ECTOPARASITES OF MAMMALS AND BIRDS FROM FORT DIX, NEW JERSEY

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ABSTRACT: New state records are detailed for 17 arthropod ectoparasite species collected from mammals and birds at Fort Dix, New Jersey. Thirty-four additional ectoparasitic arthropod species are included in a host-ectoparasite list from a total of 108 hosts of 21 different species.

This study was undertaken to supplement existing knowledge of known or potentially medically important ectoparasitic arthropods at Fort Dix, Burlington County, New Jersey. Presence, prevalence and host range data were sought on ticks, fleas and mites which are known or potential vectors of human pathogens.

Previous records of ectoparasites from New Jersey have been published by: Cooley (1938, 1946), Fox (1940), Trembley and Bishopp (1940), Cooley and Kohls (1944, 1945), Ferris (1951), Hansens and Hadjinicolaou (1952), Baquaert (1954), Burbutis and Hansens (1955), Race (1955), Burbutis (1956), Hansens (1956), Burbutis and Mangold (1956), Clifford, et. al. (1961), Manischewitz (1966), Herrin (1970), and Whitaker and Wilson (1974). Collections from Burlington County were limited in or absent from most of these records.

During 1974, the Health and Environment Activity of the Medical Department Activity, Fort Dix, NJ, conducted a small animal trapping and ectoparasite surveillance program as part of their routine pest surveillance mission. Most of those 1974 collections are included here. All new state records included herein have been examined and confirmed by taxonomic specialists. Any specimen whose identification was questionable due to condition, preparation artifacts or improper instar for determination, was omitted from these data. No taxon is reported as a new state record if it could not be determined to be such a record. New state records do not include subspecies nor

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taxa determined to genus only (although the latter are included in the host-ectoparasite list in order to reflect their occurrence and observed hosts).

METHODS

Small animals and birds were trapped in box-type live traps, anesthetized, and examined for ectoparasites. Fleas and some immature ticks were mounted in balsam on slides whereas lice and most mites were mounted in Hoyer’s medium, ringed with clear fingernail polish. Some mites and late nymphal instars were preserved in 70 percent ethanol. Louse flies were attached with casein glue to paper points. These collections and processing procedures are detailed in Bram (1978). Host animals were identified using Burt and Grossenheider (1964), Peterson (1968) and Blair, et. al. (1968). Arthropod specimens reported here have been deposited in the collections of: the senior author, the Ohio State University (Columbus), the University of Kentucky (Lexington), the University of Minnesota (St. Paul), the California State University (Long Beach), the U.S. Army Academy of Health Sciences (Fort Sam Houston, TX) and the U.S. National Museum.

RESULTS AND DISCUSSION

Ectoparasites were collected from mammals and birds at Fort Dix, Burlington County, New Jersey during 1974. Examination of 108 animals yielded 321 fleas (9 species), 964 biting lice (6 species), 517 sucking lice (7 species), 261 ticks (7 species), 259 mites (20 species), and 5 louse flies (2 species). Seventeen ectoparasite species are reported from New Jersey for the first time.

New state records are detailed below. All other collections are included in the host-ectoparasite list for the purpose of recording their occurrence and observed hosts in the study area. All specimens reported here were collected on the Fort Dix military reservation. Numbers of ectoparasite specimens reported herein should not be used for any quantitative purposes because the investigators did not attempt to collect all the ectoparasites from heavily infested hosts.

Anoplura listed below follow the classification of Stojanovich and Pratt (1965); Mellophaga follow Emerson (1972 a, 1972 b); Siphonaptera follow Hopkins and Rothschild (1953); Acari follow Krantz (1971); Hippoboscidae follow Baquaert (1959); vertebrate hosts follow Blair, et. al. (1968). Parenthetical numbers following host names indicate numbers of infested individuals examined. Life stage abbreviations for ectoparasite specimens include: L = larva(e), N = nymph(s), H = hypopus (hypopi), M = adult male(s), F = adult female(s).
Class: ACARI
Order: PARASITIFORMES
Family: LAELAPIDAE
Eulaelaps stabularis (Koch)


Hirstionyssus staffordi Strandtmann and Hunt


Haemogamasus reidi Ewing

1 N, 7 F, ex. Glaucotnys volans (L.), 18-X-1974; new state record.

Family: MACRONYSSIDAE
Ornithonyssus wernecki (Fonseca)


Order: ACARIFORMES
Family: MYOBIIDAE
Archemyobia inexpectatus Jameson


Family: LABIDOPHORIDAE
Dermacarus hylandi Fain


Family: CHEYLETIDAE
Cheyletus eruditus (Schrank)

1 N, 4 F, ex. P. leucopus, 23-IV-1974; new state record.

Family: TROMBICULIDAE
Trombicula fitchi Loomis

3 L, ex. G. volans, 18-X-1974; new state record.

Class: INSECTA
Order: ANOPLURA
Family: HAEMATOPINIDAE
Neohaematopinus sciuropteri (Osborn)

**Family: HOPLOPLEURIDAE**

*Hoplopleura erratica* (Osborn)


*Hoplopleura trispinosa* Kellogg and Ferris


*Hoplopleura sciuricola* Ferris


**Order: MALLOPHAGA**

**Family: TRICHODECTIDAE**

*Neotrichodectes mephitidus* (Packard)


Although geographic records for mallophaga are usually de-emphasized by most experts due to the extreme mobility of their bird hosts, this state record is worthy of note. This becomes readily apparent when one considers that their hosts were collected at least 30 miles from the nearest state border, a skunk's normal lifetime activity range is less than a six mile radius, and they seldom, if ever, migrate (Verts, 1967).

**Order: SIPHONAPTERA**

**Family: PULICIDAE**

*Pulex simulans* Baker

Smit (1958) resurrected this species from synonymy with *Pulex irritans* L. Many workers since then have accepted and reinforced the validity of *P. simulans* as a separate taxon. Palmer and Wingo (1972) presented a key for separating these two species with supporting illustrations. Wilson (1966) summarized previously known records of *P. simulans* but did not report any records from New Jersey.

**Family: RHOPALOPSYLLIDAE**

*Polygenis gwyni* (C. Fox)


**Order: DIPTERA**

**Family: HIPPOBOSCIDAE**

*Ornithoicoa vicina* (Walker)

*Pseudolynchia canariensis* (B. Macquart)

1 M, 3 F, ex. *Columba livia* Gmelin, 7-VI-1974; new state record.

HOST-ECTOPARASITE LIST

**Class:** AVES

**Order:** COLUMBIFORMES

**Family:** COLUMBIDAE

*C. livia* – domestic pigeon

*Campanulotes bidentatus* (Burmeister) – M:P*

*Columbicola columbae* (L.) – M:P

*P. canariensis** – D:H

**Order:** PASSERIFORMES

**Family:** CORVIDAE

*Cyanocitta cristata* (L.) – blue jay

*Brueelia sp.* – M:P

*Haemaphysalis leporispalustris* (Packard) – P:I

**Family:** EMBERIZIDAE

*Pipilo erythrophthalmus* (L.) – rufous-sided towhee

*H. leporispalustris* – P:I

**Family:** ICTERIDAE

*Quiscalus quiscula* (L.) – common grackle

*Amblyomma americanum* (L.) – P:I

*H. leporispalustris* – P:I

*Myrsidea fuscomarginata* (Osborn) – M:M

*Tangavius aeneus* (Wagler) – bronzed cowbird

*Myrsidea thoracica* (Giebel) – M:M

**Family:** LANIIDAE

*Lanius excubitor* L. – northern shrike

*H. leporispalustris* – P:I

*O. vicinia** – D:H

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*Key to ectoparasite taxa (i.e. Order: Family) in alphabetic order:


**Indicates a new state record.**
Family: MIMIDAE
Dumetella carolinensis (L.) – catbird
Mesalgoides sp. – P:An

Family: TURDIDAE
Hylocichla mustelina (Gmelin) – wood thrush
H. leporispaustrius – P:1

Class: MAMMALIA
Order: CARNIVORA
Family: CANIDAE
C. familiaris – domestic dog
Ctenocephalides felis (Bouche) – S:P
Dermacentor variabilis (Say) – P:1
P. simulans** – S:P
Rhipicephalus sanguineus (Latreille) – P:1

Family: FELIDAE
Felis catus L. – domestic cat
Androlaelaps fahrenholzi (Berlese) – P:L
C. felis – S:P
D. variabilis – P:1

Family: MUSTELIDAE
M. mephitis – striped skunk
H. staffordii** – P:L
N. mephitis** – M:T
Odontopsyllus multispinosus (Baker) – S:C
P. gwyni** – S:R

Family: PROCYONIDAE
Procyon lotor (L.) – raccoon
A. americanaum – P:1
A. fahrenholzi – P:L
C. felis – S:P
D. variabilis – P:1
Ixodes texanus Banks – P:1
O. multispinosus – S:C
Ornithonyssus bacoti (Hirst) – P:M

Order: LAGOMORPHA
Family: LEPORIDAE
Sylvilagus floridanus (J.A. Allen) – Eastern cottontail
A. fahrenholzi – P:L
Cediopsylla simplex (Baker) – S:P
D. variabilis – P:1
H. leporispaustrius – P:1
Ixodes dentatus Marx – P:1
Neotrombicula whartoni (Ewing) – A:T
O. multispinosus – S:C
Tencateia sp. – A:A
Order: MARSUPIALIA
Family: DIDELPHIDAE
M. marsupialis – opossum  
   A. inexpectatus** – A:My
   Camisia sp. – A:Ca
   C. eruditus** – P:C
   C. felis – S:P
   Ctenophthalmus pseudagyrtetes Baker – S:H
   D. variabilis – P:I
   E. stabularis** – P:L
   Laelaps echidnina Berlese – P:L
   O. multispinosus – S:C
   Orchopeas howardi (Baker) – S:C
   Orchopeas leucopus (Baker) – S:C
   O. bacoti – P:M
   O. wernecki** – P:M
   P. gwyni** – S:R

Order: RODENTIA
Family: CRICETIDAE
P. leucopus – white-footed mouse  
   A. fahrenholzi – P:L
   C. eruditus** – A:C
   E. stabularis** – P:L
   L. echidnina – P:L
   Polyplax spinulosa (Burmeister) – An:Ho
   Reithrodontomyx humulis (Audubon and Bachman) – Eastern harvest mouse
   Euschoengastia peromysei (Ewing) – A:T

Family: MURIDAE
R. norvegicus – Norway rat  
   C. pseudagyrtetes – S:H
   E. stabularis** – A:L
   L. echidnina – P:L
   Radfordia ensifera (Poppe) – A:My

Family: SCIURIDAE
G. volans – Southern flying squirrel  
   H. reidi** – P:L
   H. trispinosa** – An:Ho
   Miyatrombicula cynos (Ewing) – A:T
   N. sciuropteri** – An:H
   O. howardi – S:C
   T. fitchi** – A:T
   S. carolinensis – gray squirrel  
   A. fahrenholzi – P:L
   D. variabilis – P:I
   H. sciuricola** – An:Ho
   Laelaps nutalli Hirst – P:L
   Neohaematopinus sciuri Jancke – An:H
O. howardi – S:C
Sciurus niger L. – Eastern fox squirrel
L. nuttalli – P:L
Neohaematopinus sciurini Mjoeberg – An:H
O. howardi – S:C
T. striatus – Eastern chipmunk
Balustium sp. – A:E
C. pseudagyrtus – S:H
D. hylandi** – A:Lab
Epitedia wenmanni (Rothschild) – S:H
E. peromysci – A:T
H. erratica** – An:Ho
Ixodes scapularis Say – P:I

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