **99**: 219-265.
- BAKER, E. W., AND G. W. WHARTON. 1952. An Introduction to Acarology. Macmillan Co., New York.
- BAKER, E. W., J. H. CAMIN, F. CUNLIFFE, T. A. WOOLEY, AND C. E. YUNKER. 1958. Guide to the Families of Mites. Contrib. No. 3, Inst. Acarol., Univ. Maryland.
- BORROR, D. J., AND D. M. DELONG. 1964. An Introduction to the Study of Insects. Holt, Rinehart and Winston, Inc., New York.
- BRIMLEY, C. S. 1938. The Insects of North Carolina. North Carolina Dept. of Agriculture. Raleigh, North Carolina.
- EMERSON, K. C. 1953. New North American Mallophaga. J. Kansas Entomol. Soc. **26**(4): 132-136.
- HERMS, W. B., AND M. T. JAMES. 1961. Medical Entomology. Macmillan Co., New York.
- HICKS, E. A. 1959. Check-list and Bibliography on the Occurrence of Insects in Birds' Nests. The Iowa State College Press, Ames, Iowa.
- PETERSON, R. T. 1964. A Field Guide to the Birds. Houghton Mifflin Co., Boston.
- PETERS, H. S. 1933. External parasites collected from banded birds. Bird-Banding **4**: 68-75.
- . 1936. A list of external parasites from birds of the eastern part of the United States. Bird-Banding **7**: 9-27.