

THE GENERA *ORNITHOICA*, *ORNITHOMYA*, AND  
*ORNITHOCTONA* IN MASSACHUSETTS  
(DIPTERA: HIPPOBOSCIDAE)<sup>1</sup>

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*Ornithoica vicina* (Walker, 1849), *Ornithomya anchineuria* Speiser, 1905, *Ornithoictona fusciventris* (Wiedemann, 1830), and *Ornithoictona erythrocephala* (Leach, 1817) have been reported from birds in New England; *Ornithomya bequaerti* Maa, 1969 has not although it has undoubtedly been confused with *O. anchineuria* in the earlier literature. It is the purpose of this paper to present data on the host range, seasonal abundance, mallophagan phoresy, and acarine hyperparasitism of *O. vicina* and *O. anchineuria*; to present a second record of *O. fusciventris* in Massachusetts; and to present records of *O. bequaerti* in New England. Synonymy used in reference to New England specimens in previous literature is also cited.

The majority of birds examined during this study were captured in Japanese mist nets in routine banding studies by the Manomet (Massachusetts) Bird Observatory and the Encephalitis Field Station (Massachusetts Department of Public Health). Birds, largely Passeriformes and Piciformes, were netted in many localities in Bristol, Plymouth, and Barnstable Counties.

*Ornithoica vicina* (Walker, 1849)

*Ornithoica confluenta*: Johnson, 1922 (Maine), 1925 (Massachusetts, New Hampshire, Maine), 1927 (Massachusetts), 1929 (Massachusetts); Ferris, 1929 (Massachusetts); Peters, 1936 (Massachusetts, Connecticut, New Hampshire Vermont); Herman, 1937 (Massachusetts, New Hampshire); Procter, 1938 (Maine). (Not *Ornithoica confluenta* (Say, 1823), a parasite of wading birds (Ardeidae) known only from Florida in the United States.)

*Ornithoica confuens*: Peters, 1933 (Massachusetts, New Hampshire).

*Ornithoica vicina*: Bartlett, 1947 (Massachusetts); Bequaert, 1954 (Massachusetts, Connecticut, New Hampshire, Vermont, Maine); Maa, 1969a and b (Massachusetts, Connecticut, New Hampshire, Vermont, Maine).

HOST RANGE: *O. vicina* was taken from 21 species of Passeriformes (Corvidae, Paridae, Sittidae, Troglodytidae, Mimidae, Turdidae, Sylviidae, Sturnidae, Parulidae, Ploceidae, Icteridae, Fringillidae), one species of Piciformes (Picidae), one species of Columbiformes (Columbidae), and one species of Strigiformes (Strigidae) (Table 1). Previous records of this species from *Colaptes auratus*, *Parus hudsonicus*, *Sitta canadensis*, and *Sturnus vulgaris* could not be found

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in the literature. Other birds listed as hosts of *O. vicina* in Massachusetts include *Butorides virescens*, *Bubo virginianus*, *Corvus brachyrhynchos*, *Mniotilta varia*, *Dendroica petechia*, *Agelaius phoeniceus*, *Icterus galbula*, *Pheucticus ludovicianus*, *Poocetes gramineus*, and *Spizella passerina* (Bequaert, 1954).

SEASONAL ABUNDANCE: Specimens were collected during the months of July (21%), August (49%), September (18%), October (8%), and November (4%) (Table 2). The earliest collection was on 7/7/66 (1 ♀ ex *Passer domesticus*) and the latest record was 19/11/68 (1 ♀ ex *Junco hyemalis*).

SEX RATIOS: The ratio of males to females collected was approximately 1: 2.8 (26 males: 72 females: 1 gynandromorph). The predominance of females may be due to the relative ease with which the females with larvae may be captured.

PHORESY: The following cases of mallophagan phoresy were observed: Taunton, 15/7/65, 1 ♀ ex *Cyanocitta cristata*, 2 ♀ ♀ *Bruelia clayae*; Manomet, 2/10/66, 1 ♀ ex *Cyanocitta cristata*, 1 ♂; 1 ♀ *Bruelia clayae*; Middleboro, 12/8/68, 1 ♀ ex *Quiscalus quiscula*, 2 ♀ ♀ *Bruelia* sp. Lice were observed on three of 99 *O. vicina* examined; all three flies were females with two *Bruelia* spp. attached to the abdomen.

HYPERPARASITISM: *Myialges anchora* Sargent and Trouessart were removed from the abdomen of three *O. vicina*: Manomet, 22/9/69, 1 ♀ ex *Junco hyemalis* and Manomet, 16/10/69, 2 ♀ ♀ ex *Parus hudsonicus*.

#### *Ornithomya anchineuria* Speiser, 1905

*Ornithomya anchineuria*: Johnson, 1922 (Massachusetts, Vermont), 1925 (Massachusetts, New Hampshire, Vermont, Maine), 1929 (Massachusetts, New Hampshire, Vermont, Maine); Peters, 1936 (Massachusetts, Connecticut, New Hampshire, Vermont, Maine); Herman, 1937 (Massachusetts); Procter, 1938 (Maine), 1946 (Maine).

*Ornithomya fringillina*: Thompson, 1936 (Massachusetts); Procter, 1946 (Maine); Bequaert, 1954 (Massachusetts, Connecticut, New Hampshire, Vermont, Maine); Sheldon, Shaw, and Bartlett, 1956 (Massachusetts). (Not *Ornithomyia fringillina* Curtis, 1836, a species known from Europe and Asia).

*Ornithomyia avicularia*: Peters, 1933 (Massachusetts, New Hampshire, Vermont).

*Ornithomyia fringillaria*: Clay and Meinertzhagen, 1943 (Massachusetts).

*Ornithomyia anchineuria*: Maa, 1969a, 1969b (Massachusetts, New Hampshire, Vermont, Maine).

HOST RANGE: *O. anchineuria* was taken from 29 species of Passeriformes (Tyrannidae, Corvidae, Paridae, Sittidae, Troglodytidae, Mimidae, Turdidae, Bombycillidae, Vireonidae, Parulidae, Icteridae, Thraupidae, Ploceidae, Fringillidae) and three varieties of Piciformes (Picidae) (Table 1). This species has not been reported previously from *Bombycilla cedrorum*, *Vireo griseus*, *Spinus pinus*, and *Colaptes auratus* x *cafer*. *O. anchineuria* has also been reported from the following avian species in Massachusetts, although some

TABLE 1. HOST - PARASITE ASSOCIATIONS ENCOUNTERED IN SOUTHEASTERN MASSACHUSETTS, 1964 - 1970

	<i>Ornithoctona fusciventris</i>	<i>Ornithoica vicina</i>	<i>Ornithomya anchineuria</i>	<i>Ornithomya bequaerti</i>	<i>Ornithomya species*</i>
Screech Owl ( <i>Otus asio</i> )		1/1**			
Mourning Dove ( <i>Zenaidura macroura</i> )		1/1			
Yellow-shafted Flicker ( <i>Colaptes auratus</i> )		1/1	13/7		1/1
Hybrid Flicker ( <i>Colaptes auratus</i> × <i>cafer</i> )			4/3		
Downy Woodpecker ( <i>Dendrocopos pubescens</i> )			2/2		
Eastern Kingbird ( <i>Tyrannus tyrannus</i> )			1/1		
Blue Jay ( <i>Cyanocitta cristata</i> )		8/8	4/4		2/2
Black-capped Chickadee ( <i>Parus atricapillus</i> )		1/1	5/5	1/1	
Boreal Chickadee ( <i>Parus hudsonicus</i> )		2/1			
White-breasted Nuthatch ( <i>Sitta carolinensis</i> )			1/1		
Red-breasted Nuthatch ( <i>Sitta canadensis</i> )		1/1			
House Wren ( <i>Troglodytes aedon</i> )		1/1	5/1		
Catbird ( <i>Dumetella carolinensis</i> )		3/3	23/21		2/2
Brown Thrasher ( <i>Toxostoma rufum</i> )			4/4		1/1
Robin ( <i>Turdus migratorius</i> )		8/6	49/33		11/10
Wood Thrush ( <i>Hylocichla mustelina</i> )		2/2	6/4		
Hermit Thrush ( <i>Hylocichla guttata</i> )		1/1	4/3		1/1
Swainson's Thrush ( <i>Hylocichla ustulata</i> )			1/1		1/1
Gray-cheeked Thrush ( <i>Hylocichla minima</i> )					1/1
Veery ( <i>Hylocichla fuscescens</i> )			5/5		
Golden-crowned Kinglet ( <i>Regulus satrapa</i> )		5/1			
Cedar Waxwing ( <i>Bombycilla cedrorum</i> )			1/1		
Starling ( <i>Sturnus vulgaris</i> )		2/1			1/1
White-eyed Vireo ( <i>Vireo griseus</i> )			2/2		

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	<i>Ornithoetona fusciventris</i>	<i>Ornithoica vicina</i>	<i>Ornithomya anchineuria</i>	<i>Ornithomya bequaerti</i>	<i>Ornithomya species*</i>
Ovenbird ( <i>Seiurus aurocapillus</i> )		2/2			2/2
Yellowthroat ( <i>Geothlypis trichas</i> )		4/3	7/6		
American Redstart ( <i>Setophaga ruticilla</i> )			1/1		
House Sparrow ( <i>Passer domesticus</i> )		5/5	2/2		2/2
Redwinged Blackbird ( <i>Agelaius phoeniceus</i> )			1/1		
Baltimore Oriole ( <i>Icterus galbula</i> )			4/2		1/1
Common Grackle ( <i>Quiscalus quiscula</i> )		11/9	8/6		
Cowbird ( <i>Molothrus ater</i> )		1/1			
Scarlet Tanager ( <i>Piranga olivacea</i> )			1/1		
Summer Tanager 1/1 ( <i>Piranga rubra</i> )					
Pine Siskin ( <i>Spinus pinus</i> )			1/1		
Rufous-sided Towhee ( <i>Pipilo erythrophthalmus</i> )		4/4	11/8		2/1
Savannah Sparrow ( <i>Passerculus sandwichensis</i> )			1/1		
Slate-colored Junco ( <i>Junco hyemalis</i> )		7/7		1/1	
Chipping Sparrow ( <i>Spizella passerina</i> )			3/3		
Field Sparrow ( <i>Spizella pusilla</i> )			1/1		
White-throated Sparrow ( <i>Zonotrichia albicollis</i> )		1/1	4/4		2/2
Swamp Sparrow ( <i>Melospiza georgiana</i> )		5/4	2/2		1/1
Song Sparrow ( <i>Melospiza melodia</i> )		15/14	15/14		2/2
Other (flying, no host data, etc.)		7/7	43/43		1/1
TOTAL	1/1	99/86	235/194	2/2	34/32

\* either *O. anchineuria* or *O. bequaerti*; specimens no longer available for specific identification.

\*\*number of specimens / number of collections.

TABLE 2. MONTHLY COLLECTIONS OF HIPPOBOSCIDAE IN SOUTHEASTERN MASSACHUSETTS, 1964 - 1970

	<i>Ornithoctona fusciventris</i>	<i>Ornithoica vicina</i>	<i>Ornithomya anchineuria</i>	<i>Ornithomya bequaerti</i>	<i>Ornithomya species*</i>
January					
February					
March					
April	1/1				
May					
June			1/1**		
July		21/20	27/24		6/6
August		48/42	156/122		17/16
September		18/13	37/33		7/6
October		8/7	13/13	2/2	4/4
November		4/4	1/1		
December					
TOTAL	1/1	99/86	235/194	2/2	34/32

\* either *O. anchineuria* or *O. bequaerti*; specimens no longer available for specific identification.

\*\*number of specimens / number of collections.

of these records may actually refer to *O. bequaerti*: *Accipiter cooperi*, *Circus cyaneus*, *Philohela minor*, *Sialia sialis*, *Minotilta varia*, *Vermivora ruficapilla*, *Dendroica petechia*, *Dendroica pinus*, *Molothrus ater*, *Pheucticus ludovicianus*, *Carpodacus purpureus*, *Ammodramus savannarum*, *Poocetes gramineus*, *Passerina cyanea*, *Spizella arborea*, and *Melospiza lincolni* (Bequaert, 1954).

SEASONAL ABUNDANCE: *O. anchineuria* was collected during the months of June (1/2%), July (11%), August (66%), September (16%), October (6%), and November (1/2%) (Table 2). The earliest specimen was captured on 11/6/69 (1 ♀ ex *Dumetella carolinensis*); the latest collection was on 20/11/ 69 (1 ♀ ex *Spinus pinus*).

SEX RATIOS: The ratio of males to females collected was approximately 1: 1.5 (95 males: 140 females).

PHORESY: Seventeen cases of mallophagan phoresy were observed: Raynham, 4/8/64, 1 ♀ ex *Hylocichla mustelina*, 5 ♀ ♀ *Bruelia* sp.; Raynham, 4/8/64, 1 ♀ ex *Hylocichla mustelina*, 1 ♀ *Bruelia* (?) sp.; West Bridgewater, 21/7/6, 1 ♂ ex unknown host, 1 ♀ *Bruelia* sp.; Middleboro, 2/8/65, 1 ♀ ex *Spizella passerina*, 1 ♀ *Bruelia* sp.; Raynham, 4/8/65, 1 ♂ ex *Turdus migratorius*, 1 ♀ *Bruelia* (?) sp.; Raynham, 17/8/65, 1 ♀ ex *Turdus migratorius*, 1 ♀ *Bruelia* sp.; Easton, 18/7/67, 1 ♂ ex *Colaptes auratus*, 1 ♀ *Bruelia* sp.; Raynham, 15/8/67, 1 ♀ ex *Turdus migratorius*, 1 ♀ *Bruelia* (?) sp.; Manomet, 13/9/67, 1 ♂ ex *Turdus migratorius*, 1 ♀ *Bruelia* sp.;

Raynham, 1/8/67, 1 ♀ ex *Turdus migratorius*, 2 ♀ ♀ *Bruelia* (?) sp.;  
 Manomet, 9/8/69, 1 ♀ ex *Troglodytes aedon*, 2 ♀ ♀ *Bruelia* sp.;  
 Easton, 21/8/69, 1 ♀ ex *Colaptes auratus*, 1 ♀ *Bruelia* sp.;  
 Raynham, 6/8/68, 1 ♂ ex *Turdus migratorius*, 2 ♀ ♀ *Bruelia* (?) sp.;  
 Raynham, 6/8/68, 1 ♀ ex *Turdus migratorius*, 1 ♀ *Bruelia* (?) sp.;  
 Manomet, 20/8/70, 1 ♂ ex unknown host, 1 ♀ *Bruelia* sp.; and  
 Manomet, 21/8/70, 1 ♂ ex *Hylocichla mustelina*, 1 ♀ *Bruelia* sp.  
 Lice (*Bruelia* spp.) were attached to the abdomens of 19 of the 235  
*O. anchineuria* examined.

HYPERPARASITISM: *M. anchora* were removed from seven *O. anchineuria*: Monomy, x.65, 1 ♀ ex *Melospiza melodia*; Manomet, 21/10/68, 1 ♀ ex *Spizella pusilla*; Manomet, 2/9/70, 1 ♂ ex *Dumetella carolinensis*; Manomet, 7/9/70, 1 ♀ ex *Geothlypis trichas*; Manomet, 9/9/70, 1 ♀ ex *Hylocichla ustulata*; and Manomet, 10/9/70, 1 ♂ ex *Dumetella carolinensis*.

*Ornithomya bequaerti* Maa, 1969

Two collections of *O. bequaerti* were made in Manomet: 7/10/69, 1 ♀ ex *Junco hyemalis* and 16/10/69, 1 ♂ ex *Parus atricapillus*. This is the first report of this species in New England. Both avian species are new host records.

*Ornithoctona erythrocephala* (Leach, 1817)

*Ornithoctona erythrocephala*: Johnson, 1925 (Maine); Bequaert, 1954 (Connecticut, Massachusetts, New Hampshire, Maine).

This species was not encountered during the present survey, although Bequaert (1954) reported two specimens from *Falco columbarius* and one from an unspecified host collected in Massachusetts.

*Ornithoctona fusciventris* (Wiedemann, 1850)

*Ornithoctona strigilecula*: Procter, 1946 (Maine)

*Ornithoctona fusciventris*: Bequaert, 1954 (Connecticut, Massachusetts); Maa, 1969b (Connecticut, Massachusetts).

A female *O. fusciventris* was removed from the feathers of a *Piranga rubra* found dead in South Dartmouth on 9/4/69. Bequaert (1954) reported a specimen without host data collected on 20/5/02 in Wellesley, Massachusetts.

SUMMARY: A total of 99 *O. vicina* were recorded from 79 birds representing 24 species in four orders (Passeriformes, Piciformes, Columbiformes, and Strigiformes). Specimens were collected during the months of July through November. Three cases of mallophagan Phoresy and three cases of acarine hyperparasitism were observed. A total of 235 *O. anchineuria* were recovered from 151 birds of 32 varieties in two orders (Passeriformes and Piciformes). Collections were made during the months of June through November. Seventeen

cases of phoresy and seven cases of hyperparasitism were cited. Two *O. bequaerti* and one *O. fusciventris* were collected from three species of Passeriformes.

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#### LITERATURE CITED

- BARTLETT, L. M. 1947. Hippoboscid parasite from screech owl. *Auk*, **44**: 456-457.
- BEQUAERT, J. C. 1954. The Hippoboscidae or Louse-flies (Diptera) of Mammals and Birds. Part II. Taxonomy, Evolution, and Revision of American Genera and Species. *Entom. Amer.* XXXIV-XXXVI: 1-611.
- CLAY, T. and R. MEINERTZHAGEN. 1943. The relationship between Mallophaga and hippoboscid flies. *Parasitology*, **35**: 11-16.
- FERRIS, G. F. 1929. Observations on the genus *Ornithoica*. *Canad. Entom.* **61**: 280-285.
- HERMAN, C. M. 1937. Notes on hippoboscid flies. *Bird-Banding* **8**: 161-166.
- JOHNSON, C. W. 1922. Notes on distribution and habits of some of the bird-flies, Hippoboscidae. *Psyche* **29**: 79-85.
- 1925. Fauna of New England. 15. List of the Diptera or two-winged flies. *Occ. Papers Boston Soc. Nat. Hist.* **7**: 1-326.
- 1927. Museum notes. Insects. *Bull. Boston Soc. Nat. Hist.* **42**: 15-16.
- 1929. Some notes on certain of the hippoboscid flies. *Bull. Northeastern Bird-Banding Assoc.* **5**: 49-52.
- MAA, T. C. 1969a. Studies in Hippoboscidae (Diptera). II. Notes on the Hippoboscidae (Diptera) II. *Pacific Insects Monograph* **20**: 237-260.
- 1969b. Studies in Hippoboscidae (Diptera). II. A revised checklist and concise host index of Hippoboscidae (Diptera). *Pacific Insects Monograph* **20**: 261-299.
- 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.
- PROCTER, W. 1938. Biological Survey of the Mount Desert Region. The Insect Fauna. Wistar Inst. Anat. Biol. Philadelphia. 496 pp.
- 1946. Biological Survey of the Mount Desert Region. The Insect Fauna. Wistar Inst. Anat. Biol. Philadelphia. 566 pp.
- SHELDON, W. G., F. R. SHAW, and L. M. BARTLETT. 1956. New records of hippoboscids on woodcock. *Proc. Ent. Soc. Wash.* **58**: 13.
- THOMPSON, G. B. 1936. Some additional records of an association between Hippoboscidae and Mallophaga, together with a bibliography of the previous records. *Ann. Mag. Nat. Hist.* **18**: 309-312.